IMPOSING TABLES AND LOCK-UP APPLIANCES

TYPOGRAPHIC TECHNICAL SERIES FOR APPRENTICES — PART I, NO. 4

IMPOSING TABLES AND LOCK-UP APPLIANCES

DESCRIBING THE TOOLS AND MATERIALS USED IN LOCKING UP FORMS FOR THE PRESS, INCLUDING SOME MODERN UTILITIES FOR SPECIAL PURPOSES

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PUBLISHED BY THE COMMITTEE ON EDUCATION
UNITED TYPOTHETAE OF AMERICA
1918

Composition and electrotypes contributed by
Franklin Printing Company
Philadelphia

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INTRODUCTORY

AN important part of the work done in every printer's workshop is that which is concerned with the preparation of the forms for the press or for the electrotype molding process, after the composition of the pages has been completed. The operations consist chiefly of imposing, arranging margins, and locking up in an iron frame (called a chase) in order that the matter may be firmly fastened in a single mass. Where the printing is done on small job presses, taking forms not larger than 10 x 15 inches in size, this preparation of the forms is relatively simple, but where the work is printed on large flat-bed cylinder machines the difficulties grow in a ratio increasing with the size of the sheets to be handled. Especially is this so in places which do a high class of work, like manufacturer's catalogs, in which careful composition and halftone and other engravings are used and the printing is done in two or more colors on fine paper.

A form may be a single line, or a single block, or a page, small or large, or any number of pages assembled together for making an impression at one operation. One form only may be necessary to complete the printing of a sheet, or a number of forms may be required, usually a separate one for each color, as well as for each side of the paper.

The impression made on the sheet usually shows only a small part of the material that goes to make up the form that printed it. The spaces, quads, leads, the metal blanks within the pages, the larger metal or

wooden furniture surrounding them, together with the quoins which tighten the whole assemblage within the frame into a solid mass, always occupy more space and often cost more than the surface which makes the impression.

The articles for imposing and locking up forms in this manner may be classified, for our purpose in this book, as follows:

(1) IMPOSING TABLES — Flat, solid surfaces upon which to place the pages after they have been composed, corrected, and tied up by the compositor.

(2) CHASES — This is the printer's name for the strong iron frames in which the forms are enclosed and locked up for the press.

(3) FURNITURE — The trade name for the strips and small blocks of wood and metal used to fill blank spaces, to place between pages to make white margins, and to fill the inside of the chase so that the form may be tightened together solidly by means of

(4) QUOINS — These are wedges and other small mechanical devices for compressing the furniture and other material together to bind them into a firm mass in the chase, so that the completed form can be lifted from the imposing table and placed on the press or elsewhere.

There is a variety of styles of each of these classes of necessary articles. Many of the early simpler forms are still in use and amply serve for ordinary purposes, while others more elaborate and more durable are furnished to meet the particular requirements of certain shops and certain kinds of work. Since 1878, when Hempel offered printers the first successful metallic quoin, inventors have produced locking-up

devices without end. Many of these did not survive their experimental stages, others have been accepted with approval, while many more are adapted for special purposes only and are not extensively used. Not all of these specialized devices can be considered in this book, but an effort is made to explain those fundamental, commonly-used articles with which the composing-room apprentice should be familiar.

IMPOSING TABLES AND LOCK-UP APPLIANCES

THE preparation of forms for the press is done on a table of smooth stone (marble or slate) or steel. Until within recent years stone slabs were used solely and the table was called an imposing stone, or simply a stone, and the work termed stonework, while the work man who specializes on work of this nature is a stoneman or stonehand; so we often hear the anomalous phrase, a steel stone. The real stone is polished smoothly on top, and should be perfectly level all over its surface and be as rigid as possible. It is set on a strong hardwood frame, sometimes imbedded in plaster, but oftener fitted into a strong wooden coffin which supports it from below and forms a ledge around its four sides. This ledge should be fitted close to the stone, so that types, leads, and other small articles will not drop between the two parts; and it should be slightly lower than the surface of the stone itself, in order that the brass bottom of a galley may rest on it while tied-up pages are slid from the stone to the galley or vice versa. The steel imposing tables have the edges rabbeted or mortised to a depth of 6 points or more.

Imposing stones may be obtained in many sizes. In small towns a local stone cutter may supply the polished stone of a size required and a carpenter may build the frame to hold it. Printers' supply houses furnish them in certain standard sizes, from 20 x 25 inches to 48 x 80 inches, and sometimes larger.

Steel tables are also furnished in a variety of sizes. They are more expensive, but are preferred, especially for large surfaces, as they are not so heavy. A good

steel table is more durable and not so easily chipped as a stone surface.

The size of an imposing table required in a composing room depends upon the size of the presses used, as

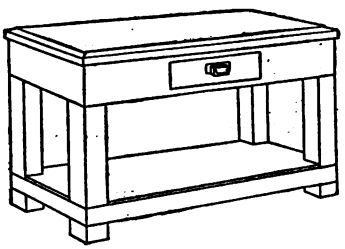


Fig. 1. Imposing Stone on wooden bench.

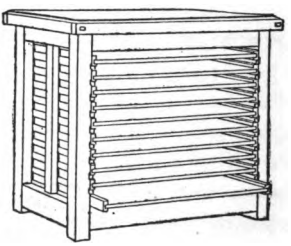


Fig. 2. Imposing Stone with letter-boards underneath.

usually there must be an imposing surface large enough to take the largest form the press will take. Small sized imposing surfaces will suffice where there are only small presses.

Imposing Table Frames

The earlier styles of frames upon which imposing stones were mounted—and many of these are still in use—contain simply a drawer to hold quoins, planer, mallet, etc., and a low shelf near the floor. (Figs. 1 and 2). The space under the table is now, however, considered valuable for the storage of material used in locking up, for chase racks, galley racks, letter boards, etc. Labor-saving furniture, reglets, page matter, and other material formerly stored in out-of-the-way places are now often placed within easy reach of the stonehand and effect a saving of time and labor. In some large, modern composing rooms the arrangement of the space under the imposing and make-up tables provides a

compact storehouse for material, the entire space being utilized for the different kinds most needed. (See Fig. 3).

Special Make-up Tables

While the dealers' catalogs show a variety of standard styles of imposing table frames, it is a frequent custom for large establishments, especially newspaper and periodical rooms, to have special tables of this sort made to suit their particular conditions.

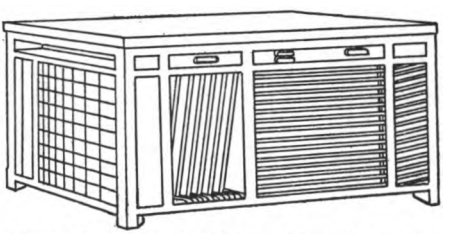


Fig. 3. Steel Imposing Table, with quoin drawers, chase and galley racks, letterboards, and rack of labor-saving furniture.

One of these is the special make-up table with iron or brass top, mounted on strong casters, so that it may be moved from place to place as needed. It may be fitted in a variety of ways, with shelves, cases, small lead and rule racks, etc., to serve the special needs of the work. (See Fig. 4.)

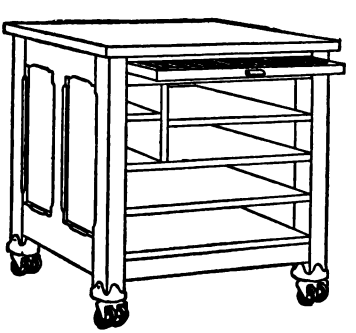


Fig. 4. Imposing Table mounted on casters

A common article in newspaper rooms is the transfer table. This is of a size to take comfortably one page of the paper, and is mounted on casters at the same height as the regular make-up tables. When a page is completed and locked up it is

slid from the imposing table to this transfer table and wheeled over to the stereotype molding press—also having its table at the same height—and the form is again slid on to the molding press. After the molding is done the form is again pushed on to the transfer table and later goes back for changes or is broken up.

Chases

The three chief requirements in a printer's chase are that it shall fit the press or the place where it is to be used; that it shall be strong and rigid as possible to withstand the pressure needed to lock up the material within it; and that its inside edges, where the furniture and other material of the form press against it, shall be perfectly perpendicular, so that the type is held upright and the inside corners exactly square.

Small chases are made of cast iron, which is the least expensive metal for an article of this kind. These are relatively weak, but as only little strength is required for locking small forms cast iron chases are usually adequate.

Wrought iron chases are much stronger than those of cast iron, and when well made they are serviceable for ordinary forms in large sizes for job presses and for book work on cylinder presses. They are more difficult to make than cast iron chases and consequently more costly. Cast iron, being brittle, will bend only very slightly under pressure and will spring back again when the pressure is released, but it will snap off when subjected to a hard blow or to excessive strain. Wrought iron, on the other hand, will bend considerably under pressure; under excessive strain it will bend out of its original shape and fail to come back again, so it sometimes happens that a wrought iron chase in which the locking up of the form is done with extreme force will

bulge at the sides, changing the position of pages, rules, or other matter out of the desired alignment. Repetition of this bending under excessive strain will often cause a chase originally true to become defective and remain so until it is rectified by an experienced machinist.

The best modern chases are made of a high grade of carbon steel electrically welded at the corners. Chases of this kind are made by taking steel bars of the desired thickness and length and placing the two ends which form a corner in an apparatus called an electric welder. In this device the pieces are held tightly together by huge jaws which gradually close up as the heat from a powerful electric current softens the metal until all the minute particles are fused together into a single piece. After the welds are made at each corner the frame is placed in milling and grinding machines which trim off the ridges of excess metal, true up the inside edges, and cut the inside corners to an exact squareness.

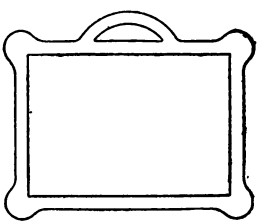


Fig. 5. Chase with reinforced corners, also with handle for carrying to and from electrotype foundry.

The weakest points of the ordinary chase are the corners, and special care is sometimes taken to strengthen them there. This is sometimes done by special brazing or by leaving an extra thickness of metal at the corner as shown in Fig. 5.

Sizes of Chases

All small job presses require chases specially fitted to be held on the bed. One or more chases are specified as parts of the equipment of the press when purchased,

but in all except very small shops extra chases are usually needed to provide for additional forms. The ordinary job press chases are beveled on two outside edges, to furnish a flange for the hooks or clamps which hold them in place on the press.

Chases for flat-bed cylinder presses, which hold the form on a horizontal bed, may be of any size that is not too large to place on the bed. Chases are usually of a size to hold the form to be printed. They are usually of wrought iron, although many pressrooms now have the stronger, better finished electric welded steel chases. Cylinder press chases have all the outside edges squared up in order to furnish a perpendicular side bearing for locking the chase in the bed by means of quoins, etc.

Crossbar Chases

A number of pages of type and other metal material in a large chase make a heavy form, which requires extraordinary pressure to bind the whole together so that it will lift as a solid mass. Even when such an assemblage of small pieces, pressed together at the sides only, is made secure enough to lift off the imposing table, there will be a tendency for the unsupported center to sag, and unless the form is handled with great care there is danger of a springing out and collapse of the whole. Skeleton chases in which poster forms are locked, having wood type and long strips of reglet and furniture, may be safely used in large sizes. Large chases for heavy forms, however,

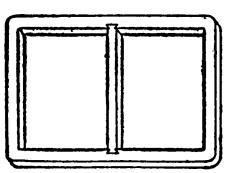


Fig. 6. Crossbar Chase.

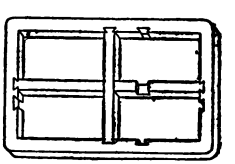


Fig. 7. Chase with shifting crossbars.

are practicable only when they have crossbars fitted midway in the open area. These bars hold the sides of the chase more rigidly and by their stiffness help to support material in the center of the form. Usually one crossbar suffices for large chases on ordinary work, but often there may be two, as shown in Fig. 7, especially for locking heavy pages or plates where close register is required.

In some chases these bars are removable, the ends being dovetailed and fitted into corresponding mortises in the frame. Sometimes they may be welded solidly in place. A removable crossbar is usually fitted into the chase quite snugly, so that it will not easily drop out, and a blow with a mallet is often necessary to remove it or to drive it back into place. The dovetails and the mortises, however, are not usually all exactly alike and a dovetail fitted for one mortise may not go into another one if the bar is changed end for end. When a well-made chase is fitted by the machinist each dovetail and its corresponding mortise is usually marked with an identical star or other sign, as a guide for putting the bar back in the proper manner after removal. This is a point the apprentice should observe closely and not make the mistake of trying to force a dovetail into a mortise for which it is not fitted.

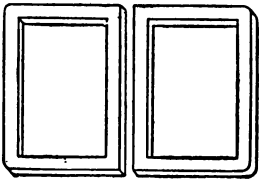


Fig. 8. Twin Book or Newspaper Chases.

Accuracy of Chases

The most common defect in chases is the inaccuracy of the inside edges, both as to the squareness of the corners and the exact perpendicularity of the sides against which the matter is locked. If the corners are

not true there is always difficulty and waste of time in getting the pages locked up with all four sides at right angles. If the pages are surrounded with rules or borders this lack of squareness will be quite noticeable and will give trouble later when the pressman prints the second side of the sheets.

The most annoying defect in a chase, however, is inaccuracy of the sides. These should form an absolutely exact right angle with the surface of the imposing table when the chase lies flat on it. A good chase will lie evenly on the stone, with all four corners resting alike and not one higher or lower to cause it to tilt perceptibly.

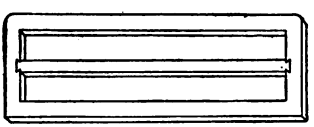


Fig. 9. Heading Chase, with long cross bar, for ruled blank-book headings, etc.

In order to make the proper impression on a sheet of paper and repeat the impressions indefinitely types must be held upright. If they lean ever so slightly one way or the other the face does not give a perfectly flat impression when the form is placed on the press, and the tendency of successive impressions will be to push them further over. There will also be a tendency at some part of the form to spring up from the surface of the imposing stone as soon as pressure is applied for locking up. This has its effect, more or less quickly brought to pass, not only on the type itself but also on the spaces, quads, leads, and other material near the impression area, which will respond to the side-twisting motion by creeping up from the surface of the bed. Low blank material, having no pressure from the top, will thus eventually work up to the level of the printing surface, receive ink from the rollers, and leave its undesirable mark on the printed sheets.

Inaccuracy in the furniture, or in an electroplate

block, or other important item placed in the form will produce the same trouble as a defect in the side bearings of the chase, but when this is detected the faulty piece of furniture may be repaired or discarded for a better piece much easier than the defective chase can be remedied. A defective chase, therefore, should not be kept in use where its defect will cause trouble of this kind, as the waste of time in rectifying forms will soon more than equal the expense of repairing the chase or even of buying a new one.

The Angle Chase

A recent style of chase, especially for job presses, is that known as the bias or angle chase, in which the form is locked up with its lines at an angle slightly different from the outside lines of the chase. (Fig. 10.) This is to overcome a common trouble in printing blank work and certain kinds of job forms in which there are very fine lines or very heavy lines placed so that the inking rollers run over them lengthwise in an exactly parallel direction. Composition rollers running swiftly and repeatedly along the sharp face of a brass rule will quickly have their surface cut into, unless they are old and particularly tough, and a cut on the face of the rollers means imperfect inking of the form, as well as spoiled rollers. In the case of a form with a long black line placed in a small press so that the rollers run lengthwise along the line, the ink supply is often insufficient to cover this properly without over-

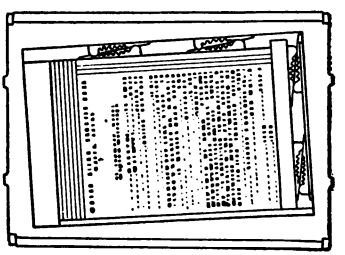


Fig. 10. Angle Chase.

inking the rest of the form; only a narrow strip on the surface of the rollers can cover the heavy line and the ink on this narrow strip is soon exhausted and not adequately renewed from the distributing disk. The locking up of the form in the chase with these lines somewhat out of parallel with the direction of the moving rollers increases the width of the roller surface covered by the lines, as the rollers run diagonally over the form. This reduces the liability of cutting the rollers by the fine rule faces, and supplies some additional ink to the black line because of the increased width of the roller surface utilized.

Some stonemen have met this difficulty of the pressman by putting a set of four beveled sidesticks around the inside of the chase and then locking up the square form within the rectangle thus formed. This plan will suffice for an occasional job, but where there is much work of this kind the special angle chase will prove worth its cost.

Screw Chases

A chase with screws inserted in the sides, having the holes threaded so that the screws could be turned up to project beyond the inside face of the frame, was an early invention for locking up a form, but it was not common. They were used to some extent after the advent of the small job presses and are now occasionally used where it is desired to get as large a form as possible into the chase by saving the space taken up by the customary sidesticks and quoins around the form. There is a series of flat-nose screws inserted through one side and one end of the chase, these being turned up against a thin strip of metal, like a reglet, inside against the form. The turning of the screws is done with a small wrench.

Screw chases are now used chiefly in newspaper rooms for locking up pages for stereotype molding. (Fig. 11.) These are, however, quite different in construction from the old screw chase, being made type-high and heavy and strong, with the screws at one end only. It will be noticed that the sidestick is beveled at intervals in its length and these bevels fit into corresponding bevels on the inner side of the chase. The sidestick is controlled, to tighten up or to loosen the page, by a long screw bolt at the end, or foot, of the chase. The notches in the footstick are to provide a free passage for the ends of the column rules and allow the pressure to be exerted only against the foot of the columns themselves.

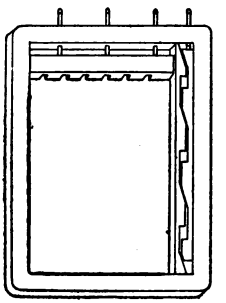


Fig. 11. Newspaper Chase fitted with screw bolts and side wedges for quick lock-up.

The screws are operated by a crank wrench, and as there are only a few of them and they are on one side of the chase they may be handled quickly. This furnishes the quickest method of locking up a form, making it particularly adapted for the rush work on a daily newspaper.

Wood Furniture

Furniture is a general name given to the pieces of low wood and metal used for the larger blank spaces in pages and in making up forms for the press. It is made in a variety of styles, some kinds being more particularly adapted for certain places than others. The greater part of this is now supplied and kept on hand in special racks and cases in labor-saving assortments of standard sizes made to multiples of pica.

The wood furniture now commonly used is made of well-seasoned cherry or hard wood saturated with an oily solution which protects it in a degree from the influence of moisture. It is about 5/8 inch high, or slightly lower than metal furniture when placed in the form; and metal furniture is, in turn, commonly a little lower than leads and slugs. Wood furniture may be obtained also in full lengths of one yard and in the usual widths from 5-point (pearl) to 18 picas or wider. The widths of 2 picas and smaller are called reglet. These full lengths may be cut to any desired sizes and are useful as sidesticks and footsticks, to put in long blank spaces and on the outside of pages in large forms to aid in keeping the matter straight and firm.

Metal Furniture

There are several styles of metal furniture in use. The common kinds are of soft metal, chiefly lead, the small pieces being cast accurately in a mold, and the larger sizes, though also cast in molds, are specially trimmed to exact size afterward.

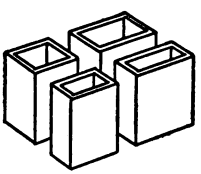


Fig. 12. Quotation Furniture.

The smaller sizes of these metal blanks are really large hollow quads, termed quotations, solid as to the four sides and the bottom but hollow at the top. (Fig. 12.) These are all made in sizes which are multiples of the pica*, those usually furnished by dealers ranging from 2 x 2 picas to 4 x 8 picas. Larger sizes of this kind are called quotation

*For convenience the term pica is used here instead of 12-point in specifying sizes of pages, furniture, and other material, but it should be understood that the size of 12-point is meant in all cases except where otherwise noted.

furniture, and range in size up to 4 x 20 picas, or even longer.

The regular metal furniture consists of hollow frames with cross braces in the larger pieces (Fig. 13). This is made in a variety of forms, the sizes ranging from that of the small quotations up to pieces 25 x 80 picas.

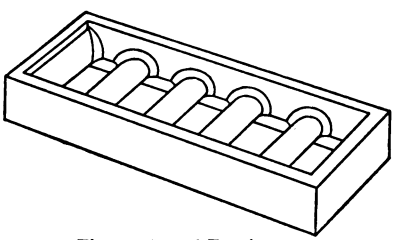


Fig. 13. Metal Furniture.

A style of metal blanks used in book rooms as a fitting between and around pages is that known as railroad or reversible furniture. (Fig. 14.) This has a solid area but is channeled on top and bottom its entire length, presenting solid, smooth sides, but shaped on the end like the end of a car rail. It is useful for margins and to place around small forms in the chase.

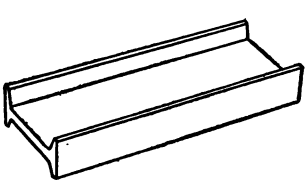


Fig. 14. Railroad Metal Furniture.

While wooden furniture is relatively cheap and is light in weight and well adapted for places where very long strips are needed for temporary uses, yet metal furniture has several advantages over wooden. Metal can be made to more precise dimensions in small sizes, it will not vary when exposed to dry air or to dampness, and will withstand greater pressure (properly applied) in the process of locking up forms. Wood quickly becomes defective and should be renewed oftener than it usually is in most composing rooms. Metal, on the other hand, will retain its accuracy for a long time, unless carelesssly handled,

and because of its greater accuracy and solidity gives greater precision and firmness in forms where it is used. The open spaces in each piece reduce the weight to a large degree, while the cross braces insure sufficient strength for all ordinary purposes.

Steel Furniture

As has been the case with many other items of printing-house equipment, steel has been recently used for this kind of material also, and in some respects with much success. Steel furniture is more difficult to make than the older forms, and consequently it is more expensive, so that its general introduction will naturally be slow in all but the larger and more progressive workshops. Its durability and rigidity are, however, qualities which in many places make it economical in the end. Uniform accuracy and exact conformity to the printer's standards of measurement are important considerations. A piece of soft metal which can be melted and poured into a mold and come out practically finished in exact size, or can be easily trimmed to exact size, is a simpler problem than making a rough cast of a piece of much tougher metal which must afterward be taken piece by piece and slowly milled on each of its sides to bring it to the required size.

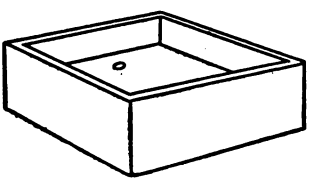


Fig. 15. Steel Furniture.

The first use of steel furniture was (as it is now and probably will continue to be) for very large blank spaces. Its form is in narrow bars, 2 picas to 4½ picas thick and ⅝ inch high, in sets of four. The ends of each bar are notched to fit at right angles with its

mates, the four bars placed to make a hollow square. The bars are of assorted lengths, the different lengths being graduated by 2 picas from 8-pica lengths to 72-pica lengths. These separate pieces, being fitted together loosely, depend entirely upon the locking up of the whole form for their security, and the locking up must be done with especial care where forms are to be carried from place to place.

Other later styles of steel furniture are somewhat similar to the usual soft-metal forms. These are usable in all cases where the older styles are employed and simply have the advantage of greater durability, and in the larger pieces of greater rigidity. This latter advantage is an important one in places where color work and close-register presswork is done, as it reduces the difficulty of getting good register and the loss of time necessary to maintain an exact and uniform position of the different parts of a form during the make-ready and printing operations.

Wooden and Mechanical Quoins

The first printers presumably tightened up their forms for the actual printing operation by inserting sticks and wedges of some sort between the sides of the type and the surrounding frame which held them in place.* This method was followed for hundreds of years with very slight variation or improvement. A quoin is a wedge, but in the printer's language the term is applied to many devices which are not wedges, yet which produce a similar result by expanding the space at their sides and thus squeezing together tightly any material held closely fitted against them.

*Some early chases held their types not with quoins but by the pressure of screws. A German printer's handbook, dated Leipsic, 1743, has diagrams of imposition in which pages are fastened by screws perforating the chase.

The rudimentary method of tightening up a page of type and similar material enclosed in a frame is by driving two beveled pieces in opposite directions, so that their thick ends will gradually close up on each other. Printers have employed this simple principle by providing long beveled sidesticks or footsticks and placing between them and the side of the chase small blocks of hard wood which were driven toward the thick end of the long piece by means of a mallet and a tool called a shooting-stick. (Fig. 16.) This method is still in vogue in some places, but in this country it has been quite generally discarded for locking up forms for the press. The operation is too slow and noisy and the results are too uncertain. It requires considerable experience and some skill to lock a large form acceptably in this manner.

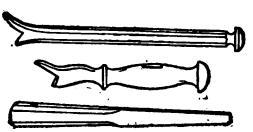


Fig. 16. Some styles of old Shooting Sticks.

The disadvantages of wooden quoins and sidesticks were especially manifest in locking up small forms, where a quicker and more precise method was demanded. With the advent of the many small job presses after the middle of the last century various devices were invented for tightening forms in the small chases. Some of these were in the form of two side plates fitted on a short screw-bolt with each end having the thread in opposite directions. (Fig. 17.) When this bolt was turned by a small wrench inserted between the plates the result was to spread them to tighten the form, or to draw them together to unlock. The strength and durability of this device are slight, as they depend upon the thread of the bolt and its hold in the side plates. It sufficed in some cases, however,

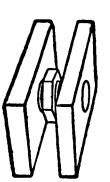


Fig. 17. Rouse Screw Quoin.

and is used in some places today, but does not meet the demand for general work or for heavy forms.

There were several variations of devices based on the principle of this screw quoin, and others embodying the wedge idea in some form. None of these, however, were extensively adopted except for small work until the Hempel iron quoin was introduced. (Fig. 18.) This quoin was simple and strong and quick and it could be used under a wide variety of conditions. The long bearing surface of the two parts and the expansive power which could be obtained by a simple turn of the key made the Hempel so much more efficient than the old wooden wedge, with its necessary shooting-stick and mallet, that it was soon adopted and remained the standard for many years. It is still commonly used and will probably continue to be used for many purposes. The Hempel quoin has been varied in minor details since the original styles appeared, and its principle has been used in quoins called by other names, as shown in the illustrations.

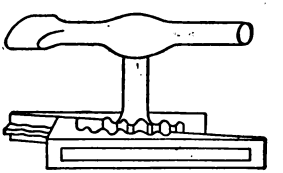


Fig. 18. Hempel Quoin and Key.

Although the Hempel proved a handy and efficient device, compared with others of its time, it has two defects which prevent it from being the ideal lock-up for printing forms. It gives a lateral motion as well as an expanding motion when the two wedges are drawn together. In many places this twisting pressure makes it difficult to keep the form truly square; extreme care is necessary to guard against an undesirable lateral force when only an expansive force is needed. The other defect is the liability of the two parts of the quoin to slip back and loosen the pressure after locking

up*. This is usually caused by the jarring of the press during the printing. It is a defect which may be remedied by the pressman taking the precaution to insert a plug of some sort between the teeth of the quoins after the form is finally locked up for the run on the press. There are many times, however, when this is not a convenient thing to do, and unlocking and re-locking is necessary even after the printing has been started. The precision required in modern presswork requires a lock-up which can be depended upon under all but very exceptional conditions.

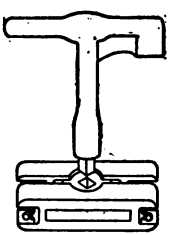


Fig. 19.
The Wickersham Quoin and Key.

A dependable mechanical quoin for general use is that known as the Wickersham. (Fig. 19.) This is a small metal case composed of two side pieces held together at the ends by small wire springs. The interior has a round triple-face cam fitted to corresponding bearings in the side pieces (Fig. 20). The turning of this interior cam by means of a key inserted in the top opening expands or contracts the width of the quoin. These quoins are made in several sizes, 2 inches and 3 inches long, and ½-inch to ¾-inch wide. They are also made in combinations of two or more quoins attached to long metal sidesticks, and to other devices for use in large open spaces, as on the

Fig. 20.
Triple Cam in interior of Wickersham Quoin.

*Some pressmen who have trouble of this sort, when the make-ready is complete, punch a common soft lead shot down between the teeth of the quoin; others have a small star-shaped piece of metal which fits across between teeth of opposite sides; still others drive a small tack in the wood furniture behind the end of the quoin to prevent it slipping back. These, however, are make-shifts, and their efficacy depends upon the forethought and care of the pressman.

bed of a press, etc. (Fig. 21). Wickersham quoins have proved serviceable over a wide range of uses; they give great power, readily controlled, and they have the special advantage of furnishing an expansive pressure only, without the side-twisting motion of the Hempel and other wedge quoins. Minor advantages of the Wickersham are its adaptability to the surface

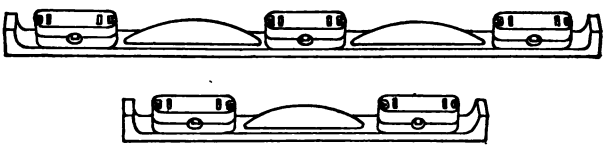


Fig. 21. Wickersham Quoins mounted on iron sidesticks, called Morton Lock-up.

of a beveled sidestick or to a face out of normal parallel with its own sides, and its reasonable surety, when in good condition, of holding the lock-up without slipping. Each quoin is held together as a single piece. In the matter of durability it usually does not equal the simpler Hempel style; the bearings which meet the round cam in the inside walls often wear quickly under tight lock-up and the sides will sometimes break out, forming a bunch that leaves its mark of injury on the side of the furniture against which it may be locked.

As stated at the beginning of this treatise, in all ordinary typographic printing the preparation of the form for the press requires, in one style or another, one or more pieces of the articles described in the preceding pages. These are assembled with the composed type page and held within the chase. A simple but typical arrangement of these articles, that of four pages locked up for a job press, is shown in Fig. 22.

Mallet and Planer

While the chase, furniture, quoins, and the composed page or printing block, are the essential components of a form for the press, there are several other accessories needed to carry on this part of the printer's work.

A planer is needed to smooth down the face of the form after being placed on the imposing stone and the

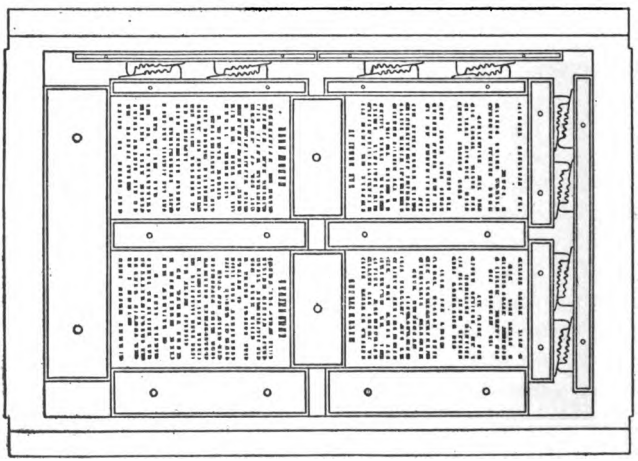


Fig. 22. Showing steel furniture and material used in a four-page lock-up.

furniture adjusted around it and before being locked up tightly. The ordinary planer is a block of hard wood with a smoothly leveled face and of a size to be held in the hand conveniently. It is laid face down on the form and hit gently with a mallet, the workman going over the entire surface of the form to put down into place any types or other items that may protrude above the general level. The back of the planer is

usually covered with a stout piece of leather where it is hit with the mallet, to prevent the splintering of the wood which is sure to occur unless protected in some manner. A special planer for use on linotype slugs is made with a face of corrugated rubber, which removes the fine burrs left by the casting and presents a softer surface, thus preventing injury to the soft metal face of the slugs.

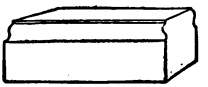


Fig. 23. Planer.

The ordinary barrel-head mallet is often used for planing forms, but it is not well adapted, as it must be very skillfully used to strike a straight blow; the flat face of the mallet-head will seldom hit the planer perfectly flat; when it does not do so the result is a glancing blow which is liable, when habitually practiced, to cause injury to the delicate lines of a printing form. A style of mallet which will invariably strike a square blow on the back of a planer is that shown in Fig. 24. This is made with an oval head and unless it is deliberately swung with a side motion it will hit a perfectly steady blow. It is intended, when not in use, to stand on its larger end, or head, and not to lie down like the old-style mallet.

Fig. 24. Round-head Mallet.

Some Necessary Tools

One quite necessary tool to have at the imposing table is an accurate steel square of good size. This is to place at the corners of the form when the locking up is done to know that it is squared up true.

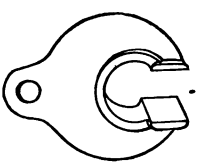


Fig. 25. Type-high Gage.

Another tool is a type-high gage (Fig. 25) of some reliable kind. This is to test the height of any small electrotype, wood

block, or other item that is liable to vary from the standard height.

Quoin keys for all the styles in use on the imposing stone should be placed at the handiest point. Many imposing tables require quoins and keys to be kept in a small drawer under the surface. A handier method is to have them in an open box at one end, about on a level with the table.

Roller Bearers in the Chase

These are used in forms for job presses, where miscellaneous work is done. They are placed at the ends of the chase where they will come under the ends of the composition inking rollers and serve as supports while these rollers are passing over the irregular printing surface. If left to themselves the metal roller wheels on a fast running press will slide along the side tracks outside of the chase, allowing the rollers to wipe the ink instead of roll it over the top and bottom edges of the printing face. Bearers placed so that they will come under the end of the composition surface of the roller will furnish a track upon which the rollers will rotate, not slide, and thus allow them to give a uniform rolling motion over the whole form and leave a better film of ink than is the case when the rollers slide over the blank parts without turning and roll only when they are on the face of the form.

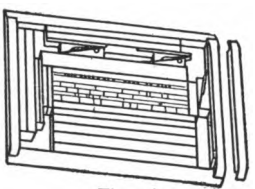


Fig. 26.
Bearers in Job Press Chase.

For this reason bearers in the chase are desirable for good inking on presses where the form rollers slide back and forth on smooth tracks on the side of the bed.

Even if the side tracks are originally rough or have sandpaper surface, they will quickly become smooth. These extra roller bearers, however, are not needed on a press where the form rollers have a positive, uniform, continuous motion entirely independent of the form itself, as in the flat-bed cylinder machines.

Roller bearers are sometimes made a part of the chase itself, the ends of the chase simply being type-high and tapering at the upper and lower parts, to permit the roller to go back and forth over the ends smoothly. Bearers of this kind are made by fastening strips of metal on top of the two ends of the chase to bring these parts to the same height as the printing surface. Separate steel bearers are also used. These are thin strips of metal with the upper edge bent sharply over at a right angle to partially cover the end of the chase. They are of a length to fit inside the end of the chase and have their ends slightly overlapped and turned to present a smoother face for the rollers to run over. Strips of 24-point wood rule with plain solid face, such as is used for posters, may be used for bearers in the absence of the regulation kind. These are simply cut to fit in the chase and slightly rounded at the corners where they will meet the rollers.

NOTE. An explanation of the methods of imposition and lock-up is given at length in other books of this series (Part III, Nos. 24 and 25) and is not within the scope of this volume.

Register Points and Folding Marks

These are small brads placed in book forms to mark guides for a second or subsequent printing of the sheet, so that it will conform to the position of the first printing, and also for the direction of the binder in cutting and folding the sheets after printing. Register points are used when the edges of the paper are irregu-

lar or crooked and uniform feeding of the sheets cannot be secured. The points are usually in pairs some distance apart, in positions indicated by the pressman or the binder. They are fastened to a crossbar of the chase or on the furniture between the heads or sides of the pages, and they puncture small holes in the paper at the same time that the first printing is done. When the points must be placed in the crossbar small holes are drilled in the bar and the brads inserted firmly, so that the points are not above the height of the printing surface. If they are higher they will be liable to mark or cut the inking rollers. When the points can be inserted in the wood furniture this is done simply by driving the brads into the wood in the desired position and filing the tips to the proper size. Special points are sometimes used, having a screw thread at one end to screw into the furniture.

These points make the punctures always in the same place in relation to the printed page, and when the sheet is turned over to print the other side, or to print a second color on the first side, the punctures serve as guides to register the second printing. When the first side of the paper has been printed the points are taken out. On the second feeding the sheets are laid so that the punctures match over another pair of spring points on the feedboard of the press or the folding machine.

Points are now often used as guides for folding the sheets on machine folders. They are not used to any extent for registering on printing presses, as it is now the custom to trim the edges of the paper in every case where possible and to use edge guides for feeding. The punctures may sometimes be slits instead of points. Points are needed for close register on handmade papers with ragged edges, where the paper is left untrimmed.

Forms for Electrotype Molding

Small editions of books, pamphlets, catalogs, and the great variety of job work done in small quantities are commonly printed direct from type forms, but a great quantity of printed matter is now done from electroplates made from the original composition. The pages of books intended for wide circulation or for more than one edition, and also of magazines, periodicals, and catalogs in large editions, are almost invariably locked up for electrotype molding in small forms, of one, two, three, or four pages, not usually exceeding 15 x 21 inches. Halftone engravings and pages of small type require more pressure in molding than forms of large type, and they are more satisfactorily molded in small forms. Where electrotyping is the usual practice the material used in the form varies somewhat from that used where the forms themselves are put on the press for printing. In addition to the high spaces, quads, leads, and smaller pieces in the page itself, the chases are made thicker and higher, the furniture is higher, and the blank spaces in and near the molding surface generally brought up higher than the level of the usual low material. There is, however, a great deal of electrotype molding done from forms with the ordinary low material throughout, and simply guardlines around

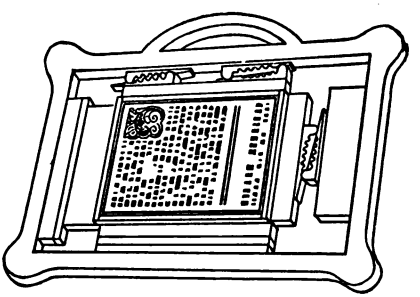


Fig. 27. Form in Foundry Chase for electrotype molding.

the pages, but this is sent to the electrotyper from composing rooms in which the usual work is done directly for the press.

Electrotype Guardlines

These are type-high strips of stereotype metal, sometimes also termed bearers. They are 18-point, 24-point, or 30-point thick, and in lengths to place around pages locked up for the electrotype process. They have a flange or rabbeted edge on the side of the face next to the type, to leave a clear white line of 10 or 12 points between the broad face of the guardline and the face of the page. Guardlines, with properly placed bearers in the larger blank places within the form, serve to secure an even pressure in the molding press and to protect the edges of the plate during the electrotyper's finishing operations.

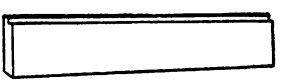


Fig. 28. Electrotype Guardline.

In a form properly locked up for the electrotyper the open spaces should have bearers or other points approximately type-high, in addition to the guardlines around the page. This is especially important where there are small types or thin rules near the edge of the page. In a form with brass rule around the outside the mistake is often made of putting a guardline close to the rule outside and leaving low leads or quads inside the rule. To obtain a good wax impression it is necessary that the bearing surface on each side of a fine line be nearly equal, as the wax will spread quicker into the larger opening, leaving a distorted impression of the molding face. If the low leads or quads inside the rule cannot be changed for high leads or quads, it will be better to insert a low slug outside the rule also, that is, between the rule and the guardline.

When two or more pages are locked in one chase a double-width guardline is inserted to separate the pages, so that the plates of the different pages can be readily cut apart. The high parts produced on the electroplates by guardlines and bearers are, of course, all trimmed away on the finished plate.

NOTE. A further consideration of the advantages of electrotype guardlines and the lock-up of foundry forms will be found in No. 24, Part III, of this series of text books.

Electrotype Blocks

The general introduction of the stereotype and the electrotype, after 1840, was followed by a number of innovations in the material and methods used in preparing forms for the press. These plates were thin and were mounted on wooden blocks as substitutes for the solid metal types—a substitution which naturally produced other changes in printing methods.

Small electrotyped plates have been and are now commonly mounted type-high on wood blocks, the plate being fastened with brads or small screws. Sometimes they are mounted on metal. For ordinary uses, especially in job work, each plate is mounted on its own special base, to be made up and locked up with type matter.

In places where the electrotyping of entire pages of uniform size is the habit, as in book work, the mounting of individual plates is dispensed with and a set of bases is provided upon which the plates are held for use on the press, and when the printing is done the plates are taken off and the same bases used for other plates.*

*These bases were called stereotype blocks at first, because they were used to mount stereotypes before electrotypes became common, and they are still called by this name in some textbooks and by old printers.

(Fig. 29.) These old-style bases are made of hard wood, bound with brass, and have catches which hold the beveled edges of the plate. They are now sometimes also made of metal entirely. The catches on the bases are attached to small screws and are operated by a ratchet, to tighten up the plate on the base, or to loosen it. The edges of the plates are almost invariably beveled to provide a good hold for the catches.

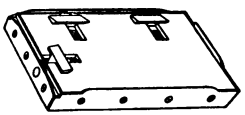


Fig. 29. Electrotype Base with catches.

Fig. 30. Ratchet for operating movable catches.

Thus it is a practice in many places first to lock up a set of electroplate bases in a chase and then to place a set of plates on the bases. Ordinarily this calls for the same material as though the pages were of type, without, however, the care necessary to keep a type page intact until it is locked up.

Wood bases serve quite well if the electrotype plates are of type matter or small line engravings. But the growing use of fine-screen halftone engravings and color-plates of solid or near-solid surface has made necessary a base firmer than wood, and the iron or steel base has become quite common in recent years. The greater precision required in registering color printing has also created a demand for the metal base; and with it has come a number of devices for holding the plates and for moving them into exact position with nicety.

Metal Bases for Printing Plates

These have been made in a variety of styles in the past dozen or fifteen years to meet the demand for a firmer and more accurate mount for electrotype and halftone plates. There has been a rapid increase in the

use of these plates and more exacting demands for better work and greater product. A difficult phase of the problem of getting a satisfactory plate base is the necessity for adapting it to the bed of a printing machine on which type forms must also be used. The standard type height must be maintained, which means an iron block approximately ⅞-inch thick and consequently of great weight if it covers many square inches of surface.*

Another feature is the means by which the plate is held in place. This is very important because of the impressional action of the press. Halftone plates having the screen covering the entire surface, and requiring a heavy impression, can be held only by shallow clasps, termed catches or hooks, on the extreme edges, and consequently they have to be treated with great care to make them secure.

Three Kinds of Metal Bases

Iron bases for printing plates may be divided into three general classes: The individual page base, made in a single block like the wood block (Fig. 29); the sectional base, made up of smaller pieces assembled into pages or forms (Fig. 31); and the iron base covering practically the entire bed of the press (Fig. 32). In the latter style, if the press bed is large, the base may be in two or more sections.

*The relative thickness of the electroplate and of the base varies somewhat in different places and for different classes of work, although efforts are sometimes made to standardize these. An average thickness of approximately .152 inch for the plate and .759 inch for the base is customary for ordinary work. For bases of this height halftone copper plates and zinc line plates, which are much thinner in the original plate, are backed up with stereotype metal to make them of the required thickness. For some special kinds of work thinner or thicker plates, and corresponding differences in the height of bases, are often used.

The individual page base is made for certain standard sizes and can be used only for the sizes to which it is adapted. The cost of a set of such bases is considerable, but where there is a certain amount of regular use for them they are desirable and profitable. In a printing establishment where there is constant variety in the sizes of pages handled the installation of different sets of these bases for each size required would mean an extensive outlay which might not be advisable.

In order to meet this need in a more economical way, and especially to supply plate bases for miscellaneous job work, sectional bases have been designed. These are made of small pieces in sizes conforming to multiples of pica. They are furnished in assortments and may be combined to form bases of any desired size. In these assortments some of the pieces have a stationary catch or hook on one edge to hold the bevel of the plate. Other pieces have movable catches held on horizontal screws and operated by a ratchet, or in some cases by a special key. Still other pieces are plain hollow blocks to fill the interior of the combination. These are assembled to make a page of the desired size, with the catches properly placed at the four sides of the plate, and the whole locked in a chase like a type page. The movable catches are turned back to allow the plate edges to be inserted under the lip of each catch. The printing plate is then laid in place and the movable catches are closed up till the plate is held firmly on all sides.

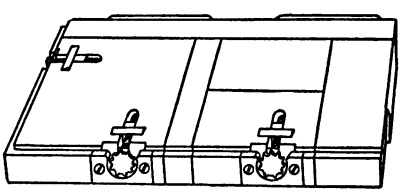


Fig. 31. Sectional Metal Electroplate Base.

Grooved Metal Bases

Another style of plate base is furrowed with deep channels diagonally across its surface. The area of the supporting surface being greater than the tops of the channels, this gives a plate base sufficiently solid for ordinary purposes, but when an extra solid foundation is needed there are pieces of metal provided to fill the channels under the plate. The channels have at the bottom a toothed rack which engages with corresponding teeth on the lower side of the catches. The catches are inserted in the grooves at appropriate positions around the sides of the plate and fitted close up to the beveled edge by means of a special key which tightens the catch by turning the screw.

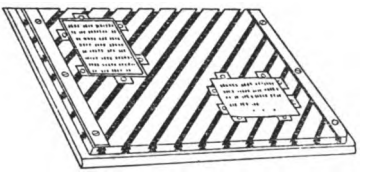


Fig. 32. Grooved Steel Base in job press chase. (Note the roller bearers screwed on ends of the base.)

Large metal bases are provided to meet the demands of heavy forms of halftones, for large editions, and for accurate register in three-color work. They are grooved at intervals over their entire surface. These bases take a number of pages on a single block, and plates usually can be fastened on any part of the surface. Plate catches are inserted in the grooves so that they will come at the edges of the plate in position to hold the plate uniformly all around. Some bases are lined off over their surface in squares of 12-point ems, to furnish a guide to the stonehand when placing the plates in position.

An advantage of detachable bases is that one of a number of plates may be removed, replaced, or its position changed without disturbing the others.

Catches and Register Hooks

The catches which hold the printing plate in position on the base are of three general classes:

1. The stationary catch used on ordinary bases designed for single plates. These are short strips of brass or other metal fastened on the side of the block, having the upper edge projecting enough to catch the edge of the plate yet distinctly below the level of its printing surface. Fixed catches are at the head and one side of the page, and hold the plate while the movable catches on the opposite sides push the plate firmly against them. Stationary brass catches are also provided to be inserted at the edge of the base beside the furniture or in the interior of the form between sections of a combination base.

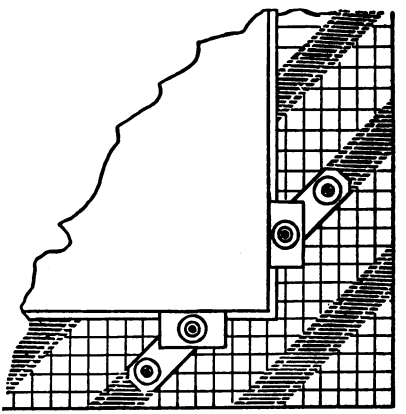


Fig. 33. Showing movable catches and bevel edges of eletroplate.

2. The movable catch held by a short screw in the position where it is placed. This kind is commonly used on large grooved metal bases. A simple style consists of a pair of bevel-edge nuts, a small one in the dovetailed channel and a larger one on top of the base, both connected by a stout, slotted flat-head screw

which is tightened or loosened with an ordinary screw-driver.

3. In another style somewhat similar to the foregoing, the catch is connected by a perpendicular screw to a pair of wedge-shape steel pieces in the channel. The turning of the screw draws the wedges together till their expanding sides press tightly against the sides of the channel at the same time that the catch is drawn down firmly on the edge of the plate. There are several variations of this idea of the screw and wedge principle applied in other catches.

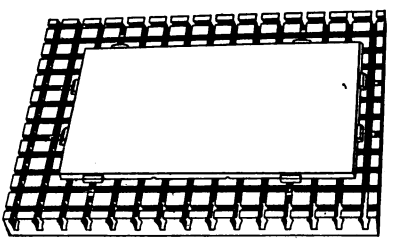


Fig. 34. Plate fastened to grooved block by screw and wedge catches.

The shape of the catch itself is sometimes an important detail. The front has an undercut bevel which

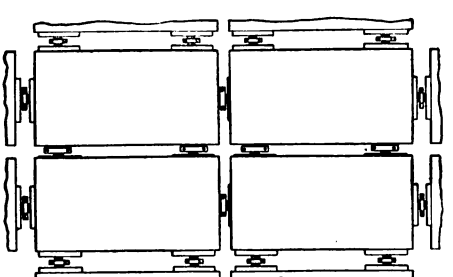
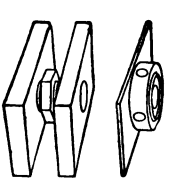


Fig. 35. Four metal bases locked up with register quoins.



Register Screw Quoins, used to adjust, or register, the accompanying metal bases.

enables it to clutch the beveled edge of the plate and draw it down to the base. The angle of this bevel varies according to the nature of the plate generally

used. Usually for a thick plate the angle of the bevel is slight, while for a thin plate the angle is more pronounced in order to allow the catch to reach in and secure as strong a hold as the margin on the plate will allow. Obviously it is desirable to have the bevel on the face of the catch and the bevel on the edge of the plate conform to each other, so that they may fit together as snugly as possible. A sharp-angle catch against a square-edge plate, or vice versa, does not give a secure hold.

SUGGESTIONS TO STUDENTS AND INSTRUCTORS

THE following questions, based on the contents of this pamphlet, are intended to serve (1) as a guide to the study of the text, (2) as an aid to the student in putting the information contained into definite statements without actually memorizing the text, (3) as a means of securing from the student a reproduction of the information in his own words.

A careful following of the questions by the reader will insure full acquaintance with every part of the text, avoiding the accidental omission of what might be of value. These primers are so condensed that nothing should be omitted.

In teaching from these books it is very important that these questions and such others as may occur to the teacher, should be made the basis of frequent written work, and of final examinations.

The importance of written work cannot be overstated. It not only assures knowledge of material but the power to express that knowledge correctly and in good form.

If this written work can be submitted to the teacher in printed form it will be doubly useful.

QUESTIONS

1. What are the principal operations called for in preparing forms for the press after the composition is completed?
2. What are some of the principal sources of difficulty in these operations?
3. What constitutes a form, and how many may be needed to complete the printing of a sheet?
4. How much of a form shows on the printed sheet?
5. Of what does the part that does not show consist?
6. What classes of articles are needed for imposing and locking up forms, and what does each class contain?
7. Upon what were forms formerly made up, and how has this appliance been modified in recent years?
8. Describe the construction and mounting of a real stone.
9. What is the advantage of steel?
10. What are the sizes of imposing surfaces in your composing room?

11. What usually governs the size to be procured for a composing room?
12. How are imposing-tables utilized for other purposes?
13. Describe a transfer table and its uses.
14. What are the three requirements of a chase?
15. Of what are small chases generally made?
16. What other material is commonly used, and what are its advantages and disadvantages?
17. What are the very best chases, and how are they made?
18. What part of a chase is the weakest, and what is sometimes done to strengthen this part?
19. What sorts of chases are required for small job presses, and how are they attached to the press?
20. What chases are required for flat-bed cylinder presses, and how are they attached to the press?
21. What difficulty arises as chases increase in size?
22. Describe the appliance used to meet this danger.
23. What point should the apprentice particularly observe in using this appliance?
24. Describe the most common defect in chases, and its effects.
25. Describe the most annoying defect in chases, and its effects.
26. What else will produce similar results?
27. What should be done when chases or furniture are defective?
28. What is an angle chase, what troubles does it meet, and how?
29. What other method has been used to meet this trouble and how far is it successful?
30. What is a screw chase?
31. Describe the screw chase used in newspaper offices.
32. What is furniture?

33. Describe wood furniture; tell how it is kept and for what it is used?
34. Of what are the common kinds of metal furniture made, and how?
35. What are "quotations"?
36. Of what does regular metal furniture consist?
37. What is railroad furniture?
38. What are the comparative advantages of wood and metal furniture?
39. Describe steel furniture and state its advantages and disadvantages.
40. What are wooden quoins, and how are they used?
41. Describe some disadvantages in the use of wooden quoins.
42. Describe the Hempel quoin.
43. What are the defects?
44. Describe some means of overcoming these defects.
45. Describe the Wickersham quoin, and state its advantages.
46. Describe the planer and mallet, and their use.
47. Describe two other necessary tools, and give their uses.
48. Where should quoin keys be kept?
49. What are roller bearers in the chase, and what is their use?
50. What are register points?
51. Where are they placed and how are they attached?
52. Describe their use, and state when they are necessary and when not.
53. What are the special features of forms for electrotype molding?
54. Are these features always present, and why?
55. Describe electrotype guardlines and their use.
56. What do electrotype forms often need besides guardlines in order to make a good mold, and why?

57. What material is put between two or more pages locked in one chase for electrotyping?
58. How are electrotype plates ordinarily made type high?
59. What is done where electroplates of entire pages are used, as in book work?
60. What change has come with the use of fine-screen halftone engravings and color-plates?
61. What difficulties have to be met in using these devices?
62. What are the usual thicknesses of plate and base?
63. Are their proportions always observed?
64. What is sometimes done with halftone copper plates and zinc line plates when they are to be mounted on standard bases?
65. Name and describe three kinds of metal bases.
66. Describe the second kind in detail.
67. Describe grooved metal bases.
68. What sorts of work require large metal bases?
69. Describe these bases and their advantages.
70. Describe one or more kinds of catches used to hold the plate on the base.

BACKING UP — To print the second side of the sheet in proper position.

BASE — A support for a printing plate, to make it type-high. See *Block*.

BEARERS — (*a*) Steel ledges on each side of the bed of a cylinder press, upon which the ends of the cylinder move while making the impression. These ledges are type-high and serve the purpose of equalizing the motion of the printing cylinder over the form. The corresponding parts of the cylinder which rest on these bed bearers are termed cylinder bearers. (*b*) There are also bearers on the sides of the bed of platen job presses, forming a track upon which the ends of the inking rollers move while inking the form. (*c*) Roller bearers made of strips of metal or wood are often placed inside the ends of chases for platen press forms. (*d*) The guardlines placed around and in blank parts of pages to be molded for electrotyping, stereotyping, or similar treatment, are also termed bearers. Generally, any strong flat surface which serves to bear off excessive impression from an adjoining surface or to steady the motion of unequally moving parts.

BED — The flat part of a press upon which the printing form is placed.

BEVELED SIDESTICK — A strip of wood or metal thicker at one end than at the other, placed inside the chase, against which quoins are placed to lock up the form.

BLOCK — A printing plate of any kind mounted type-high; a base upon which to mount a printing plate.

BROADSIDE CHASE — A skeleton chase to hold a single large page, like a poster.

BROADSIDE — A large sheet printed on one side only.

CHASE — An iron frame to hold a printing form for the press.

CLEARING AWAY — To put surplus leads, furniture, and other material back in their places after use.

COFFIN — The frame or box into which an imposing stone is placed on its table.

CROSSBAR — The extra bar placed across a large chase.

FOLDING CHASES — Formerly said of a pair of chases, to be used side by side on the bed of a hand press or a cylinder press.

FOOTSTICK — A piece of wood or metal furniture similar to a sidestick, placed at the short side of a form; used at the foot of a newspaper page.

FORM — A page or number of pages or engravings locked in a chase ready for printing.

FOUNDRY CHASE — A special chase for electrotype forms.

GUARDLINES — Type-high strips of metal to place around forms to be molded for electrotyping, etc.

GUTTER — The blank space between the back margins of book pages.

FURNITURE — Large blank pieces of various kinds to place in printing forms. See pages 19-22.

HALF-SHEET FORM — A form containing all the pages to be printed on a sheet; so imposed that when one side is printed and the sheet turned and printed on the back it contains two copies. When cut in two each half contains an impression of all the pages in the form.

HEMPEL QUOINS — A pair of metal wedges used to tighten a form in a chase, etc. See page 25.

IMPOSING TABLE — A stone or metal surface upon which forms are locked up for the press.

IMPOSITION — The process of laying pages on a smooth surface arranging them in order, and locking up in a chase.

LETTER BOARDS — Movable shelves under an imposing table, or elsewhere, to hold type or other forms before or after they have been printed.

LIFT — When a form is locked up tightly so that it will rise from the imposing table without types or other pieces dropping out, it is said to lift, or to *rise*.

LOCK-UP — The process of arranging furniture around a form and tightening it in a chase preparatory to going to press.

MAKING MARGIN — Placing furniture and other blanks around the pages in a chase, so that they will be printed in the proper place on the sheet.

MORTON LOCK-UP — One or more Wickersham quoins fastened to a steel sidestick.

PATENT BLOCK — Old name for electrotype or stereotype base.

PLANER — A smooth-faced block of wood to level the surface of a type form.

POINTS — Small brads placed in printing forms to puncture holes in the sheets, as guides for subsequent feeding and registering. See page 31.

POSTER CHASE — A large chase without crossbar, in which poster forms are locked up.

QUOIN — A small wedge or mechanical device used to tighten up the form in the chase, usually operated by a key. (See page 23.)

QUOTATIONS — Large hollow quads. See page 20.

RATCHET — A small toothed instrument for turning the screws of electrotype bases.

REGISTER — To adjust the pages or parts of a form so that they will print exactly in the place desired; such as to back up pages on a sheet, to strike different colors in correct place, etc.

REGISTER HOOKS — Small catches or clamps inserted in electroplate bases to hold the plate in place. The hooks are attached to screws by means of which they can be moved back and forth very precisely and thus move the plate into the desired position.

REGLET — Thin strips of wood, similar to thick leads, for placing between lines, and other places in forms.

SECTIONAL BLOCK — An electrotype base made up of a number of smaller pieces. See page 38.

SHEETWISE — Said of a sheet printed with two forms, one for each side of the sheet; in distinction from half-sheet.

SHOOTING-STICK — A small implement used to drive up wooden quoins beside a beveled sidestick. Not now much employed.

SIDESTICK — Strips of wood or metal placed at the side of a page in a chase, against which the quoins are placed to lock up the form.

SKELETON CHASE—A large chase without crossbar, such as is used for large poster forms.

SKELETON FORM — A form made up chiefly of large blank spaces, with relatively little printing surface.

SPRING — A printing form containing defective material, or being locked too tightly, so that it does not lie solidly on the imposing surface or on the press bed, is said to spring; an improper condition for good presswork.

STEREOTYPE CHASE — For locking up forms for stereotype molding, chiefly in newspaper work.

STONE — Common term for the imposing table, which was formerly of polished stone, but is now of steel.

STONEMAN — One who works especially at imposing and locking up forms for the press.

TURTLE — A section of the surface of a large cylinder on the old-time type-revolving press. Newspaper pages were made up and locked on these curved surfaces, the columns running laterally along the cylinder surface. Column rules were thin at the foot of the type and thick near their face, thus allowing a slight curvature from column to column across the page. The

bottom of the column rules extended beyond the face and the ends were fastened in the framework of the turtle. This, together with a firm lock-up at the foot of the columns, kept the composed type in place during the revolution of the cylinder when printing.

TYPE-HIGH PLANER — A tool or machine for planing off the bottom of electro bases and other printing blocks, to bring them to the exact height of type.

UNLOCK — To loosen up a form by turning or moving the quoins.

WICKERSHAM QUOINS — A small mechanical device for locking up a form in a chase. See page 26.

WORK-AND-TURN FORM — When all the pages of a sheet are imposed in one form, the paper is turned after the first printing and printed on the second side, making two copies when cut. Same as half-sheet form.

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THE following list of publications, comprising the TYPOGRAPHIC TECHNICAL SERIES FOR APPRENTICES, has been prepared under the supervision of the Committee on Education of the United Typothetae of America for use in trade classes, in courses of printing instruction, and by individuals.

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The Committee on Education of the United Typothetae of America, under whose auspices the books have been prepared and published, acknowledges its indebtedness for the generous assistance rendered by the many authors, printers, and others identified with this work.

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The Committee also desires to acknowledge its indebtedness to the many subscribers to this Series who have patiently awaited its publication.

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