

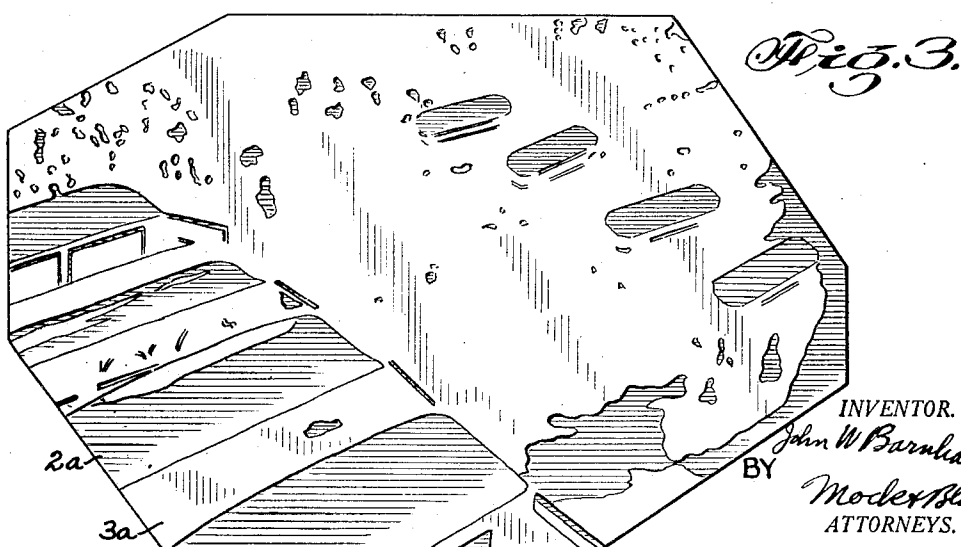
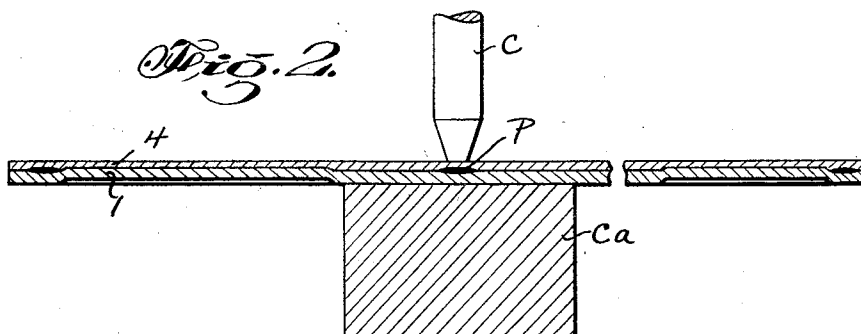
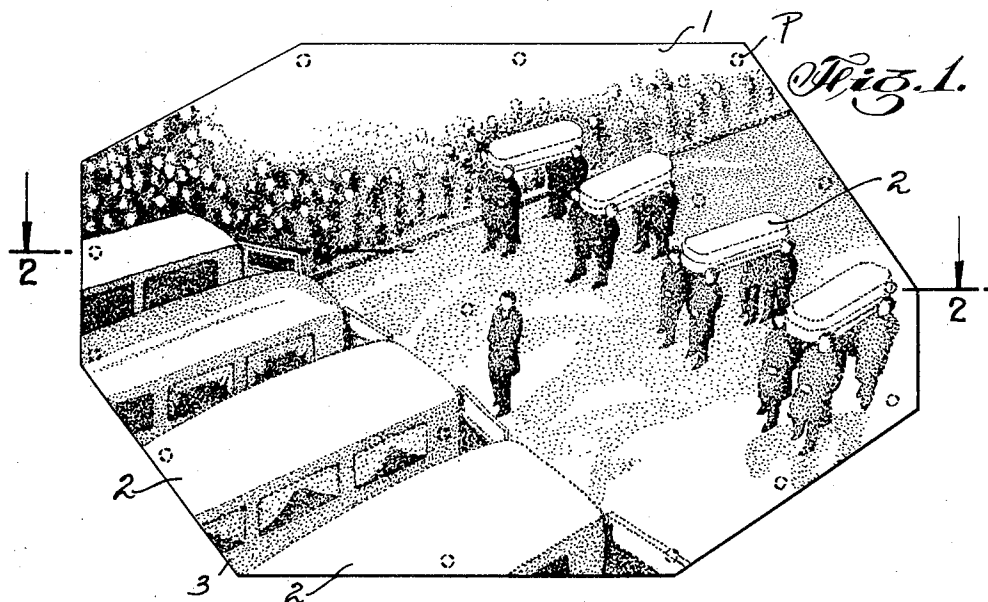
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PRINTING PLATE AND UNDERLAY AND METHOD OF PRODUCING THE SAME

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PRINTING PLATE AND UNDERLAY AND METHOD OF PRODUCING THE SAME

Application filed June 5, 1931. Serial No. 542,230.

My invention relates to a new and improved printing plate and underlay and a method of producing the same.

One of the objects of my invention is to provide an improved printing plate which is produced by a photo-mechanical process, suitably combined with a metallic underlay, so that the printing plate and the underlay form an assembled unit which can be readily handled, transported, stored, etc.

Another object of my invention is to provide a new and improved method of permanently or detachably connecting a printing plate of the photo-mechanical type, with a metallic underlay.

Other objects of my invention will be set forth in the following description and drawings, which illustrate a preferred embodiment of my invention, it being understood that the above general statement of the objects of my invention is intended to generally explain the same and not to limit it in any manner.

Fig. 1 is a plan view illustrating the printing surface of the plate.

Fig. 2 is a section along the line 2—2 of Fig. 1. This figure shows the assembly of the plates after they have been welded and subsequently pressed together. It is to be understood that when the plates are in the welding machine, portions of the plate and of the underlay are slightly spaced, so that the assembled plates do not have final form shown in Fig. 2, until after the plates have been removed from the welding machine, and then pressed together.

Fig. 3 is a plan view of that face of the underlay which is in contact with the back or rear surface of the printing plate.

In my application Serial No. 492,417, I have illustrated the operation of finally shaping a half-tone printing plate, by means of which the high-light areas of said printing plate are slightly depressed with respect to the areas having the dark-tone values, in order to prevent overprinting of the high-light areas.

According to the present invention, the underlay which is utilized in the above mentioned process can be made of metal, and this

underlay may be connected to the back of the printing plate, prior to the final shaping operation.

As shown in Fig. 1, the surface of the photo-mechanical printing plate 1 may be provided with high-light areas 2, and with areas 3 which correspond to the relatively dark tones of the picture to be printed. A half-tone plate has the dots relatively small and the edges of said dots are widely spaced in the high-light areas 2, and said dots are larger and their edges are closer to each other in the dark-tone areas 3.

The underlay 4 has a surface which corresponds to the printing surface of the plate 1. The printing plate 1 and the underlay 4 are preferably of the same size and shape, and the areas 3a of the underlay 4 correspond in size, shape and location to the dark-tone areas 3, and the areas 2a of the underlay 4 correspond in location, shape and dimensions to the high-light areas 2. The plate 1 and its metal underlay 4 are connected at separated points by means of spot-welding.

For this purpose the resist composition which is used for etching the printing surface of the plate 1 is first carefully cleaned off so that the printing face of the plate 1 has good conductive properties.

The etched face of the underlay 4 which is shown in Fig. 3, is then applied to the smooth back or rear surface of the printing plate 1. The plates 1 and 4 are now united by means of a spot-welder having a pointed electrode C and having a relatively large and flat electrode upon which the etched face of the plate 1 rests.

In actual practice it is preferable (although not absolutely necessary), to have the pointed electrode C above the associated electrode Ca, and to have said pointed electrode C upwardly and downwardly movable.

The etched surface of the printing plate 1 is caused to rest upon the relatively large and planar surface of the associated electrode, and the pointed electrode C is then caused to descend with suitable pressure. The current which is employed should be of relatively low voltage and of relative large amper-

age, so that the printing surface of the plate 1 is not injured.

This spot-welding operating can be carried out at a suitable number of points P and these points P may be wholly or partially confined to the periphery of said plate, although the invention is not necessarily limited thereto.

Likewise, it is preferable to confine the welded points P to the dark-tone portion of the printing plate. This is because the larger dots afford a better contact surface with less danger of burning, and because the plates contact with each other in the dark-tone portions prior to the welding operation.

Experience has shown that while welded areas or points P can be produced which firmly unite the metal underlay to the back of the printing plate 1, the printing surface of the plate 1 is not injured or affected to any noticeable extent. The connection thus produced is sufficiently permanent for all purposes, so that the plate and the underlay form an assembled unit. However, if desired, the underlay can be separated from the plate without injury to the plate or to the underlay. After the underlay and the plate have been assembled, the assembled unit can be subjected to pressure by means of a blanket or blankets, so that the high-light areas of the plate 1 are slightly depressed, in order to finally shape the assembled unit and to prevent overprinting of the high-light areas.

My invention is particularly valuable for newspaper work in which half-tone printing plates must be stored for long periods of time, because each plate forms an assembled unit with its underlay, so that it can be immediately utilized at any time. Likewise, my invention provides an assembled unit which can be conveniently handled at all times.

If desired, the surface of the underlay 4, which is adjacent the back of the printing plate 1, can also be formed by an etching operation so that the areas 2a of the underlay are sufficiently depressed with respect to the areas 3a.

Another important feature of my invention is that the printing plate and the underlay are suitably connected, before pressure is applied in order to finally shape the printing face of the half-tone plate 1. If the printing plate and the underlay are pressed together before connecting them, it is impossible to subsequently register them.

While I prefer to have the etched surface of the underlay adjacent the back of the printing plate, it is possible to join the planar or unetched back of the underlay to the back of the printing plate, before the final pressing operation.

The etched or prepared surface of the underlay should be thoroughly cleaned in order to remove the resist before the spot-welding operation is performed in order to ensure

good electrical conductivity. Heretofore, in connecting two metallic plates by means of spot-welding, the outer surfaces of the assembled plates were marred by the spot-welding operation. However, by using associated electrodes, one of which has a relatively large area and which contacts with the printing surface of the plate 1, and by using a current of sufficiently low voltage, and utilizing an electrode having a conical tip, the assembled unit can be formed without injuring the printing surface of the plate 1.

The surface of the underlay which is adjacent the back of the printing plate can be prepared by any operation.

I have shown a preferred embodiment of my invention, but it is clear that numerous changes and omissions can be made without departing from its spirit.

I claim:

1. A method of forming an assembled half-tone printing plate and a metallic underlay therefor, which consists in forming the half-tone printing surface of the printing plate, preparing a metallic underlay with a surface corresponding to the printing surface of said plate, the prepared surface of the underlay having the areas corresponding to the high-light portions depressed with respect to the areas corresponding to the dark-tone portions, assembling said printing plate and said underlay so that the high-light portions of the printing plate register with the relatively depressed portions of the underlay and the dark-tone portions of the printing plate register with the relatively undepressed portions of the underlay, connecting the printing plate with its underlay so as to form an assembled unit, and then subjecting said unit to pressure in order to relatively depress the high-light portions of the printing plate.

2. A method of forming an assembled half-tone metal printing plate and a metal underlay, which consists in connecting said metallic plate to its underlay at separated points by causing the back of the printing plate to join with the adjacent surface of the underlay at separated points and without substantially affecting the printing surface of the printing plate.

3. A method of assembling a metal printing plate and a metal underlay therefor, which consists in spot-welding said printing plate to its underlay, the electric current used for performing the spot-welding being caused to traverse a relatively large area of the printing plate and a relatively small area of the underlay so that the back of the printing plate is joined to the adjacent face of the underlay at separated areas, without substantially marring the exposed printing surface of the printing plate.

4. As a new and useful article of manufacture, a printing plate having a metal under-

lay connected thereto, the printing plate being joined to the underlay, the exposed printing face of the printing plate being substantially unmarred, said underlay having one of its surfaces provided with relatively depressed portions which register with the high-light portions of the printing plate, the high-light portions of the printing plate being depressed with respect to the dark-tone portions thereof.

5. As a new and useful article of manufacture, a half-tone printing plate having a metal underlay assembled therewith, the back of the printing plate being joined to the adjacent face of the underlay at separated points, the face of the printing plate being substantially unmarred, the face of the underlay which is adjacent the back of the printing plate having relatively depressed portions corresponding to the high-light areas of the printing plate, the high-light areas of the printing plate being depressed relative to the dark-tone areas thereof.

6. As a new and useful article of manufacture, a half-tone printing plate having a metal underlay assembled therewith, the back of the printing plate being joined to the adjacent face of the underlay at separated points, the face of the printing plate being substantially unmarred, the underlay having relatively depressed portions corresponding to the high-light areas of the printing plate, the high-light areas of the printing plate being depressed relative to the dark-tone areas thereof.

In testimony whereof I affix my signature.

JOHN W. BARNHART.