Dec. 6, 1955 H. HEICHLINGER 2,726,147

TRANSPARENCIES FOR RECEIVING PRINTING
AND METHOD FOR PRODUCING THE SAME
Filed June 25, 1953

FIG. 1

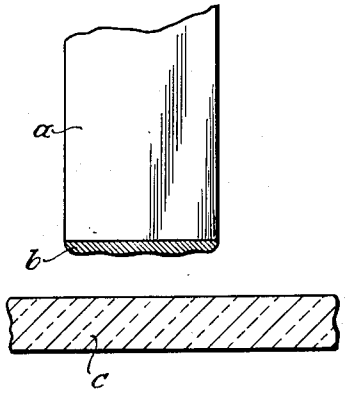


FIG. 2

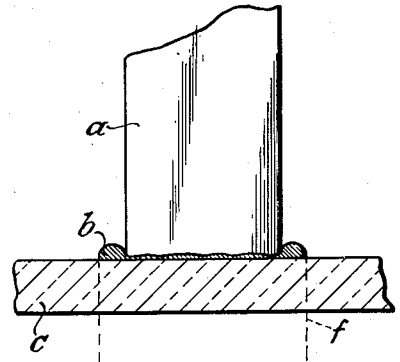


FIG. 3

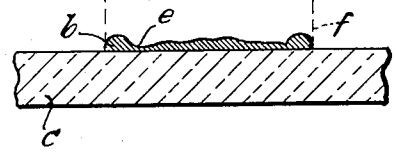


FIG. 4

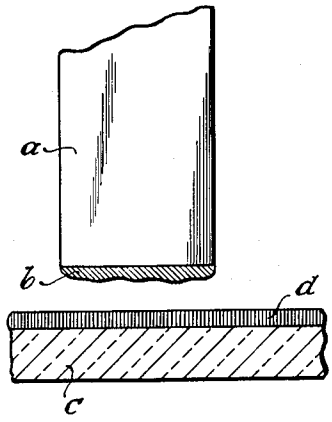


FIG. 5

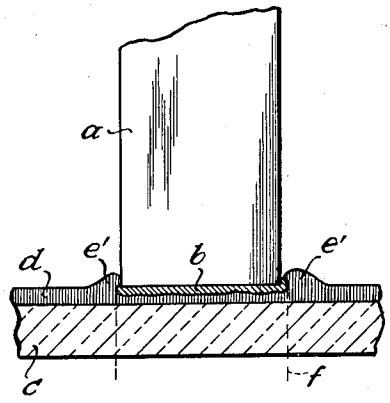
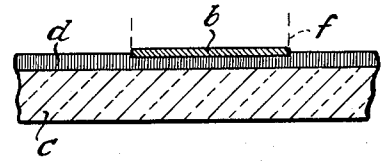


FIG. 6



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2,726,147

Patented Dec. 6, 1955

2,726,147

TRANSPARENCIES FOR RECEIVING PRINTING AND METHOD FOR PRODUCING THE SAME

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Application June 25, 1953, Serial No. 364,118

Claims priority, application Germany August 19, 1952

5 Claims. (Cl. 41—43)

The present invention relates to transparencies having printed lettering or other indicia thereon, and more particularly to transparencies suitable for use in photo-engraving and similar processes of the graphic arts.

It is presently common practice to produce master copy on a transparent film by pressing an inked letter or similar printing element against the film. Because the surface of the film is relatively hard and non-absorbent the ink distribution is irregular and the edges of the printed letters are not sharply and clearly defined. Moreover, it is necessary to dust the printed film while the ink is still wet in order to increase the opacity of the printing.

Among the objects of the invention is the provision of an improved transparent film having a resilient surface which receives the impression of the inked letter and which provides sharp definition and uniform opacity of the printing.

Another object of the invention is to provide an improved resilient coating material for the transparent film, together with means for improving the ink absorption characteristics of the coating.

Still another object of the invention is the provision of a method of causing the film to become ink absorbent at its impression receiving surface and causing it to become restored to a transparent condition after the printing has been completed.

Other and further objects will become apparent upon reading the following specification together with the accompanying drawing forming a part hereof.

Referring to the drawing:

Figure 1 is a sectional view in elevation showing an inked printing element before contact with a conventional transparent film.

Figure 2 shows the conventional film of Figure 1, in printing engagement with the printing element.

Figure 3 shows the resulting ink distribution on a conventional film.

Figure 4 shows an embodiment of a film in accordance with the invention before engagement with an inked printing element.

Figure 5 shows the film of Figure 4 in printing engagement with the printing element.

Figure 6 shows the resulting improved ink distribution on the resilient coating of the film of Figure 4.

Referring to the drawing, in the usual method of printing on transparent material shown in Figs. 1 to 3, the conventional transparent film *c* is a smooth surfaced relatively hard and non-resilient substance such as cellulose acetate which will not absorb printing ink. When the type member *a* coated with printing ink *b* comes into printing engagement with the film *c* as shown in Fig. 2, the ink *b* is squeezed laterally outwardly from beneath the printing element and forms peripheral ridges at *f* and depressions as at *e*. The resulting printed impression shown in Fig. 3 is therefore irregular both in outline and in opacity. Moreover, this effect cannot be avoided by the use of less ink, since the opacity would be reduced.

According to the present invention, as shown in Figs. 4 to 6, however, I provide transparent sheets by means of which transparencies or diapositives of better opacity and edge definition can be prepared. They can then be used as master copy for offset and intaglio printing or be used for any other desired purpose. This object is attained in the present invention by providing the relatively non-resilient transparent sheet material intended to receive the impression with an elastic coating and this coating, at least at its outer surface, is provided with ink absorptive material.

Figs. 4 to 6 illustrate printing on a transparent sheet having an elastic coating in accordance with the invention. The ink is forced by the printing element *a* into the elastic coating *d;* the elastic coating yields laterally below the printing element *a* and forms elevated ridges *e'* alongside the letter (Fig. 5), which confine and reduce the lateral squeezing of the ink sufficiently for all practical purposes. The dotted lines *f* in Figs. 2 and 3 indicate the spread of the printed impression in the printing process which was formerly customary. On the other hand, in accordance with the present invention, after the printing impression, the elastic coating is relieved of strain and returns together with the printed impression to its original width (dotted lines *f* in Figs. 5 and 6), being slightly impressed or inlaid in the upper surface of the elastic coating.

The result is a diapositive which is a faithful reproduction of the original and which has a uniform and sharply defined opacity capable of being faithfully copied.

As coating base, there can be used, for instance, transparent films of cellulose nitrate, cellulose acetate, cellophane or cellulose hydrate, or similar plastic films. For the elastic coating there can be used preferably unvulcanized rubber by itself or in mixture with waxes, resins, oils, fats, fatty acids or other substances which do not reduce the elasticity of the rubber or reduce it only slightly. There are also such suitable materials as guttapercha, isinglass, gelatine in mixture with glycerine (roller compound for printing rollers) and the like, as well as any transparent elastic substance which can be applied to the coating base. The elastic coating is preferably prepared by dissolving the elastic substance in a suitable solvent and applying this solution, as by brushing, rolling, pouring and the like, onto the coating base and thereafter drying the applied coating.

In order to make the surface of the coating of the invention more capable of receiving the ink, a superficial coating of magnesia, talcum, glass powder pulverized into a fine suspension, barium sulfite or the like may be applied to the resilient coating in a thin layer, so that the transparency is at most only slightly reduced.

In this connection, there may be provided only a thin ink absorbent resilient coating which does not impair the transparency and thereby interfere with the usefulness of the master copy.

It has been found, however, that the surface of the resilient coating can be made still better able to take up the ink if a thicker superficial ink absorbent layer is applied. This heavier ink absorbent layer necessarily reduces the transparency of the master copy. The transparency is restored after the printing, or the absorptive layer dissolved away. A denser, porous layer of chalk or the like absorbs the liquid constituents of the ink immediately at the moment of contact.

Example

A plastic coil of material such as cellulose hydrate, cellulose acetate or the like is thinly coated with latex, for instance by brushing or pouring. After drying, the coating is cold vulcanized in known manner, by treatment with a solution of sulfur chloride and light benzine (gasoline). Before the vulcanization bath is completely evaporated, the coating still has a good degree of tackiness so that a

heavy layer of chalk or similar ink absorptive material may be applied thereto and will adhere well.

Preferably, it is dusted with an alkaline or acid soluble absorbent agent, for instance, magnesia or chalk, inasmuch as hydrochloric acid forms during the vulcanization, this acid being thereby neutralized.

The transparency of the resilient coating can be completely restored after the printing is completed, by methods such as coating it with a thin layer of varnish, gum arabic or some other agent which penetrates into its pores and then closes them.

If the coating consists of chalk or magnesia, it can be etched away by acid or be dissolved by the addition of acid to the gum arabic.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is the invention as defined in the appended claims.

What is claimed is:

1. A printed transparency of the class described comprising: a base formed of transparent relatively non-resilient sheet material; a relatively transparent elastic coating applied to one side of said base, the outer side of said elastic coating being ink-receptive when engaged by an inked printing element; a superficial coating of ink absorbent material applied to said ink-receptive side of said elastic coating; and a printed inked impression partially inlaid in said elastic coating.

2. A transparency according to claim 1, further comprising a penetrating pore-closing transparent agent applied to at least a portion of said superficial coating for increasing the transparency of the portion to which it is applied.

3. A transparency according to claim 1, wherein said superficial coating is of sufficient thickness to impair the transparency of said base and said elastic coating and in which said superficial coating is formed of acid soluble material and said elastic coating is formed of acid resistant material, whereby said superficial coating may be removed from any desired portion of said transparency by treatment with an acid to increase the transparency thereof.

4. The method of producing a transparency having a resilient coating adapted to receive printing ink from a printing element, comprising the steps of: applying an acid resistant resilient coating to the transparency; dusting the coating with a pulverized finely divided acid soluble ink absorbent material; and removing the ink absorbent material by treatment with acid after the printing ink has been applied to the dusted elastic coating.

5. The method according to claim 4, wherein said resilient coating comprises cold vulcanized rubber, said ink absorbent material being applied to said coating while the vulcanization of the rubber is incomplete and the coating is tacky.

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