

LESSON FIVE

Preparation for Presswork

With the multiplicity of printing presses on the market nowadays, it would be impractical to even attempt to go into details as to the proper operation of all of them. That must be left to the handbooks issued by the companies making the machines themselves. However, it is possible to supply enough information to help in handling the average hand fed gordon or clamshell type jobber, of which there are thousands scattered around the country, and probably will be for years to come. If the press you work is different, you can either adapt it to your needs, or get instructions from the press manufacturer. The bigger, more complicated machines require a service man to show the printer all their ins and outs, and they are customarily installed with that understanding. With such we are not concerned here.

The Squeeze in a Form

There is a certain amount of "squeeze" in any form you put in your chase, but a lot of it can be eliminated by being very careful about making all lines of exactly the same length, and by being sure to fill in around irregular matter with the proper thickness of leads, reglet, furniture, and so forth. If the sum total of one side of a form is one, two, three or more points larger than the other side, or if there are spots elsewhere in the form which lack or exceed the common measurement by even as much as one point, you may find it hard to tighten or lock up the form in the chase so that it can be lifted without a spill.

To check your work for dimension is not difficult. If you have two twelve point lines on one side and three eight point lines on the other, they will equal 24 points,

and you will be safe, but if you insert leads between the lines you will have 26 points (24 plus 2) on one side and 28 (24 plus 4) on the other, which situation calls for correction by inserting the equivalent of the extra two points somewhere on the short side—wherever the spacing will look right—not neces-

FORMS MUST BALANCE UP TO LOCK OR TIGHTEN PROPERLY

24 PTS	8 PT	12 PTS
	8 PT	
	8 PT	12 PTS

Example of correct makeup

28 PTS	8 PT	12 PTS
	8 PT	
	8 PT	12 PTS

2 PT LEADS

Example of incorrect makeup

sarily all in one spot. A small supply of one point leads or brass strips, and half point copper strips are of great help in cases like this. Substitutes of unknown and inexact thickness may cause trouble.

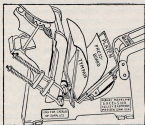
Aside from this you will find that the form in its entirety will close in a little when you tighten the chase screws or quoins. Allowance should be made for this when making it up, and particular watch should be kept on wood furniture or reglet if it is old, round edged or battered. Such furniture probably has little or none of the oil in it which was originally applied to prevent absorption of moisture, and there may have been warping. Those printers who have extra chases, and who have left a form standing locked up in one for several months may discover that the old furniture which, when used in summer was tight, has, during the intervening months lost a small percentage of moisture, and shrunk just enough to make the form loose.

While on the subject, we can't refrain from repeating a word of advice which we consider of the ut-

most importance. The leverage or pressure which you can exercise with either chase screws or, if you use them, quoins, is tremendous, so it is better to rely on the form being made so that it will lock properly with a moderate amount of squeeze than to try to make up for inequalities by more pressure. Too much of it will warp or break the chase. Turn one screw or quoin a little, then turn up the next one, and so on, coming back to the first after going the rounds. In this way you will get good, even locking.

Getting the Press Ready

You have put your form in the chase, the chase is in the press, and you are ready to proceed. Be sure that any makeready sheets and dented or scarred tympan materials are removed from the platen, because an even impression cannot be obtained unless the tympan is absolutely smooth. For the usual work, two oiled tympan sheets over a sheet of pressboard and three or four sheets of book or newspaper will probably be all right for a starter.



If the tympan is taken off, the replacement should be made by putting the two tympan sheets under the bottom bail, then placing the other material carefully below it, finally binding down the whole with the two tympan top sheets (drawsheets) under the upper bail, making very certain the packing is entirely flat—no buckles.

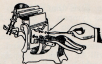
Oiled tympan paper, pressboard, book and news paper are recommended materials for making a good tympan. Depending on the work to be done and what there may be on hand to do it, printers sometimes use ordinary cardboard, chipboard and rubber blanket to obtain results. Rubber blanket, chipboard and blotting stock should not be resorted to unless the form is too big to bring up any other way, or the type is too worn for anything but a soft packing. Envelope printing requires a comparatively soft packing, and usually special makeready.* A good job of card work can often be done with no cardboard or pressboard in the packing, the stock being fed to the press supplying the necessary resiliency, but if you try that, be sure that the impression at start is light enough so that the first proof taken does not squeeze and injure the type.

**(This will be covered later.)*

Taking a Trial Impression for Makeready

The press being inked, you can take a proof on news, book, or the stock on which the job is to be printed. News will be the easiest to get a general idea of the impression. On gordon or clamshell style job presses, the weight of opinion is in favor of leaving the impression screws alone except under unusual circumstances, once the platen has been tested for evenness of impression in the four opposite corners. How to test and correct the platen level will be discussed elsewhere in the course. Assuming you have an ordinary job to do, we'll leave the impression screws alone and build up the necessary squeeze in other ways.

If the impression is clear all over, turn the sheet over and see whether there are any spots which are embossed or punched from the printing on the other side. If



TURNING UP IMPRESSION SCREWS
WITH SCREW DRIVER.

Set nuts must first be loosened. Be sure to tighten them after using Impression Screws. If form is weak on one side you may need to tighten Impression Screws, but before doing this see article on makeready.

there are, the whole job needs less impression, rather than more, because your finished job should have no evidence on the back. If the tympan is down to the near-minimum recommended as a starter, the chances are the impression screws were set up too far the last time they were touched. They will have to be slacked off, and the platen readjusted as already mentioned.

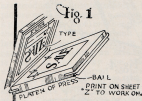
The odds are, however, that your first proof will either show very little impression at all, or be indistinct in spots. If low all over, you can add another sheet of tympan paper, or book stock. Keep the tympan as hard as possible. A good hard tympan on the platen makes for clear, sharp impression. A soft tympan not only is likely to show through on the other side, it will wear the corners of your type, rounding them off. When worn type and material is mixed with unworn or new in a form, more time and work is required to patch up and make ready.

Once the impression is satisfactory over part of the area, through addition of full sheets of paper or cardboard, you are now going to make ready.

Makeready

If one or two characters or spots are punching through, examine the tympan to make sure there

are no lumps under it. If there are none, you probably need to take the chase out of the press, loosen the form, and plane it smooth again, because the punching is coming through letters being too high. This will necessitate another trial sheet, as relocking the form may change the relative positions and amount of spotting up.



After this is done take your trial impression sheet, and mark out the poor spots, outlining them in pencil. You are going to *spot up*, to use the printer's term. You can only do this if the ink is not too heavy, so that the low spots will show, so be sure the ink is on the weak rather than the heavy side.

The accompanying illustration will help you to understand the making of an overlay, as it is called. The impression in this case has been taken on the top sheet, instead of on a separate piece of paper, which is permissible. The weakest spots will require several patches, each smaller than the previous. The best paper for spotting up is something thin — tissue, manifold, french folio, or similar. By holding the sheet up to the light, or using carbon paper, you can get your markouts on the back, and paste the patches on it. Use as little paste as possible — more will hurt your impression.

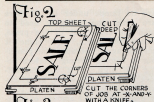
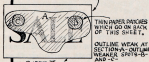


Fig. 4
SHEET PRINTED FROM FORM-Z-



By drawing heavy lines, or with carbon get these outlines onto the back of sheet. Paste on piece-A- first then paste-B-AND-C-IN proper position.



More details and illustrations will be given in later lessons.

An impression can be pulled on one of the sheets under the top sheet, and the pasted up sheet placed exactly over it, in register, so that your overlays will be in the right locations. A sheet of plain paper can be removed from the tympan to compensate for the one just added.

Make sure that the top sheet of your tympan is drawn firmly back when you put it under the tympan bails, then take another impression. There may and probably will be some low spots still visible, which are corrected by another overlay sheet as just described. If a second does not finish it, you can make and add a third. When the makeready is complete, put your pressboard or hard board directly under the top sheet of the tympan. This will make for a good sharp, clear impression. If it is already on the platen, it will only require moving up. If you are now putting it on in addition, enough paper will have to be taken off to compensate for the thickness of the board. Procedure throughout the makeready process varies with the individual printer, so you will quite likely learn of other, and possibly just as satisfactory, ways of arriving at the same result.

When the form has cuts which are either partly or wholly below printing level, or when a single line or more, due to its surroundings, fails to print, you can make use of underlay instead of overlay. Underlay consists of layers of paper or card under the low spot or line, and the illustration shows you how they are made. Underlay, just as overlay, is a branch of makeready.

After the makeready is done, look out that you do not loosen more than one tympan bail at a time, because the makeready sheets may shift if you do, and spoil the impression.

Earlier we learned how to make an impression on the top sheet, for setting the gauges and grippers. This impression can be wiped off as soon as the setting up is done. An oiled tympan top sheet will make this easy with-

UNDERLAYING

Fig. 1

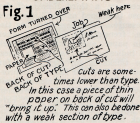
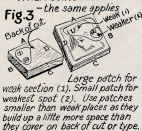


Fig. 2



Fig. 3



More details on cuts will appear in a later lesson.

out cleaning liquids, although gasoline or benzine may be used if the tympan is not oiled. A sheet of the stock to be used can then be fed, to check the position of the gauges, and correct them if necessary.

Halftone Makeready

Up to 1890 cuts for illustrating were largely confined to woodcuts, type cuts, chalk plates, and in the latter part of the period, a few line etchings. The makeready for

these was fairly simple. A good many books were illustrated with steel or copper engravings, but this was a separate craft, and the printed plates were purchased outside.

One invention leads to another, and photography had to become widely used before technicians started to adopt it for plate making. The halftone appeared shortly after the line etching. Halftones are produced by photographing the picture or design through a screen on a plate of copper, zinc, or other metal, the screen breaking the result into larger or smaller dots. As in the case of a line etching an acid bath is used to eat away the parts which are not required to print, with the result that the parts with smaller dots print lighter, while at the other end of the scale the dots get bigger and finally merge to form solid color.

As you probably have discovered, in printing, more pressure is required to make solids than light forms, and halftones are no exception. Halftone makeready requires building up under the solids to give them the proper tonal quality, which build up at the same time takes the squeeze off the lighter parts. A good job of halftone printing calls for more time on makeready than on the same area of type or other printing surface.

Both underlays and overlays can be used for halftone makeready. In general, underlays are valuable if an area is low which does not necessarily coincide with the light and heavy parts of the halftone itself. Practice and experience will do more for you than printed advice in all makeready work.

Overlays will provide the extra pressure on the specific spots which require emphasizing in the picture itself. If the halftone is from a photograph, you will endeavor, by overlays, to give the

picture the same snap and character which appears in the original. A halftone without overlay has a tendency to greyness and monotony of color detail. Observe those used in newspapers, which



*Coarse Screen Halftone
(To show the dots)*

This kind is used on News and other rough papers—Fine Screen used on smoother paper has dots smaller and closer together.

the time element in publishing prevents bringing up properly.

For underlay, follow ordinary underlay instructions. On the overlay, a little more work is necessary. Take an impression on the sheet under the first tympan sheet. This can be done by loosening the bottom tympan bail, pulling the top sheet out from under it and rolling back the top sheet, being careful not to disturb the top bail, and replacing the bottom one before making the impression. Both bails cannot be loosened at once; if that is done the tympan may shift, throwing the makeready out of position.

Take another impression on thin smooth stock. Examine this carefully for spots which can be improved. The solid parts can probably stand more color. Put a carbon sheet face up under the printed proof, so that when you outline the part to be brought up, with a pencil, the marks will show on the back. Trace around the sections which need the most additional treatment, also those that

need medium impression, and, if necessary, a third lining off for those that need only a little more pressure. Cut pieces of white tissue, french folio, or some other thin paper, and paste on the back as indicated by the carbon lines, one thickness for light, two for medium, three for heaviest impression. Place this finished spot sheet directly over the impression on the tympan, using great care to have it exactly located. Roll back the drawsheet, put it under the lower bail, and try an impression on the stock for the job. If the cut needs more attention to be satisfactory, proceed again as outlined above.

SUGGESTED PRACTICE

Take a proof of any halftone cut you may have (if you have one) in your press, if you own one, and mark it up for overlay. Make another proof and add such other overlays as may be necessary to get good results from it.

Much of the trouble which printers have with halftone printing comes from trying to make more ink or more impression take the place of makeready. Over-inking and over-impression will cause picking of the paper surface, offsetting on the back of the printed sheets, excessive wear on the halftone, and filling in of the etching dots with ink, requiring frequent washing up of the form.

Picking of the paper will soon fill the ink with specks, which will deposit themselves on the face of the cut, and result in the familiar "sunspots" on the printed sheet. When this happens, the only remedy is to clean up the ink plate, rollers and form, and start all over again. Over-inking is, therefore, to be avoided. Makeready will do it better and with less trouble.

We will go into more details, with illustrations, in one of the last lessons of the course, after you have had more experience.

The Importance of a Clean Imposing Surface

Mention has been made before of the necessity for having an absolutely smooth form in your chase—all type locked or tightened in the chase with no high or low letters, because otherwise some letters will punch through the paper, and others will not show up at all. On the Excelsiors, the chase bed makes a good surface on which to put your chase when you want to tap down your form and make it smooth. Remember, never use a piece of metal for that job—always use a planer or a similar piece of wood which you know to be absolutely smooth, level, and free from any inequalities of surface, dents, etc. A marble imposing surface is very handy, and will enable you to leave your chase bed in the press. It will also give you more room to move around on. The main thing is to get a surface, metal or stone, which is level and free from any blemishes, as well as properly supported so that there will be no bend, give or warp in the surface.

Just as important as the surface itself is keeping it smooth and clean. A minute speck of metal is all that is necessary to keep one letter in your form from planing down to the proper level, and it is very easy indeed for small specks of wood, metal, ink, etc., to stick to the imposing surface unless it is kept wiped off. You will find it best to do it at least every day, because one or two high letters in your form will spoil the appearance of the job, wear the type down before its time, and hold the impression and rollers off the surrounding type. Proper planing down of your type form, plus a clean imposing stone, will eliminate time-taking work, and produce better results all round.

Speaking of planers, you will find that even the surface of the

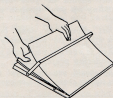
planer will become rough and give trouble if a form which has been inked, but which has been hauled out of the press for correction, is planed down again without wiping off the ink. So watch the surface of your planer too.

Tympan Packing

The best tympan packing is thin and hard, but under some circumstances a heavier, or even a softer one is necessary. On large presses the impression screws are usually left alone, and additional pressure is applied by using more packing. On hand presses like the Excelsior, at least part of the impression can be supplied with the screws.

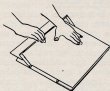


If you are using a hand press, start with the screws backed off. On large platen presses, start with a thin, hard packing, because too much squeeze will injure your form.



Small jobs may require only two sheets of thin, hard, smooth paper, preferably oiled tympan, over a sheet of thin cardboard, or regular pressboard. If you prefer you can use oiled tympan only for the top drawsheet, with ordinary 50-pound book paper (not news) for the second drawsheet. The harder and smoother the tympan, the sharper and cleaner the impression, with consequently less wear on

the type. The cardboard or press-board (and any additional sheets of paper) should be the size of the platen, but the oiled tympan drawsheets must be long enough to go under the balls of the platen at top and bottom. The drawsheets should be pulled taut, with no wrinkles or creases of any kind.



The corners of the drawsheets where they pass under the balls may be clipped off to prevent binding at these points.

If you find that more impression is needed, add more sheets of paper (book or oiled tympan). Do not, however, try to make impression take the place of makeready which is a separate subject.

Lesson Five—Questions

1. What kind of tympan packing is best for ordinary work?
2. What should be your aim in building up your tympan packing?
3. What should be done before you spot up for makeready?
4. When is overlay used and when is underlay preferred?
5. Why should you be careful when you tighten chase screws or quoins?

The Printer's DICTIONARY

Ben Day — A process of screen work used in cut-making, for shading, etc., much used in newspaper advertising work, and newspaper cut-making. For instance, if Mutt or Jeff are wearing pants with a

herring-bone weave in them, the odds are overwhelming that they got them from the engraver, not from the artist, altho the latter



Shading by Ben Day screen

probably indicated that they should be supplied with that particular cloth in their trousers. There are a large variety of Ben Day screens. The process is named after the inventor.

Benzine Can—The common term given to the cleaning can when it contains a hydro-carbon cleaner



Benzine can

like benzine, gasoline, benzol, kerosene, etc. Most so-called benzine cans nowadays are of the safety type.

Billhead — A printed form on which invoices and bills are made out. The kind listed in the Kelsey catalog have light grey ruling except in the place for the heading. Many people use the regular cut sizes of bond paper, with printed headings, and ruling either printed at the same time or left off entirely, in these days of typewriters and billing machines.

Bimonthly—Magazine or other periodical issued every two months.

Binder — A machine used for stapling or binding sheets together, such as books, pamphlets, publications, etc.

Biweekly—Newspaper or magazine or other periodical issued once in two weeks.

(To be continued)