

Feb. 7, 1961

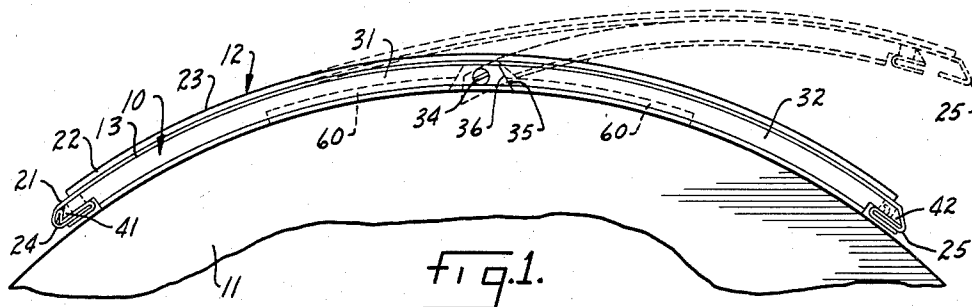
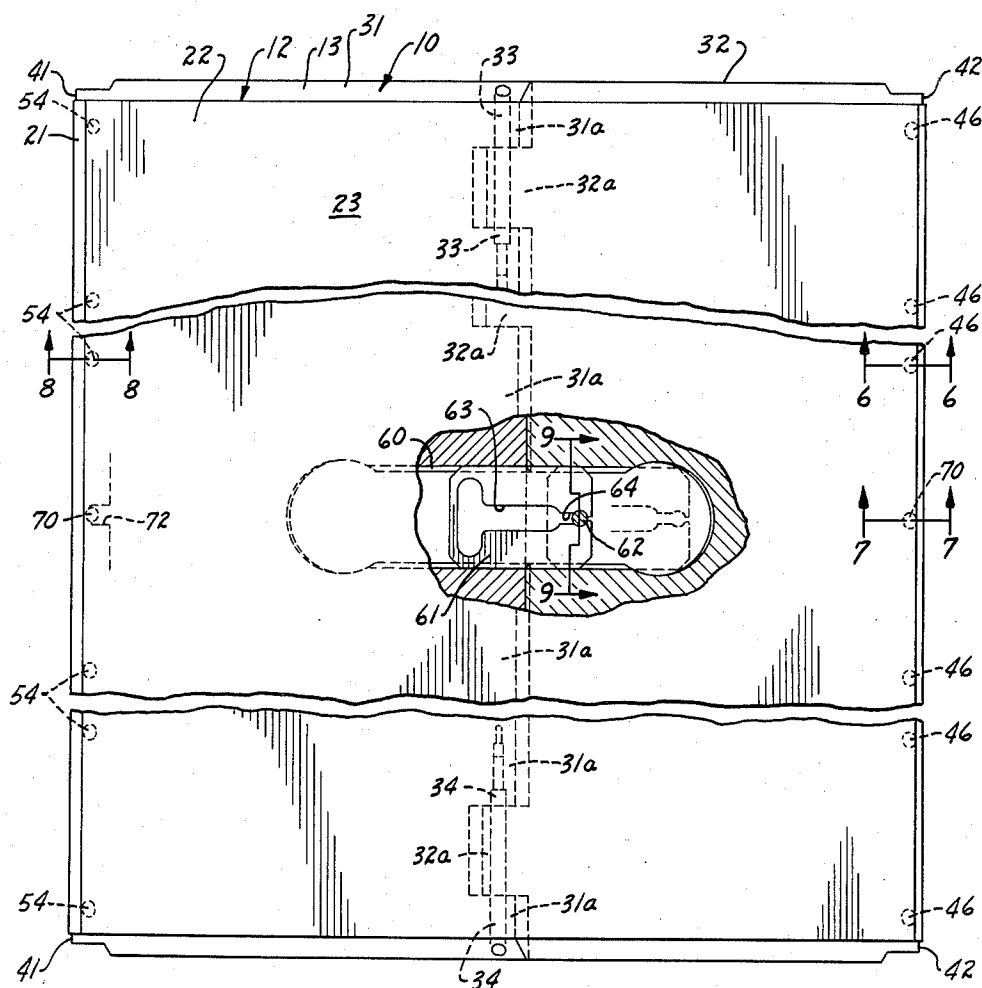
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SADDLE FOR SUPPORTING THIN PRINTING PLATES

Filed Sept. 16, 1958

2 Sheets-Sheet 1



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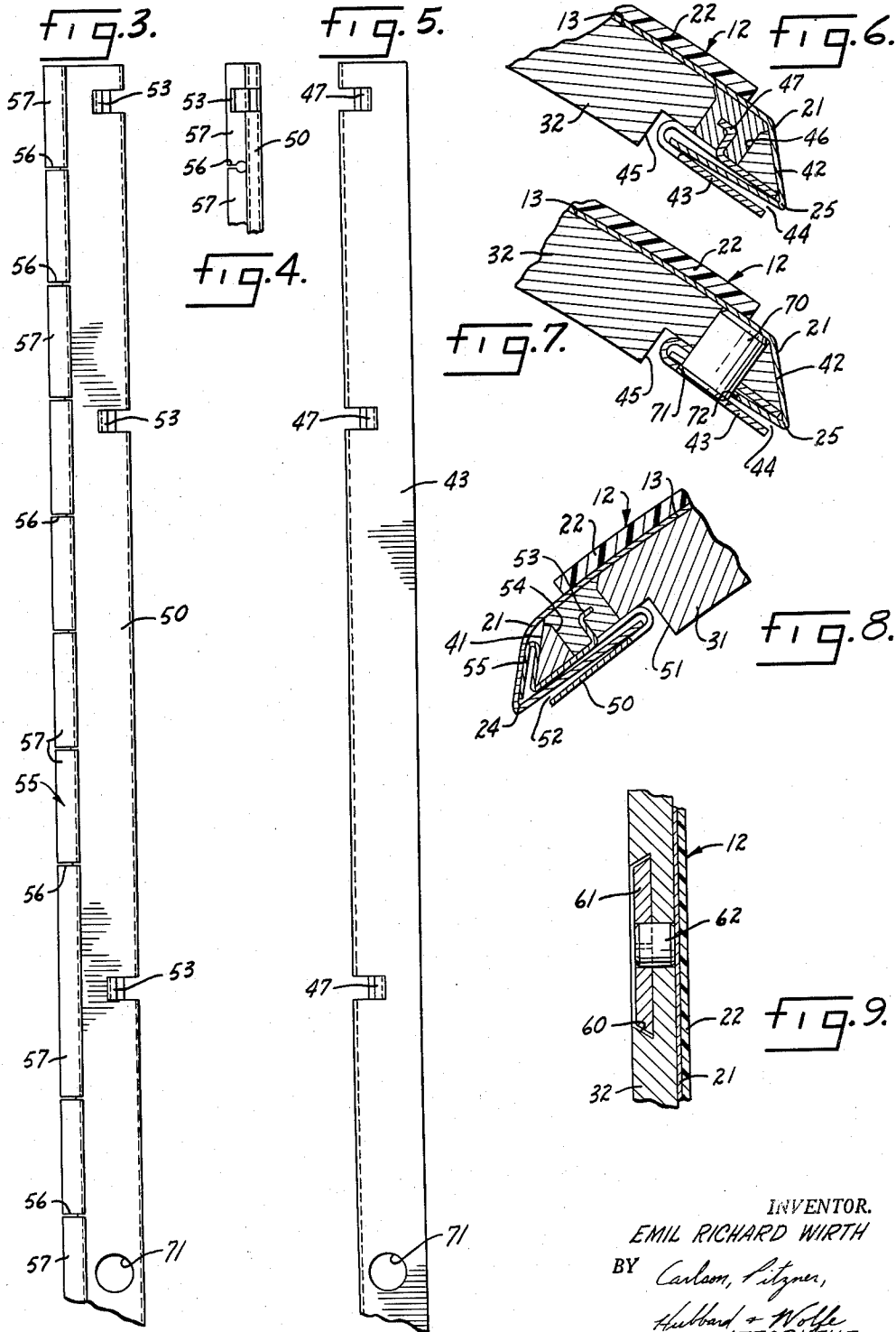
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2 Sheets-Sheet 2



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SADDLE FOR SUPPORTING THIN PRINTING PLATES

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Filed Sept. 16, 1958, Ser. No. 761,353

5 Claims. (Cl. 101—415.1)

The present invention relates generally to printing plates for use in rotary newspaper and magazine type presses, and concerns more particularly a saddle or "dummy" plate for supporting a thin, printing surface member.

A very promising and important development in the art of preparing printing plates is the use of "fast etch" methods to form a printing surface on sheets of zinc, magnesium, plastic, or other materials not conventionally employed for plate making at the present time. One of the most promising of these methods involves photopolymerization of a plastic layer that is bonded to a thin metal backing sheet to form a printing plate.

A practical problem presented by this work is the fact that plates of this type are very thin as compared to the plates modern presses have been designed to handle. For example, one type of the proposed plastic-on-steel plates referred to above, is only 0.053 inch thick, whereas conventional magazine press plates are usually $\frac{1}{4}$ inch thick, and newspaper plates are normally $\frac{3}{8}$ or $\frac{7}{16}$ inch thick. The new plates are thus too thin for conventional plate lock-up devices and also prevent the printing and impression cylinders of commonly used presses from being brought into printing relation. These cylinders are usually, of course, relatively adjustable, but plates of this thinness are well beyond the ordinary range of adjustment.

Furthermore, the thinness and resulting lack of stiffness of the proposed plates requires that they be carefully handled so that the printing surface is not bent or cracked. The plastic plates particularly must not only be carefully handled but also must be fully supported so that there is no looseness during the printing operation which would cause the plate to "work" and eventually crack or split.

It is therefore the primary aim of the present invention to provide a saddle for adapting a thin, relatively flexible, printing plate for use in conventional printing presses.

With more particularity, it is an object of the invention to provide a saddle as described above that supports a thin printing plate and gives it the required rigidity and form necessary for use in conventional presses so that the plate can be locked-up on the press in the usual manner by conventional lock-up devices.

It is a further object to provide a saddle of the above type that holds a thin plate tightly against a smooth, properly curved surface so as to avoid flexing or "working" during the printing operation.

It is also an object to provide a saddle as characterized above that allows a thin plate to be mounted thereon simply, rapidly and accurately, without special tools or equipment.

In more detail, it is another object to provide a saddle of the type described that has a novel plate tensioning spring which uniformly tensions a plate, permits rapid plate mounting, and is exceptionally economical to manufacture.

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Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

Figure 1 is an end view of a saddle constructed in accordance with the invention supporting a thin printing plate on a printing cylinder, the latter being only schematically shown;

Fig. 2 is a plan view of the saddle and plate shown in Fig. 1;

Fig. 3 is a fragmentary plan view of the tensioning spring member forming a part of the saddle shown in Figs. 1 and 2;

Fig. 4 is a fragmentary side view of the member shown in Fig. 3;

Fig. 5 is a plan view of the plate securing member utilized in the saddle shown in Figs. 1 and 2;

Fig. 6 is a fragmentary section taken along the line 6—6 of Fig. 2;

Fig. 7 is a fragmentary section taken along the line 7—7 of Fig. 2;

Fig. 8 is a fragmentary section taken along the line 8—8 of Fig. 2; and

Fig. 9 is a fragmentary section taken along the line 9—9 of Fig. 2.

While the invention will be described in connection with a preferred embodiment, it will be understood that I do not intend to limit the invention to that embodiment. On the contrary, I intend to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

Turning first to Fig. 1, there is shown an arcuate saddle 10 embodying the invention fitted on a printing cylinder 11 which is schematically illustrated for clarity. The saddle is provided with a smooth upper arcuate surface 13 on which is mounted a relatively thin printing plate 12.

The plate 12 is formed of a curved metal backing sheet 21 having an outer plastic layer in the form of a sheet 22 bonded to the metal and defining a printing surface 23. The backing plate 21 has extended portions along each of its opposite straight edges which are sharply folded under to define elongated hook portions 24 and 25.

In accordance with the invention, the saddle 10 comprises a pair of rigid sections defining the arcuate surface 13 which are hinged together about an axis lying generally along an element of the surface 13 and which have means at their opposite straight edges for securing thereto the opposite edges of the printing plate 12 and for tensioning the plate against the arcuate surface. The illustrated rigid sections 31 and 32 of the saddle 10 are dimensioned so that they, together with the printing plate 12, form a plate assembly of standard size and shape which can be utilized in the conventional manner in a standard printing press.

In the preferred embodiment, the hinged edges of the sections 31, 32 are formed with interfitting portions 31a, 32a, so that there is no continuous parting line paralleling the hinged axis. The hinge is formed by passing a pair of pins 33, 34 through overlapping ones of the portions 31a, 32a adjacent the sides of the saddle 10.

By avoiding a continuous parting line between the sections 31, 32, a more uniform supporting surface 13 is maintained for the plate 12. Also, in the preferred embodiment, the abutting edges 35, 36 of the sections 31, 32, respectively, are inclined with respect to the surface 13 so that the sections 31, 32 can only swing upwardly relative to one another (see Fig. 1).

For securing the opposite edges of the plate 12 to the saddle, slots are provided along each straight edge 41, 42 of the sections 31, 32, respectively, to receive the hook portions 24, 25 of the plate. To this end, a member 43

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is folded to define a slot 44 and is secured in a cut out or relieved portion 45 formed along the edge 42 of the section 32. In order to secure the member 43 in place, a plurality of countersunk holes 46 are provided along the edge 42 and the member 43 is provided with up-
standing tangs 47, each of which extends upwardly into one of the holes 46. The holes 46 are filled with solder so as to securely anchor the member 43 in place.

To provide a slot along the opposite side of the saddle 10, and also to tension the plate against the surface 13, a member 50 is secured in a cut out 51 formed in the underside of the section 31 adjacent its straight edge 41. The member 50 is an elongated resilient strip folded to define a slot 52 and having tangs 53 which are soldered firmly into place within holes 54 spaced along the edge 41. This construction is similar to that of the member 43 described above. In addition however, the member 50 is again folded to define a "doubled over" spring portion 55 which underlies the plate 12 and exerts a resilient force away from the edge 41 that is effective to tension the plate and hold it tightly against the surface 13. In the preferred construction, the spring portion 55 is split along a plurality of lines 56 so as to define a plurality of springs 57 acting independently against the plate. The provision of a number of independently acting springs each exerting its individual spring force assures uniform tensioning of the plate 12 on the saddle 10 throughout the surface of the plate.

As a feature of the invention, provision is made to lock the sections 31, 32 against relative movement when they are positioned to form the continuous arcuate surface 13. In the illustrated arrangement, this is accomplished by providing a dovetailed track 60 in the undersides of the sections 31, 32 which extends across the hinged edges of the sections. Slidably carried in the track 60 is a dovetailed locking clip 61 which moves between a locking position wherein it extends across the hinged edges of the sections 31, 32 and an unlocked position wherein the clip is positioned off to one side of the hinged edges. In Fig. 2 the clip 61 is illustrated in its locking position in solid lines and in its unlocked position in broken lines. It will be understood that the clip, when in locking position, will prevent relative movement of the sections 31, 32 about their hinge pins 33, 34.

To insure that the clip 61 remains in its locked position, a pin 62 is fixed in the section 32 and a slot 63 is formed in the clip 61 which straddles the pin 62. The sides of the slot 63 are narrowed at 64 so that the clip expands slightly in a lateral direction and snaps about the pin 62 when the clip is moved to its locking position. This detent-like action holds the clip firmly in its locking position while permitting it to be moved easily to its unlocked position.

For the purpose of locating the plate 12 on the saddle 10, pins 70 are provided approximately at the center of each of the saddle section edges 41, 42. The pins 70 extend through holes 71 formed in the members 43 and 50 and cooperate with notches 72 formed in the hook portions 24, 25 of the plate 12. It will be understood that the pins 70, by being fitted through the holes 71 in the members 43, 50, also facilitate the assembly of the saddle 10 by properly positioning the members 43, 50 as they are rigidly secured to their respective sections 31, 32.

It is believed that the operation of the saddle 10 will be obvious from the above description. However, to briefly recount a typical sequence of steps in which the saddle 10 is used to mount a thin printing plate 12 on a printing cylinder 11, it will be observed that the operator first moves the locking clip 61 to its unlocked position where it is spaced from the hinged edges of the saddle sections 31, 32. The saddle is then folded by lifting one of the sections relative to the other.

The hooked portion 24 of the plate 12 is next fitted within the slot 52 with the notch 72 being disposed about

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the pin 70. The sections 31, 32 are then gradually swung into arcuate alignment and the hook portion 25 of the plate 12 is guided within the slot 44, with the notch 72 straddling the pin 70. When the abutting edges 35, 36 of the sections 31, 32 come into engagement, the locking clip 61 is slid along the track 60 until the narrowed detent portion 64 snaps about the pin 62 so as to lock the saddle in its arcuate position.

When the saddle is locked, the plate 12 is pulled tightly against the smooth outer arcuate surface 13 of the saddle and the individual spring portions 57 exert forces generally in the plane of the plate 12 so as to uniformly tension the plate against the saddle surface. The plate and saddle assembly may thereafter be handled as a conventional printing plate.

It will be noted that the mounting of a printing plate on the saddle requires no special tools or equipment, and that the continuous force exerted by the spring portions 57 keeps the plate properly tensioned against the saddle so that it is held tightly against the surface of the saddle and will not flex or "work" during the printing operation.

It will also be observed that the saddle 10 is made up of relatively simply formed elements so that the entire unit is quite economical. Adding to this economy is the fact that the saddle may be reused repeatedly with successive printing plates. The ease with which a plate can be fitted onto and removed from the saddle 10 makes the substitution of printing plates a simple and rapid operation.

I claim as my invention:

1. A saddle for supporting a thin printing plate comprising, in combination, a pair of rigid arcuate sections defining a cylindrical surface and being hinged together about an axis lying generally along an element of the surface, means for locking said sections against relative movement about said axis when they form a continuous arc, said sections having opposite straight edges, means defining a slot along each one of said straight edges for receiving the opposite ends of a printing plate, and spring means adjacent one of said slots for tensioning a plate fitted into said slots against the arcuate sections.

2. A saddle for supporting a thin printing plate comprising, in combination, a pair of rigid arcuate sections defining a cylindrical surface and being hinged together about an axis lying generally along an element of the surface, the hinged edges of said sections having inter-fitting portions so that there is no continuous parting line paralleling the hinged axis, a track formed in said sections extending across their adjoining hinged edges, a locking clip slidable in said track so as to lock said sections against relative movement when they form a continuous arc, said sections having opposite straight edges, means along each one of said straight edges for holding the opposite ends of a printing plate, and spring means adjacent one of said edges for tensioning a plate against the arcuate sections.

3. A saddle for supporting a thin printing plate comprising, in combination, an arcuate structure having opposite straight edges, means at one of said edges for securing one edge of a thin printing plate, and a member at the other of said edges for securing the opposite edge of said plate and for tensioning the plate against said arcuate structure, said member being an elongated resilient strip having means for holding said plate and being folded longitudinally to define a doubled-over spring portion adapted to underlie the plate and exert a resilient force from the edge of said structure.

4. A saddle for supporting a thin printing plate comprising, in combination, an arcuate structure having opposite straight edges, means at one of said edges for securing one edge of a thin printing plate, and a member at the other of said edges for securing the opposite edge of said plate and for tensioning the plate against said arcuate structure, said member being an elongated resilient strip folded longitudinally to define a slot for receiv-

ing the edge of said plate and being again folded to define a doubled-over spring portion adapted to underlie the plate and exert a resilient force from the edge of said structure.

5. A saddle for supporting a thin printing plate comprising, in combination, an arcuate structure having opposite straight edges, means at one of said edges for securing one edge of a thin printing plate, and a member at the other of said edges for securing the opposite edge of said plate and for tensioning the plate against said arcuate structure, said member being an elongated resilient strip folded longitudinally to define a slot for receiving the edge of said plate and being again folded to define a doubled-over spring portion adapted to underlie the plate and exert a resilient force from the edge of said structure, said doubled-over spring portion being split into aligned segments so as to define a plurality of springs acting independently against said plate.

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