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LOCKING FORMS JOB PRESS

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LOCKING FORMS FOR THE JOB PRESS

**CONTAINING
USEFUL INFORMATION REGARDING THE
IMPOSITION OF JOB FORMS; WOODEN AND
METAL FURNITURE, QUOINS, BEARERS,
FOUNDRY GUARDS, ETC.**

**BY
FRANK S. HENRY**

**INSTRUCTOR IN PRINTING, PHILADELPHIA TRADES SCHOOL
AUTHOR OF "PRINTING FOR SCHOOL AND SHOP"**



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PREFACE

PRINTING, which now ranks fifth among the industries in the United States, is undergoing many changes both in the methods of its production and in the manner of training its future workmen.

Realizing the futility of relying on individual effort to train apprentices in the shop, educators and employers are co-operating in an endeavor to recruit the rapidly depleting ranks of all-round workmen. For this purpose trade schools are springing up all over the country, part-time courses and continuation work being a valuable auxiliary to shop practice. That such schools are a boon goes without saying, for too frequently the journeyman (working against time-units) has no time to devote to the apprentice, whose training is consequently neglected.

This state of affairs is particularly true of the process of locking up forms for job presses. If the apprentice does get an opportunity to do this work, it is frequently without any admonition or instruction, the average compositor seeming to think that there is really nothing to this branch of the work, and that anyone ought to know how to do it correctly. That the ordinary compositor does not know how to do it correctly is fully evidenced by the careless, thoughtless way in which many forms are put together.

The endeavor of this book is to point the right road and give reasons for each operation. To avoid needless repetition, Book 4, Part I, of this series should be read in conjunction with this volume, for in it certain matters are there treated more in detail. While this series of text-books has been prepared for the apprentice, it will also be of value to many journeymen.

CONTENTS

	PAGE
GENERAL PRINCIPLES	7
QUOINS	10
LOCKING UP A FORM	13
PULL-OUTS	16
BEARERS AND GUDGEONS	18
LOCKING UP REGISTER JOBS	19
JOBS WITH RULES	21
FURNITURE	24
LOCKING FORMS FOR ELECTROTYPING	26
AVOIDING AND CORRECTING TROUBLE	29
SUPPLEMENTARY READING	32
REVIEW QUESTIONS	33
GLOSSARY	39

LOCKING FORMS FOR JOB PRESS

General Principles

LOCKING up forms for press is one of the most important operations in a printing office. On the care exercised by the stonehand (or lockup man) depends the safety of the form while on press. Some slight inattention to detail, or some lack of foresight or care may cause an expensive pull-out or accident. For this reason the one who essays to lock up forms is cautioned to exercise the utmost diligence and care, and see that everything about the form is absolutely correct before sending it to press.

There are a few simple rules regarding the locking up of forms; the form must be square, it must be tightly locked up, the furniture must not bind, and the type must be on its feet.

The mistake that nearly every novice makes when he locks up his first form is to use many thin pieces of furniture of varying length, to place them helter-skelter in the form, or to build up the form in the shape of a pyramid.

One does not have to take a college course in physics to learn that a solid piece of wood ten inches long, two inches wide, and three-fourths of an inch thick has less "give" or "spring" to it than have four pieces of wood ten inches long, one-half inch wide, and three-fourths of an inch thick. See Fig. 1. It is also a matter of common observation that wagon-springs are

made up of "leaves" of spring steel, firmly held together, and gradually decreasing in size towards the axle to which they are fastened. See Fig. 2.

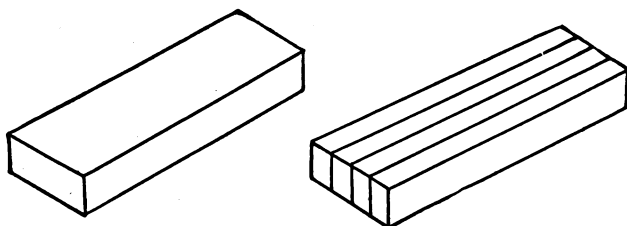


FIG. 1

One piece of wood

Four pieces of wood of same dimensions
as above have not same stability

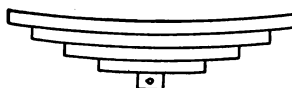


FIG. 2—Wagon Spring

The object to be attained by thus assembling the leaves of the wagon-spring is to make it springy. Nearly every *unthinking* compositor assembles his furniture in like manner. I have never met a compositor who could give a good reason for so doing. Very likely he has seen someone do the same thing, and he has followed a bad precedent, and has himself never given any thought to the matter. The method is radically wrong. Every form locked up for press should be made as firm and as unyielding as possible. It should be made up of the fewest possible number of pieces of furniture, and should be put together so that when locked up pressure will be brought to bear on the sides of the furniture as well as the type, and

the whole form made an immovable mass. If any part of the form can be twisted around, the form has not been properly built up.

A method frequently used in building up a form is shown in Fig. 3. This pyramid style is wrong. Notice

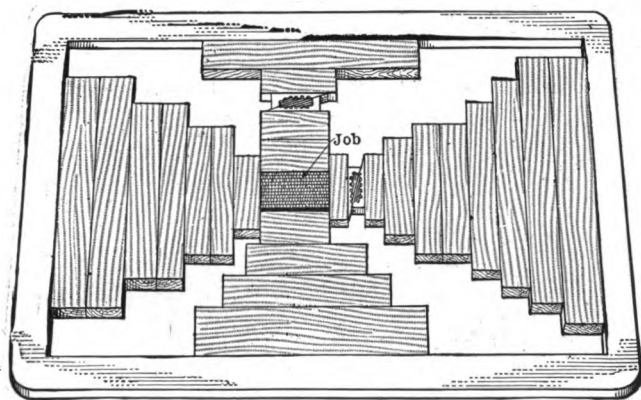


FIG. 3—Improper way to lock up a form

that the only bearing that the furniture has is alongside the short end of the job. The furniture can be twisted with but very little effort. The job is apt to work loose and pull out on press. Also, there is not a sufficient number of quoins for the size of the job.

Fig. 4 shows the proper way to lock up such a job. Long, wide pieces of furniture have been used throughout. The job is a small one. Suppose that the job were 6 x 10 picas in size. The placing of one piece of 6 x 20 pica metal furniture on each side of the job would build it out to fifty picas in length. We could then use fifty-em furniture to build up the form.

If the job is a large one, and offers sufficient bearing for furniture and quoins, there is no need to build it to larger dimensions. The object of building up the small one is to get a long, firm bearing for the quoins, and an unyielding lockup.

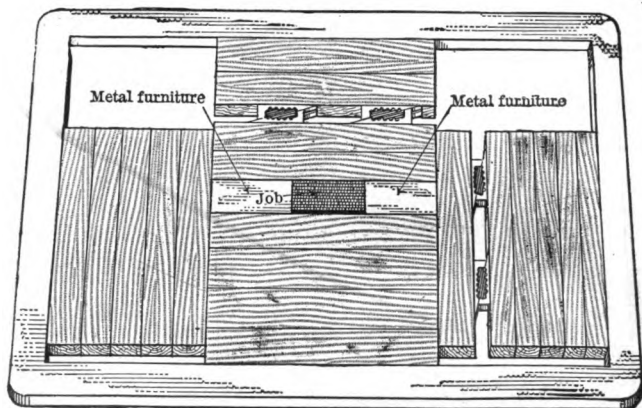


FIG. 4—Proper way to lock up a form

Quoins

Wedge-shaped devices, known as *quoins*, are used for locking up forms. For many years wooden quoins were the only kind in use, being driven together with a shooting-stick. These have been supplanted by iron quoins, locked with a key. Today there are quoins for every imaginable purpose. Fig. 5 illustrates a few. See also pp. 23-27, Part I, No. 4, of this series for a more comprehensive description of quoins.

When locking up a form the quoins should be placed in about the position shown in Fig. 4. Note that the points of quoins alongside of the form are pointing toward the lower left-hand corner. This is the point

toward which you wish to drive the form. If the quoins are placed in the reverse position, they will be driving against the quoins on the other side. A practical demonstration of the wrong way (and why it is wrong) may be had by placing just one set of quoins alongside of the form and locking it up. The quoins will drive the form apart.

Sometimes a form will so nearly fill a chase that there is but little room for the quoins. In such cases we have no choice but to use narrow furniture. Metal

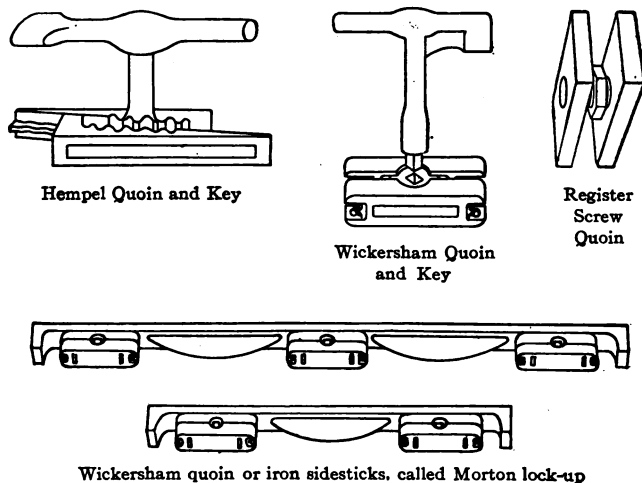


FIG. 5—Standard Forms of Iron Quoins

furniture here may be better than wood. If our space will admit of a six-em piece of furniture, it is much better to use one six-em piece than two three-em pieces, or a four-em and a two-em piece. If there is room for an eight-em piece and a two-em piece, put the eight-em piece alongside of the type. The reason

is obvious—it has more stability than the two-em piece. This principle prevails in all forms regardless of the combination of furniture.

Inasmuch as wood is yielding, and the great pressure exerted by iron quoins has a tendency to embed the quoin in wooden furniture, many stonehands make a practice of always using reglet alongside of the quoin. This is to be commended. Moreover, the use of six- or twelve-point reglet is frequently necessary to keep the quoins from expanding too far.

This matter of expansion of quoins is an important one. It is evident from Fig. 6 that the farther the quoin is expanded, the less bearing the two parts have on each other.



FIG. 6—Hempel quoin improperly expanded

If the space between form and chase is very narrow, and too small to admit of using a Hempel or similar quoin, the Rouse screw quoin may be used. If it becomes necessary to place the quoins against the iron chase or iron furniture, place a piece of heavy cardboard between them, for iron against iron is very apt to slip. Take no chances. The pulling-out of quoins is frequently an expensive accident. There are several *locking-quoins* on the market, operated with a spring-actuated catch that engages in a rack on the quoin. After the quoin is tightened the catch is released, and when it engages in the racks, the quoin is locked. It is impossible for the quoin to slip.

The ends of all quoins should have plenty of clearance, and should never be allowed to drive into the furniture that is near them.

Locking Up a Form

In general, jobs are locked up in certain ways for convenience in handling the sheet or to secure better rolling of the form. Jobs containing rules are usually placed in the chase in such a way that the rollers do not strike the ends of the rules. Inasmuch as it is more convenient to have the guides on the left-hand side of the tympan, jobs are usually locked up head to the left. There are special cases, however, when this is not done. Letterheads that contain but few lines are usually locked up head down. Envelope corners may be either head or foot down if the envelopes are not opened (*i.e.*, the flap turned up), always foot down if the envelope is opened.

It is always advisable to lock up a form so that the pressman can read the printed matter on the draw-sheet while running the press, for by so doing errors are frequently detected.

Fig. 7 shows how a letterhead should be locked up. It has been placed head down in order to get a better roll. The job has been set forty-five picas wide, and it is nine ems deep. Put fifty-em furniture above and below, as shown. Add a piece of metal furniture 5 x 10 to build job out to fifty ems. Place enough material at the bottom of the job (one pica in this case) to build the job out to ten ems. Use nothing but fifty-em furniture, arranging the same in a neat manner. Do not have the furniture all zigzag; a good compositor is neat in everything that he does.

After the furniture is in place, put in the quoins. They should be arranged as shown in the figure. Note that the points of the quoins alongside of the form are pointing toward the lower left-hand corner. This is the point toward which you wish to drive the form. If the quoins are placed in the reverse position, they will be driving against the quoins on the other side.

Having placed the quoins in proper position, lock up the form tight enough to lift. Stand it on edge, and remove all dirt and grit from the bottom, using

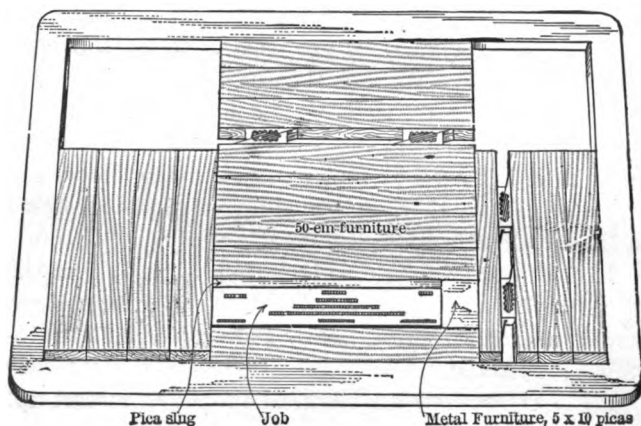


FIG. 7—Proper way to lock up a letterhead

either the hand or a brush. Also brush the stone, if it seems dirty. Replace the form on the stone, loosen the quoins, arrange the furniture neatly, and push the quoins together as tightly as possible with the fingers. Then plane the form with a planer and mallet; first rubbing your hand across the face of the planer to remove anything that may have adhered to it, and which would very likely batter the type.

Fig. 8 shows one style of mallet and proper method of holding and tapping a form-planer. See also pp. 28 and 29, Part I, No. 4, for further discussion of mallet and planer.

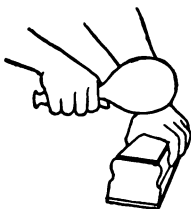


FIG. 8—Method of holding and tapping planer.

The word *plane* means to make level. That is why the form is planed—to make it level. To see some men planing a form you might think that planing meant to drive the form into the stone. It requires but a very light tap of the mallet on the planer to drive down any letters that may be projecting. Do not drag or slide the planer over the form, but lift it when moving it from point to point over the form. If you slide it, any type that may be sticking up is apt to be broken off. When you replace the planer on the stone (or, better, a shelf provided for it) *do not lay it on its face*, as it is apt to pick up grit.

Never attempt to plane a form that is locked up. If it is properly locked up the planer will not push down the letters that project, but they will be driven into the face of the planer, thus battering the letters and spoiling the planer.

Every form possesses two dimensions—length and width. Every form also possesses a certain amount of “give” or “springiness.” The way in which it has the

greatest amount of give is the side that should be tightened first. In the letterhead in Fig. 7, after having tightened the quoins with the fingers, we should start at the top and tighten the quoins a little with the key. This will remove the greater part of the spring. Then tighten the quoins on the side a little; then the top; then the side. In this way go over the quoins until the form is "tight enough." This can only be learned by experience. When the form is so tight that the letters cannot be pushed out by a fairly good pressure of the fingers, it is tight enough. Do not exert extreme pressure in locking up, for it is comparatively easy to break a cast-iron chase.

After the form is locked up, raise it above the stone by placing something about two picas thick under *one* edge, and try to push down the letters. After the whole form has been gone over in this manner, stand it up on one edge and rub the hand across the bottom of the form. If any letters are loose and have been pushed down, they will be detected. Do not drop the form flat on the stone after trying it for loose letters and before rubbing the hand across the bottom, as this would push the letters back in place. See that everything is square, tight, and on its feet before sending a form to press.

Pull-Outs

Careless compositors frequently neglect to justify their lines properly, leaving it to the stonehand to make up for their deficiencies. The lockup man should realize that he is responsible for all forms sent to press, and that carelessness on his part may result in serious and expensive accidents.

A battered letter, a letter of wrong size in a line, a long or a short lead, or leads of different thickness when used together in the same line, may all cause type to be loose and pull out. "Pull-outs" are expensive. They destroy type and waste the time of both pressman and compositor in rectifying the damage which has been done. A loose quoin dropping between form and platen will mash the form and may crack the platen. A little care in locking up forms will usually prevent trouble.

If a lead is too long it will prevent the furniture from bearing firmly against the ends of adjacent lines. If a lead is too short, the last letters in the two adjacent lines are apt to move out of alignment. Leads of different thickness will show irregularity of alignment in the printed matter, and are apt to cause the letters to be loose where the leads join.

Battered type is the most frequent cause of pull-outs, and usually hard to detect. This difficulty is encountered in offices where bodkins instead of tweezers are used to pull type out of jobs. Neither of them should be used if the type is tight. Tweezers are apt to slip off the letter and batter the face. The proper way is to lift the job from the stone and push the letter out from the bottom. If a bodkin is driven into a type it raises a burr. If this burr is on the nick side or the side opposite the nick it will prevent the letters alongside of it from receiving full pressure in the lockup. Some lockup men have a pernicious habit of burring quads and type to tighten a line instead of opening the form and putting in sufficient material. Two pieces of furniture overlapping and binding will also cause type to be loose and pull out.

Bearers and Gudgeons

In many offices it is customary to use *bearers* in job-press forms, the popular belief being that they prevent the rollers from bearing too hard on the form. A brief inspection of rollers that have been run on bearers will prove that the bearers do not bear off the rollers, but that they actually sink into them. Bearers are useful only under certain conditions.

In all types of job printing-presses the rollers are moved up and down across the face of the type. On each end of the roller-stock is a wheel, known as a *gudgeon*, that rolls on a track at the side of the press. This track should project 0.918 inch (type-high) from the bed of the press. The gudgeon should be *exactly* of the same diameter as the roller. The roller-stock should be keyed to the gudgeon.

When these perfect conditions prevail, if the rollers are not bearing firmly enough on the form, all that is necessary is to put a few sheets of paper back of the form; if the rollers are bearing too firmly on the form, glue a strip of cardboard on the track or place a strip of adhesive bicycle tape around the gudgeon or roller wheel. In the Victoria Press the rollers are raised or lowered by moving the whole track with an adjusting-screw.

If the rollers and gudgeons are not exactly of the same diameter, the one of greater diameter will roll farther than the other. For example, suppose that the circumference of the roller is six inches and that of the gudgeons only five and one-half inches, what becomes of the other half inch? The gudgeons in rolling are rotating the rollers, both making one revolution in

the same period of time; the circumference of the roller, however, moving six inches while the gudgeons move only five and one-half inches. That half inch is gained in the five and one-half inches, the roller sliding over the form instead of rolling. The same thing will happen if the rollers are smaller than the gudgeons. In this event, they will slip in the opposite direction. *The contact of the roller on the form should be a rolling contact, not a sliding one.*

If the roller is sliding instead of rolling, it will fill up the type, and produce smeary prints. It will also wear out the roller-pins, which finally break, leaving the roller free to revolve in the gudgeons.

When rollers are loose in the gudgeons it is advisable to use roller-bearers, as they will cause the rollers to roll over the form and not drag; but *they will not bear off the rollers from the form.*

There are adaptable and adjustable gudgeons on the market, so devised that the pressman may always have them of proper diameter for his rollers.

If the roller-tracks are worn so smooth that the gudgeons slide without rolling, roughen them with sandpaper or put powdered rosin on them.

Locking Up Register Jobs

While there are devices made especially for registering jobs without unlocking the forms, not every office is equipped with such devices. When imposing a form that may have to be moved to get it into register, always place about six two-point leads at the side away from the quoins. Then, if it is necessary to move the job, it can be done without disturbing the furniture. If the form be made up of plates, use leads or furniture

at each of the four corners, as shown in Fig. 9. This will permit of twisting the plates if necessary.

When a register job is first locked up for press, a chalk-mark should be made across each quoin in such a way that it marks the quoin and the furniture that it abuts. Every time the form is unlocked and a change made, exactly the same amount of material should be put back into the form, and the quoins and furniture put into their original positions. When the

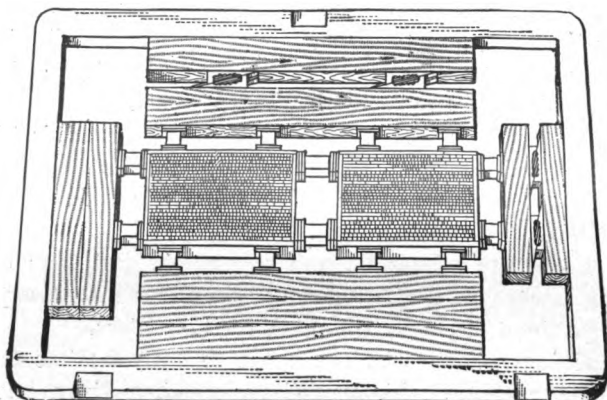


FIG. 9—Method of locking up a form so that it may be easily moved

quoins are tightened, the chalk-marks will all come into perfect alignment. When this occurs the form is locked up exactly as it was in the first instance. In no other way can you be assured that such is the case. It is a very easy matter to exert more force at one time than at another.

When running register jobs, pressmen frequently resort to the expedient of plugging the quoins with a wad of moistened paper, which, when dry, holds them firmly in place.

Another method of preparing a form for registering is by inserting register quoins in all parts of the form. By loosening one quoin and tightening another the various parts of the form may be slightly shifted. See Fig. 10.

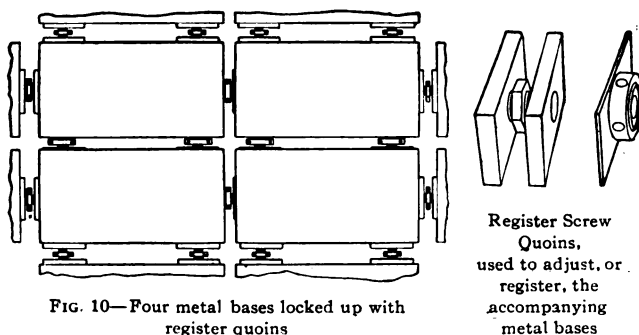


FIG. 10—Four metal bases locked up with register quoins

Jobs With Rules

Jobs containing rules should, if possible, be locked up in such a way that the rollers will not strike against the ends of sharp rules, for they may cut the rollers. Forms are frequently locked up at an angle, using wedge-shaped furniture, to prevent any cutting of the rollers.

Perforating-rule that is locked up with a job and imposed so that it is vertical in the chase should run off the sheet, and should have a two-point or three-point face-rule at the top and bottom. This will prevent the rule from cutting the rollers. The marking of the tympan may be prevented by the use of a frisket, which is a sheet of manila paper stretched tightly between the grippers and glued to them. An im-

pression of the form is pulled on the manila sheet, and holes are cut in it so that the type may go through and print on the sheet beneath.

Time can frequently be saved in the setting and the appearance of a rule job can be improved by printing one part of the form over the other instead of setting the job in column form.

Figs. 11 and 12 show two tables, the first with imperfect joints, the other with perfect joints. The first one was set in columns and the rules inserted

No.	1	2	3	4	5	6	7	8	9	10	11	12

FIG. 11—Usual form of hand-set table, showing imperfect junction of rules.

No.	1	2	3	4	5	6	7	8	9	10	11	12

FIG. 12—Showing same job as Fig. 11, but as it appears when printed in two impressions. See Fig. 13.

while setting. Owing to the fact that the column rules have shoulders on each side, the cross-rules cannot fit up against them. The second was made up into two sections and both printed at the same time. The sheet was turned end for end and printed a second time. This printed one section over the other, thus producing perfect joints. Inasmuch as both sections are printed at the same time the pro-

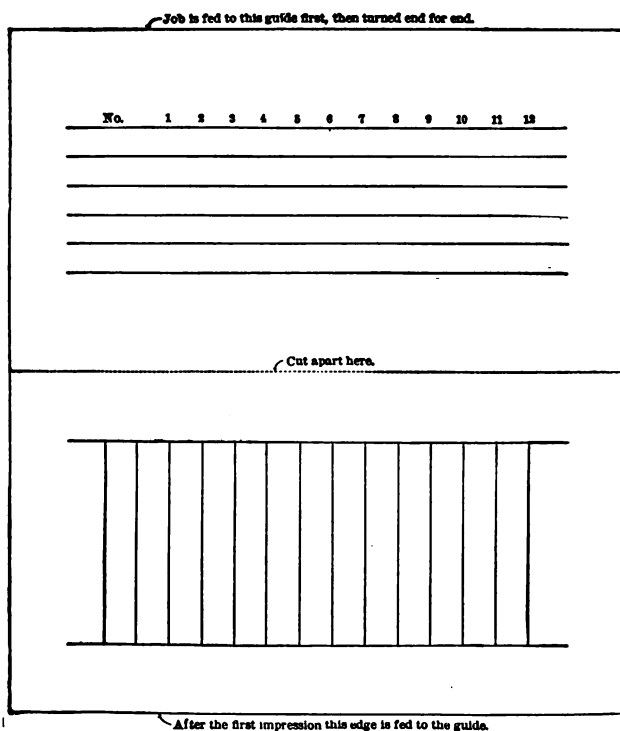


FIG. 13—Showing lock-up of a rule form in two sections, to be printed at one time. When the sheet is turned end for end the two sections will overlap, thus producing two copies.

cedure does not entail any extra time in running the job, but it does produce perfect joints. Moreover, there is a great saving in time when setting the job, for the lines are all set full width instead of in narrow columns.

If the job is so large that both sections cannot be worked in the same form, it is still advisable to set the job in this way and make two forms of it, especially if there are but few impressions needed, for the saving in composition will usually offset the cost of the extra presswork. This is sometimes called the wax-engraving effect.

Fig. 13 shows the proper method of imposing the two sections of the rule job shown in Fig. 12. The guide-edge is marked. Observe that the top and bottom horizontal rules are printed in the form with the vertical rules. This should always be done. It prevents the rollers from striking the sharp ends, and also guarantees a perfect joint. If the sheet does vary a little it will not show a gap between the vertical and horizontal rules, as it undoubtedly would do if all the vertical rules were in one section and all the horizontal ones were in the other.

Furniture

Printers' furniture comes in wood and metal, the latter being of lead, iron, steel and aluminum. There is a diversity of opinion regarding the merits of the different kinds. Each has some use in which it excels. No one kind possesses all the attributes of a perfect, cheap, and efficient lockup material.

Lead is heavy, compressible, and easily battered, but when kept solely for making up margins it remains of uniform widths. Iron and steel are lighter in weight

than lead, and forms made up of them are easier to lift; they are not compressible, and not easily battered, but they are more expensive. Wood is light and cheap, and even though it has many inherent defects, and is the chief cause of putting type off its feet and causing forms to ride, it still holds its own in most printing offices.

No matter how carefully wooden furniture is kept, it will shrink, and some of it will warp. Warped furniture is fit only for kindling-wood. Throw it away; it invites trouble, and wastes time.

When using wooden furniture to make up margins be sure that the pieces are of the right width and are all of the same width. Some pieces shrink so badly as to be unfit for this purpose. They are all right for use around the job but are not to be relied on for making up margins. Test them by laying them together side by side on the imposing stone. Lead and iron furniture are better for this purpose.

Four-em wooden furniture has a groove running the length of one side; this is the top, use it this side up. It is almost, *but not quite*, square. Therefore if turned on its side it does not measure four picas.

Never use water on wooden, iron, or steel furniture.

If a form has been locked up and kept standing for a few days before it is placed on press, it should again be tried for tightness, for forms made up with wooden furniture have a bad habit of shrinking. At least that is the popular belief. The facts of the case are, we believe, that compressed wood finally yields to compression, and becomes permanently set to a smaller size. After the wood yields to compression and there is no longer any compression, the form is necessarily loose in the chase.

Locking Forms for Electrotyping

In the process of making an electrotype plate the form is subjected to an extremely heavy pressure to drive it into the wax mold from which the electrotype shell is made. Jobs that are to be electrotyped are usually set with high quads and spaces, and all large open spaces are filled with bearers or standards to bear off the heavy pressure and prevent the wax from sticking in the crevices between type and leads. Guards (also called bearers) are placed around each job or page to bear off the pressure around the edges. Jobs containing low quads and spaces are frequently sent to the foundry to be electrotyped. If they contain many open spaces, guards or standards should be inserted to help bear off the pressure. Never send a form to the electrotypist without guards.

All that has been said regarding the locking up of forms for job presses holds good for electrotype forms.

Electrotype chases are usually of cast-iron and much heavier than job-press chases. They will stand more pressure. There is one corner, usually the lower left-hand, whose two adjacent sides have been milled to a right angle. This insures having one corner square. Lock up in this corner.

When locking up a form a chase should be chosen to suit the size of the job. Put small jobs in small chases; large jobs in large chases. When locking up pages of a book, or where there are many pages of equal size, choose a chase that will accommodate three or four pages.

Each job or page should be surrounded with guards. When locking up a number of pages of equal size it is customary to make up enough sets for, say four forms.

The head and foot guards run full across the pages in the form, and the guards along the sides of the pages are made of such length that they do not bind when the pages are tightly locked up. This method is considered better than having the side guards long and the head and foot guards to fit each page, for any inequality in the length of the pages will then be more readily detected. Moreover, it saves cutting a lot of small pieces of guards. There should be one guard for each side of each page. This means that there

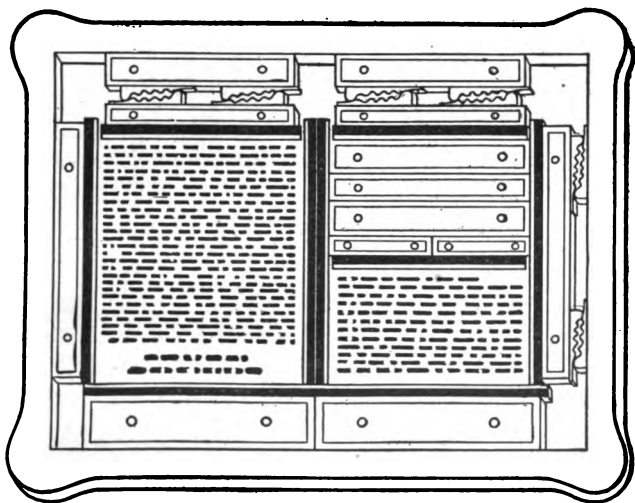


FIG. 14

will be two guards between pages. If a page of a book set with low spaces and leads contains but a few lines, place a guard beneath the last line of the text. Fig. 14 shows both methods.

If the job be the only one of its size and kind, select guards that come nearest to it in size. If the job is

large enough to offer good bearing for the quoins, the guards may be slightly longer; it does not matter. They can overlap as shown in Fig. 15. No need to waste electrotype guards by cutting. Frequently a set of guards belonging to a job can be used without destroying the set.

As no attention need be paid to margins, a narrow piece of straight wooden furniture should be placed between chase and type. The pages should be as-

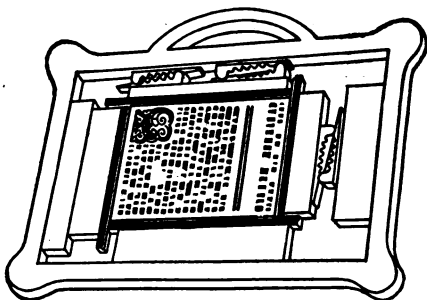


FIG. 15

sembled, untied, and guards placed around them as described, then the quoins and the necessary furniture inserted and the locking up proceeded with, bearing in mind that the form must be tight, square, and on its feet.

If the job to be electrotyped is to be printed in more than one color, it need not be made up into separate forms. Lock up the form as if for one color. Pull a proof, and on that proof designate what color each part is to be. The electrotyper will make the necessary number of plates and rout away on each what is not needed.

Electrotypes to be used with red ink should be nickel-plated, for copper has a deleterious effect on some inks.

Avoiding and Correcting Trouble

"Off its feet" is a familiar expression among printers. If applied to a single line it means that the letters in the line are tilted or leaning. If applied to a form it means that in locking up the form the whole body of type has been lifted away from the imposing-stone. This is usually caused by having furniture whose sides are not at right angles to the top and bottom. When pressure is applied to the quoins the form is lifted bodily. Sometimes the form can be seen to come up from the stone.

To determine if a form is on or off its feet, let it lie flat on the stone and strike it a light blow with the ball of the hand or give it a *very light* tap with mallet and planer. If it is on its feet it will have a solid sound; if it is off its feet it will have a hollow sound. Test every form before sending it to press. Never send a form to press that is off its feet. The type will have a tendency to "ride."

Allowance for Squeeze—It is almost impossible for a compositor to set a job inside of a border and squeeze it together so tightly that it will look all right on the galley and still make a perfect joint when locked up. Some allowance must be made for squeeze. If the job contains many lines of type and much spacing material, it will have more springiness than if put together with considerable solid furniture. The job should be squeezed together as tightly as possible and then about two points more put in to allow for squeeze. If very springy, allow four points.

Troublesome Corners—When locking up a job with a rule border, make a perfect fit of the corner away from the quoins by pushing the rules together with a piece of wooden furniture. Never use a bodkin for this purpose, as it may batter the end of the rule and prevent a perfect joint. Now lock up the form carefully until all the corners come together perfectly. Use a try-square to see if the ends and sides are at right angles.

If a corner should prove a little refractory and persist in gaping open, a little beeswax, melted into the joint by the heat of a lighted match, may overcome the difficulty. After the wax hardens, trim off the surplus. Tinfoil placed in the open joint, and the surplus trimmed off, has also proved effective.

Squaring the Form—Every form with a border, or which has rules, either horizontal or vertical, or any element whatever that would mar the appearance of the work if it were not at right angles with the sides of the paper, should be tested with a try-square before sending the form to press. This will frequently save a useless waste of time in the pressroom, for, if the job is not square, it will be returned to the composing-room for correction. Learn to do things correctly. It is the doing of the little things correctly that constitutes perfection.

Riding of Forms—When locking up a small form, it will sometimes be noticed that it has a tendency to "ride"—that is, the pressure causes the matter to bulge up in the center. Unlock the form and see if anything has dropped down between the type and the furniture. If the cause is not discovered in this way, take out a few of the pieces of furniture and place them side by side on the stone and see if a gap is

visible between them *at the bottom*. See Fig. 16. Sometimes the furniture is slightly wider at one point than at another. If this proves to be the case, either insert other furniture, or turn one or two of the sloping pieces upside down, when they will counteract the slope of the others, and the form will lock up without riding.

The riding of forms on cylinder presses is also a frequent cause of trouble. This is usually due to the

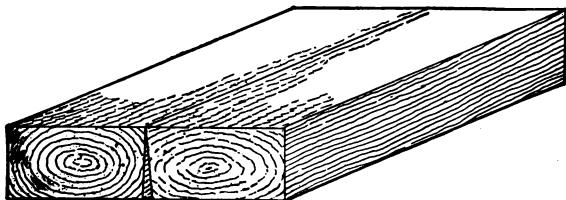


FIG. 16—Showing two pieces of warped wooden furniture. When pressure is applied by the quoins the furniture will ride

fact that the material is wider at the top than at the bottom. In locking up, the form is slightly raised. As the cylinder goes over the form, the type is pushed down, but not the furniture. After the cylinder has passed, the type comes up again, and brings the furniture with it. This continues until the furniture is high enough to be inked by the rollers and leave an impression on the sheet, thus spoiling the sheet.

To overcome this trouble, unlock the form and see if anything is binding. If not, then examine the furniture, and reverse a few pieces as directed above. If this does not correct the trouble, cut long strips of thin cardboard about one pica wide and drop them down alongside of the material that is riding. This

will usually rectify the trouble. As a last resort, pressmen are sometimes compelled to drive small nails into the furniture to keep other material from riding.

SUPPLEMENTARY READING

Printing for School and Shop. By F. S. Henry. Published by John Wiley & Sons, Inc., New York.

Modern Methods of Book Composition. By T. L. DeVinne. Published by Oswald Publishing Co., New York.

SUGGESTIONS TO STUDENTS AND INSTRUCTORS

The following questions, based on the contents of this volume, 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. Why is the locking up of forms such an important operation?
2. Describe the proper way to lock up a form.
3. Why is the pyramid style an improper way of locking up a form?
4. What happens if one piece of furniture "binds" on another?
5. What do you understand by binding?
6. What is "give" or "spring"?
7. Why is it better to use one piece of wooden furniture than to use two or more pieces having the same dimensions?
8. How many things can you think of that would be likely to cause type to become loose and pull out?
9. What is a quoin?
10. Why is a quoin used?

11. Describe the principle involved in each type of quoin that you have seen.
12. Why should quoins not be expanded to their fullest extent?
13. Why should quoins bear against reglet instead of wooden furniture?
14. If you had room alongside of quoins for ten ews of furniture, what size pieces would you use? Why?
15. Why is it better to place one wide piece of furniture rather than two or more narrow ones between quoins and type?
16. In what direction should the points of quoins be placed in a form? Why?
17. What will happen if quoins are improperly placed in a form?
18. What will happen if the points of quoins drive into the furniture that is near them?
19. What is a locking-quoins?
20. Why is it important to begin to tighten the quoins in a form at some specified place?
21. What will likely happen if the tightening of quoins is not begun at the right place?
22. How would you test a form to make sure that it is tight?
23. Why are letterheads usually locked up head down?
24. If you had a job whose width and length were exactly the same, and the sheet on which the job is to be printed were also square, how would you lock up the job? Give reasons for your answer.
25. Describe your method of procedure in locking a small job in a large chase.

26. What do you understand by "tight enough to lift"?
27. Why is it important to brush off the bottom of type and the surface of the imposing-stone before finally locking up a form?
28. Why is it wrong to lay a planer on its face on the imposing-stone?
29. If you were really compelled to lay a planer on a form of type, would you put the face of the planer or some other part against the face of the type? Why?
30. Why should a planer never be dragged over the face of a form?
31. What happens to the planer if you attempt to drive down some letters that are sticking up in a form that has been tightly locked? What happens to the letters?
32. What is a "pull-out"?
33. What is the most frequent cause of pull-outs?
34. What special care should you take to avoid pull-outs?
35. Why should a bodkin never be used to pull type out of a form?
36. What happens if tweezers slip while pulling a letter out of a form?
37. Bodkin and tweezers are valuable and time-saving accessories for a careful compositor. Name some of their uses.
38. What is a burr?
39. Of what use is a bearer in a job-press form?
40. What is a gudgeon, and why is it used?
41. Is it important that gudgeons and roller be of the same diameter? What will happen if they are not?

42. What happens if the roller makes a wiping instead of a rolling contact with the type?
43. If the rollers were pressing too heavily on the form, how would you overcome the difficulty?
44. If the rollers and form were not in contact, how would you bring them together?
45. What is an adjustable gudgeon?
46. What should be done if the gudgeons are not rolling on the roller-tracks?
47. What is the height of type?
48. What do you understand by a "register job"?
49. Why is it important to have some two-point leads between furniture and job in a form that may require registering?
50. Why do lockup men make chalk-marks across quoins and furniture?
51. Why do pressmen frequently plug quoins with wads of moistened paper when running a register job?
52. Why are jobs containing rules frequently locked up at an angle?
53. How should perforating-rule be locked up?
54. What is a frisket? Why is it used?
55. How can we obtain the wax-engraving effect in jobs containing rules?
56. When running a rule job in two sections, one overlapping the other, why should we have the top and bottom horizontal rules in the form with the vertical rules?
57. Does it increase the amount of presswork if we run two parts of a rule job at the same time on one sheet? Why?

58. Name the different kinds of furniture with which you are familiar, telling what special attributes and drawbacks each possesses.
59. Why does four-em wooden furniture have a groove running lengthwise along one side?
60. Is it advisable to use water on furniture? Give your reasons.
61. Is there any kind of furniture that may be wet without harming it?
62. What difficulties are likely to be encountered if warped wooden furniture is used in making up a form?
63. Which is better for making up margins in forms, wooden or metal furniture? Tell why.
64. What causes a form to be loose after being locked up for a few days?
65. What is an electrotype?
66. Why are high quads and spaces usually used in type that is to be electrotyped?
67. In what way does an electrotype chase differ from an ordinary job-press chase?
68. Would you lock up a small job for electrotyping in a large chase?
69. Of what use are guards around pages locked up for electrotyping?
70. What are standards?
71. Should there be one or two guards between two pages in an electrotype form?
72. What do you understand by overlapping of guards in an electrotype form? Why are they so placed?
73. Why is it unnecessary to "skeletonize" a form for colors if it is to be electrotyped?

74. When locking up a page that is to be printed in more than one color, how would you mark the proof for the electrotyper?
75. If the electrotype is to be used with red ink, what would you mark on the electrotyper's proof?
76. What do you understand by "off its feet"?
77. What usually causes a form to ride and get off its feet?
78. How would you determine if a form is on or off its feet?
79. What do you understand by allowance for squeeze?
80. If the corners of a rule job did not come together, how would you rectify the matter?
81. Why is it important to use a try-square on every form before sending it to press?
82. If a form was riding on press, what would you suppose was causing the trouble and what would you do about it?

GLOSSARY

- ALIGNMENT** (also spelled *Alinement*)—Having type so arranged or justified that all the letters line up across the bottom of the face.
- BEARERS**—(a) Pieces of metal or wood placed at the sides of job-press forms to cause the rollers to turn and prevent them from sliding. (b) The guards placed around pages locked up for electrotyping are sometimes called bearers. (c) The large high quads with dots upon them used in electrotype forms. (d) See Glossary of "Imposing Tables and Lockup Appliances," Part I, No. 4.
- BIND**—When leads or furniture overlap something in a way to prevent the matter from being locked up, it is said to bind.
- BODKIN**—A long-pointed piece of slender steel, usually mounted in a wooden handle, used by printers when working upon galley or imposing-stone. Sometimes of steel alone, combined with tweezers.
- BORDER**—Any kind of rule or type-unit combination placed around a job to embellish it.
- BURR**—A small piece of the body of type or rule that is raised above its normal level. To drop a heavy type on one corner will batter it and raise a burr. The dig of a bodkin into type will raise a burr. Dressing rule on a mitering-machine usually leaves a burr.
- CHASE**—A frame of iron or steel that is used to lock type in. There are many different kinds; job chases, cylinder chases, heading chases, electrotype chases, combination chases, etc. See some typefounder's specimen-book.
- COMPOSITOR**—One who sets or assembles type by hand.
- ELECTROTYPE**—A lead printing-plate with a copper face. A form of type is pressed into wax to make a mold. This wax mold is covered with fine plumbago to make it a conductor of electricity. It is then placed in an electroplating bath, and a thin copper shell deposited. This is removed, cleaned, backed up with lead, trimmed to proper thickness, routed if necessary, and mounted on a plate for printing.

ELECTROTYPE CHASE—An electrotpe chase differs from the ordinary printing-press chase in that it is higher, heavier, and not as neatly or accurately finished.

EM—The square of any body of type. The pica em is the standard unit for length of material used in a printing shop.

ENVELOPE CORNER—The printed matter placed in the corner of an envelope, usually restricted to the name, business, and address of the sender. Useful in case of miscarriage of the letter.

FACE-RULE—Rule whose printing surface is the same thickness as the body of the rule. The real face of the rule is designated by a thin groove on the side of the rule running parallel with and near the upper surface.

FORM—Any assemblage of printing material locked up for press.

FRISKET—A sheet of heavy paper so arranged that the form will not mark the printed sheet.

FURNITURE—Material used in assembling and locking up forms for printing.

GIVE—The amount that a form will yield when under compression.

GUARDS—Metal strips, type high, with a broad upper surface, placed around or in a form locked up for electrotyping, to help bear off or equalize the pressure exerted by the electrotpe press.

GUDGEONS—Metal wheels that are slipped over the ends of the roller-stocks on job presses. The gudgeons roll on the tracks and, being keyed to the stocks, cause the rollers to rotate. They should be of the same diameter as the rollers. Adaptable and adjustable gudgeons are made for this purpose.

GUIDE-EDGE—That edge of the sheet which is placed against the guide.

IMPOSING-STONE—A framework surmounted by a smooth, level slab of marble or steel, on which forms are imposed.

IMPOSITION—The placing of pages in a form so that they will print in proper position on the sheet.

LEADS—Strips of metal, made to multiples of points, and used in spacing lines of type.

LETTERHEAD—The printed form at the head of sheets of letter paper; also the sheet itself after it is printed.

LOCKUP—Locking up forms for press.

LOCKUP MAN—Sometimes called a stone-hand. A man whose duty it is to lock up and correct forms.

MALLET—A wooden implement consisting of a head and a handle. Used in conjunction with an uncovered planer to plane forms or with a proof-planer to beat off proofs.

MORTON LOCKUP—One or more Wickersham quoins fastened to a steel sidestick.

NICK—A depression left in one side of the body of a type during the process of casting. So that the letters will be in the proper order for printing, type is set in the stick with the nick up.

OFF ITS FEET—Said of type which is not standing perfectly upright, or which has been raised bodily from the stone when locking up.

PERFORATING-RULE—A piece of steel or brass rule with a sharp face made up of dots or dashes, usually put into a type form, so that the job may be printed and perforated at the same time.

PLANE—To make level or smooth.

PLANER—A block of hard wood, one face of which is level and smooth. Used on the face of type forms to push down all the letters and make the form plane or level. The face of a proof-planer is covered with felt.

PLATEN—That part of a job printing-press on which the make-ready, tympan, and guides are placed, and on which the sheet takes the impression from the type.

PRESSMAN—One whose duty it is to prepare forms for printing. This he does by making ready the form, and by making proper adjustments of the various parts of the press.

PULL-OUT—Anything pulled out from the form by the suction of the rollers.

PYRAMID—A triangular figure consisting of a broad base and running up to a point at the top. When such a figure is placed with the broad side at the top, the pyramid is said to be inverted.

QUADS—Blocks of type metal, cast to point sizes of body, and in multiples of the square of the body. A one-em

quad is just as wide as it is thick; a two-em quad is twice as wide as it is thick; a three-em quad is three times as wide as it is thick.

QUOIN—A mechanical device so constructed that it may be expanded, thereby exerting pressure sidewise. Used by printers to lock up forms.

QUOIN-KEY—A device for tightening quoins.

REGISTER—To get the various parts of different forms into such position that when they are all printed on one sheet each printing will be in its proper place.

REGLET—When wooden furniture is cut into strips thinner than two picas, it is called reglet. The most familiar thicknesses are six and twelve points.

RIDING—When any part of a form works up on press, it is said to be riding.

ROLLER-BEARERS—Bearers placed in job-press forms to cause the rollers to rotate.

ROLLER-PINS—Pins fastened to the roller-stocks and engaging in slots in the gudgeons, so that the roller-stock will be driven by the gudgeons.

ROLLER-STOCK—The iron center around which the roller composition is cast to make a roller.

ROLLER-TRACKS—The sides of the press on which the gudgeons roll. They should be .918 inch high.

ROSIN—A resin obtained as a residue after the distillation of turpentine from the sap of the pine tree.

ROUT—To cut away that part of a printing-plate which is not needed, or which would likely mark the sheet.

RULES—Strips of brass or lead, type high, one long edge of which has been prepared as a printing surface.

SHOOTING-STICK—A piece of iron or wood so shaped on one end that when placed against one edge of a wooden quoin and struck with a mallet the quoin will be driven against its mate and the form locked up. Mechanical quoins have almost supplanted wooden quoins for locking up forms.

SIDESTICK—A long, tapering piece of wooden furniture, used alongside of type in forms or galleys, and locked in place with wooden quoins.

- SKELETONIZING**—Taking a job apart and rebuilding it so that its various parts may be printed in different colors.
- SPACES**—(a) Pieces of type metal used between words in a line. They come of different thickness so that by using various combinations the lines may be made of uniform length. They also come of two heights—low, for letterpress printing; high, for electrotyping. (b) Extremely thin spaces, made of copper, and called “copper thin spaces,” are used for justifying lines and spacing words.
- SPRING**—Said of a form that yields or “gives” a great deal when under compression; also of forms that “ride” or rise from the imposing-stone while being locked up.
- SQUARE**—When all corners are absolute right angles. Every form containing a rule or type border should be tested with a try-square before sending to press.
- STONE**—See imposing-stone.
- STONE-HAND**—See Lockup Man.
- TIGHT**—Said of a form in which everything is so firm that it cannot be pushed out with the fingers.
- TWEEZERS**—An instrument consisting of two prongs, normally held apart, but which may be squeezed together to take hold of small pieces of type, etc. Useful in galley and stone work.
- TYMPAN**—The sheets of paper drawn tightly across the platen and held in place by tight bands called tympan-bales. It is frequently called the packing.
- TYPE-HIGH**—In America, .918 inch high. It varies in other countries from .916 to .923 inch high.
- WARPED**—Bent or twisted out of proper shape.
- WAX-ENGRAVING**—A method of obtaining printing-plates by first engraving on a wax-coated plate of copper, then building up the background and making an electrotypes from the plate.
- WAX-ENGRAVING EFFECT**—Printing rule forms in two sections, one over the other, so that the printed sheet has the effect of having been printed from a wax-engraving.
- WRONG FONT**—Any letter in printed matter which is not of the same size or face as the balance of the word in which it is found.

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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 course of printing instruction, and by individuals.

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