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METHOD FOR MOUNTING PRINTING SURFACES

Filed May 23, 1934

Fig. 1.

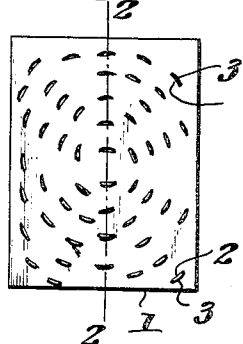


Fig. 3.

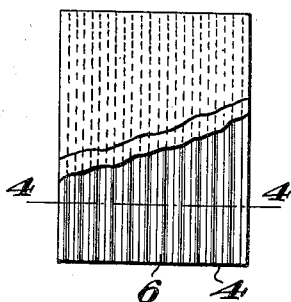


Fig. 5.

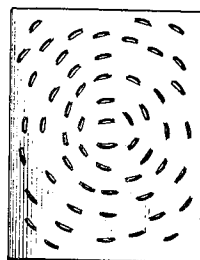


Fig. 2.



Fig. 4.

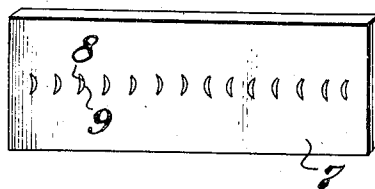
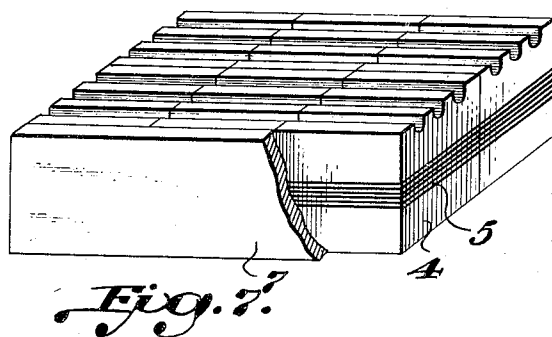
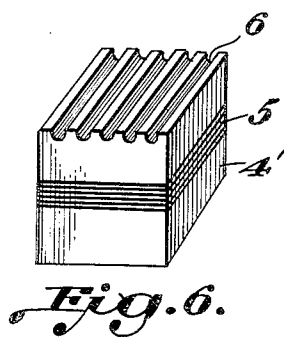
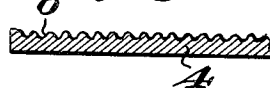


Fig. 8.

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UNITED STATES PATENT OFFICE

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METHOD FOR MOUNTING PRINTING SURFACES

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5 Claims. (Cl. 29--148)

This invention concerns improvements in methods for mounting printing surfaces and has among its objects to facilitate the mounting of printing process plates onto their bases, whereby the plates may be affixed to these bases so that movement in any direction is prevented or reduced to a minimum, to obviate the necessity of employing wood for the bases and to render the use of solder and rivets or screws in the case of metal bases and the use of nails or screws in the case of wood bases unnecessary and to eliminate or reduce to a minimum the troublesome and time-wasting operation known as "make-ready".

As is known wood bases are not entirely satisfactory for mounting printing process plates because they are liable to warp or give when pressure is applied and moreover offer difficulties in presenting a smooth flat surface of the correct height during the printing. Moreover there is always the danger of movement of the plate on its base with adverse effects on the printing.

The invention will now be described with reference to the accompanying drawing, in which:

Figure 1 is a plan view of the reverse side of a printing plate which has been provided with raised parts,

Fig. 2 is a section along the line 2—2 of Fig. 1,

Fig. 3 is a plan view of the upper surface of a base plate which has been provided with grooves,

Fig. 4 is a section taken on line 4—4 of Fig. 3,

Fig. 5 is a plan view of a base plate as shown in Fig. 3 onto which the printing plate as shown in Fig. 1 has been pressed and then removed,

Fig. 6 is a perspective view of a standard mounting quotation provided with grooves on its upper surface, and with lighter cut grooves around the middle of its vertical sides,

Fig. 7 is a perspective view partly in section of six standard mounting quotations mounted together to form a base and locked along one side by a locking plate, and

Fig. 8 is an elevational view of the rear side of the locking plate.

According to the invention the method for attaching or joining metal printing process plates to metal or wood or other bases so as to prevent movement in any direction consists in providing the plates with their lower surfaces with depressions and raised parts such as furrows and ridges 3 and attaching the plates, for example by pressure or joining the plates with adhesives such as shellac or cement to the bases 4 which are similarly provided with depressions and raised parts such as furrows and ridges, the depres-

sions of the bases being adapted to receive the raised parts of the plates and the raised parts being adapted to fit the depressions in the bases.

According to the invention the base 4 may already be provided with the depressions and raised parts ready to receive the corresponding raised parts 3 and depressions 2 in the plates or the depressions and raised parts may be imparted to the bases by affixing a metal plate provided with the depressions and raised parts to a base of softer material than the metal plate and then applying the requisite pressure with, if necessary, the application of heat. This method can be utilized for imparting the requisite depressions and raised parts to a softer plate than the base by providing the base with depressions and raised parts corresponding to those which are to be formed in the plates.

According to the invention if it is desired to attach a soft metal plate to a harder base, say of cast iron, an intermediate plate provided on its upper surface with the depressions and raised parts may be attached to the harder base, if necessary with the aid of screws or the like, and then the soft metal plate containing the corresponding raised parts and depressions can be attached thereto. Alternatively the soft metal plate could be pressed onto the harder metal plate and thereby be given the requisite corresponding raised parts and depressions.

In the case in which both the printing plate and the base are of soft metal an intermediate plate provided with depressions and raised parts on both surfaces could be fixed to the upper surface of the base and to the under surface of the printing plate.

The surfaces of the printing plate or of the base or of both may have already the requisite corresponding raised parts and depressions or one or both of such surfaces may be provided with the corresponding requisite depressions and raised parts by the application of pressure and, if necessary, heat.

According to a further feature of the invention the method of attaching metal surfaces to other surfaces to prevent relative movement may be utilized in setting up a composite base for printing process plates such as shown in Fig. 7. In this case the vertical sides of the parts of the base or mounting quotation 4' are provided with grooves 5, depressions or the like in any desired arrangement and strips 7 of harder material, provided on each face with depressions 3 and raised portions 9, are interposed between the vertical sides of adjoining parts of said base, so that

the grooves, depressions or the like abut against the depressions and raised portions of the strips, whereafter the whole is locked by the application of pressure which causes the vertical sides of the parts of the base to be provided with depressions and raised parts corresponding to those on the strips. Thus in the case when unit bases of say type metal, such as standard mounting quotations 4', are to be joined together to form a composite unit for supporting a printing process plate, metal locking plates 7 harder than the unit bases, e. g. of zinc and containing depressions and raised parts on one or both surfaces are interposed between the respective units which are then locked together under the application of pressure. By this means any tendency of the respective units to spring when locked together is avoided.

According to the invention in an alternative method of setting up a composite base, individual units such as quotations of soft metal provided with grooves are locked under pressure or with an adhesive against individual units of harder metal, said units of harder metal being provided with raised portions on their vertical sides forming indentations in the soft metal units when the pressure is applied.

An embodiment of the invention will now be described by way of example with reference to the mounting of a rectangular copper process plate 1 on a type metal base 4.

The top surface of the base is provided with grooves 6 lengthwise over its entire surface removing the metal. The grooves may suitably be about one sixteenth of an inch deep leaving ridges of the original surface about one thirty-second of an inch in width between each groove. Two types of grooves are shown in Fig. 3, i. e., continuous grooves and discontinuous grooves.

The underside of the copper plate is provided with a series of parallel chevron shaped depressions 2 and raised portions 3 across the width of the plate to cross the grooves 6 in the base. The chisel or tool used should produce the sharpest and highest upturn on one side of the raised portion only. If desired additional depressions and raised portions may be provided close to the edges of the plate both along the length and width thereof. Although not essential these additional depressions and raised portions give additional grip at the edges where printing pressure starts and finishes on cylinder machines.

The base is now placed in position on a suitable press and with good firm hard pressure the copper plate can be bedded into the grooved base surface to a level printing position whereby the raised parts cut into the metal of the base and the grooves take up the metal displaced as a result of the cutting action of the raised parts.

The copper plate is now lifted from its bed and both surfaces are coated with a layer of shellac varnish or any other suitable cement. The plate is then fitted accurately into its bed on the base. This can be effected without any trouble and with another nip of pressure the plate is securely mounted when dry against lift or movement in any direction relative to its base.

The grooves 6 in the base surface facilitate the imparting of the requisite depressions and raised parts to the base when the pressure is applied.

If desired in mounting the prepared plate on its base, the base can be coated with shellac or cement and the plate warmed and coated also with shellac or cement pressed down level as one

operation instead of pressing the plate down first, then lifting it and repressing it.

If desired the chevron shaped depressions 2 and raised portions 3 may be replaced by straight or wave shaped or even circular or elliptical depressions and raised portions.

The plate may be provided with the necessary depressions and raised parts by cutting the same with a chisel whose end has been slightly rounded by grinding. No precision is required in making the cuts in any particular directions and parts of the plates may be provided with extra depressions and raised parts if desired.

In order to facilitate the lifting of the plate from the mount after fixing down for printing without bending the plate or disturbing the base a few clear channels without depressions or raised parts are provided in each side of the plate in order to allow a lifting wedge to be inserted.

During the production of the depressions and raised parts the plate may be held in a locking device or press and the surfaces actually gripped by the device or press may be protected by sheets of rubber or the like.

The grooves in the standard mounting quotation may for example be prepared in the following manner: a row of 48 point quads is locked in a small chase with two pieces of steel perforating rule on either side. A piece of steel perforating rule 48 points wide is cut and the teeth are opened to triangular points similar to a saw with a saw file. This section of rule is mounted in the end of a piece of 48 point wood furniture and a satisfactory steel scraper to commence the formation of the necessary grooves (about 8 to the inch) is thus prepared. The steel rule being above the quads forms a guide in which to run the scraper, keeping it true in the grooves as they deepen. This simple tool will not finish the grooves but it is very easy to finish them to a satisfactory depth with an ordinary graver, leaving the necessary amount of original surface ridge to support the plate.

The strip of harder metal, e. g. zinc, which is interposed can be provided with depressions and raised portions in the manner hereinbefore described.

If desired the plates may be provided with the depressions and raised portions by casting.

If desired in setting up a composite base, individual units such as quotations provided with grooves or depressions are locked by pressure and/or with adhesives such as shellac against similar units. Alternatively the individual units of soft metal provided with grooves can be similarly locked against units of harder metal having raised portions on their vertical sides forming indentations in the soft metal units when pressure is applied.

According to the invention the method of attaching metal surfaces to other surfaces to prevent relative movement as hereinbefore described may be applied for fixing plates on rotary printing cylinders with or without special jackets, sections or bands to take portions or whole covering plates. The pressure required for fixing the plates on the base surface can be applied for instance by screw toggle clamps or plates or bands.

The invention offers many material advantages in addition to those hereinbefore indicated, of which the following are given by way of example.

(a) If engraved plates are delivered unmounted the mounting operations required are well within the scope of small and average printing plant equipment.

(b) The plates can be more accurately mounted with ordinary labour than hitherto.

(c) Individual color plates can be more accurately adjusted to register.

5 (d) The process specially provides for the needs of small blocks to be worked with loose type formers.

10 (e) The process of mounting is not detrimental to the systems which have their special purposes but is supplementary, is a very simple process which enables efficiency to be obtained without worry and risk and time wasting operation for it enables the operator to obtain that much desired article "the ready to
15 print block".

(f) Existing blocks on wood can be economically remounted on metal by the printer or engraver.

20 (g) The soft metal mounting units can be separated and re-used for other sizes or as spacing material.

25 (h) The process does not prevent interlaying between plates but aims at dispensing with the necessity of interlaying by providing more rigid and level impression.

What I claim is:

1. A method of mounting metal printing process plates on bases of metal harder than the metal of the plates, comprising securing an intermediate plate of metal harder than the printing plate and provided with raised parts on its upper surface to the base, providing the under surface of the printing plate with depressions, and pressing the printing plate down upon the
30 intermediate plate to cause the raised portions of the intermediate plate to cut into the under surface of the printing plate.

2. A method of mounting soft metal printing process plates on soft metal bases, comprising providing the upper surface of the base and the under surface of the printing plate with depressions, interposing a plate of metal, harder than the metal of the printing plate and the base and provided with raised parts on its upper
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and lower surfaces, between said printing plate and base, and pressing said printing plate and the base toward each other to force the raised parts on the intermediate plate to cut into the upper and lower surfaces of the base and printing plate, respectively. 5

3. A method of mounting metal printing process plates on a metal rotary printing cylinder so as to prevent horizontal movement in any direction, which consists in providing the printing plates on their lower surfaces with raised parts and the cylinder with depressions, and causing the raised parts to cut into the cylinder by the application of pressure, the depressions serving to take up the displaced metal. 10 15

4. A method of mounting metal printing process plates on metal bases made up of a plurality of quotations locked together so as to prevent horizontal movement in any direction, which consists in providing the printing plates on their lower surfaces with raised parts and the bases with depressions, and causing the raised parts to cut into the bases by the application of pressure, the depressions serving to take up the displaced metal. 20 25

5. A method of mounting metal printing process plates on a metal base so as to prevent horizontal movement in any direction, comprising making the base of a plurality of quotations of soft metal, providing the quotations with depressions in their side faces, interposing strips of hard metal, provided with raised parts on the faces thereof, between adjacent quotations, pressing the quotations together to force the raised parts on the strip of hard metal to cut into the sides of the quotations, providing the printing plates on their lower surface with raised parts and the base of assembled quotations with depressions, and causing the raised parts to cut into the base of assembled quotations by the application of pressure, the depressions serving to take up the displaced metal. 30 35 40

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