Jan. 16, 1934. W. F. WALLACE ET AL 1,943,645

OFFSET PRINTING METHOD

Filed May 11, 1932

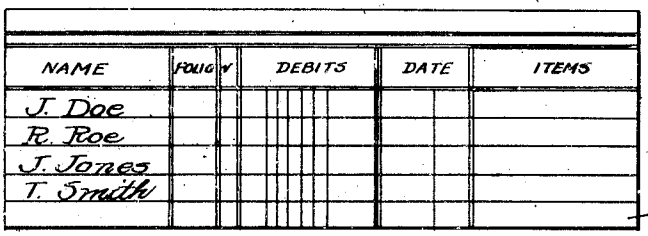


Fig. 1.

Copy.

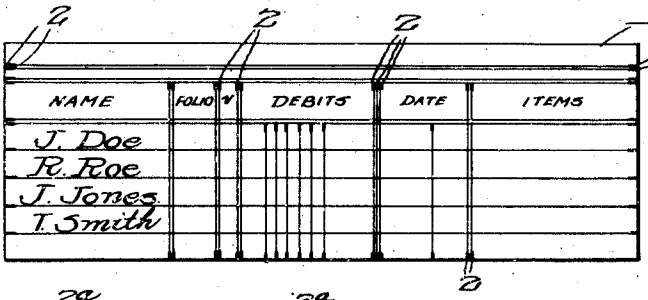


Fig. 2.

Copy.

Prepared.

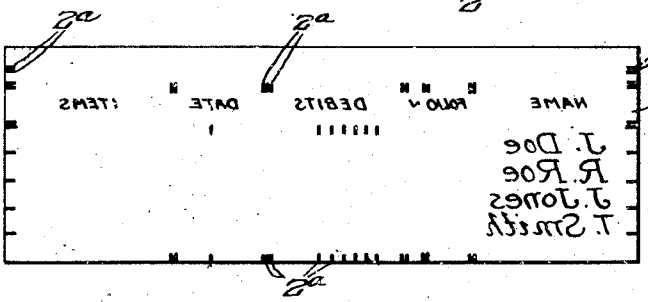


Fig. 3.

Photo Plate.

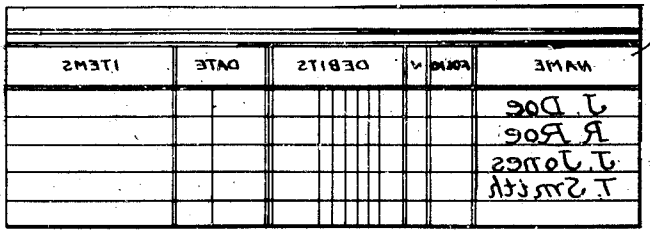


Fig. 4.

Photo Plate.

Prepared.

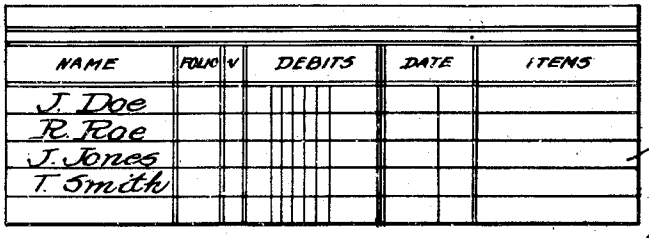


Fig. 5.

Zinc Plate.

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OFFSET PRINTING METHOD

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5 Claims. (Cl. 95—5)

This invention relates to printing and more particularly to the offset printing of rule sheets, such as bookkeeping and account forms.

Heretofore it has been customary to pen rule bookkeeping or account forms where fine lines and accurate work is required, and then print the headings thereon. Pen ruling is relatively slow and requires special machines different from the usual printing machines. Therefore, two kinds of machines must be available for pen ruled forms. Therefore, forms requiring less accuracy, particularly where the thickness and continuity of the lines is not of prime importance, have been made by contact printing and some by offset printing. However, in such printing the lines become gradually thicker and cannot be controlled with sufficient accuracy, even at the first printing, to produce the fine grade of work accomplished by pen ruling.

It is the purpose of this invention to make it possible to print ruled or lined forms of at least equal quality to forms as previously produced by pen ruling by offset printing methods and by the usual presses and equipment employed therewith.

A better understanding will be had of our invention and the inherent advantages thereof from the following description given in connection with the drawing in which:

Fig. 1 represents a form to be reproduced known as the "copy";

Fig. 2 represents the "copy" as prepared for photographing;

Fig. 3 represents a photoplate looking at the emulsion side, the plate being of course negative whereas the "copy" is positive; for convenience in drawing, that which would appear white on the actual negative is shown black and vice versa.

Fig. 4 is a similar view of the photoplate as prepared for further use; and illustrated as in Figure 3.

Fig. 5 represents the zinc plate made from the photoplate shown in Fig. 4, the zinc plate being of course positive and from which a similar positive on paper may be reproduced in an offset printing machine in the usual manner.

In the illustrative example shown in the drawing our improved step in the offset printing process is concerned particularly with the treatment of the original copy of ruled forms, wherein such copy usually has finely ruled lines in pale color or of such a low degree of actinicism that the lines are completely lost during the photographic step of the process or appear indistinctly on the negative. In such a case the negative must be retouched and the lines or rulings cut in thereupon. Our improved method of exactly reproducing such original copy embodies the step of marking the lines on the copy with relatively heavy spots that are certain to be transmitted to the negative whereby the exact location of the lines or rulings to be cut in upon the negative are indicated, such spots or markings being used as guides for the retouching or cutting in operation.

In following the method of our invention the "copy" 1, which is to be reproduced and which is illustrated in Fig. 1, is prepared as illustrated in Fig. 2 by spot marking the margins as at 2, preferably with a black ink to indicate the positions of the lines. The reason for this is that in photographing the "copy", the light lines, usually blue, of the ruled forms have such a low actinic value that they do not photograph. The "copy" thus prepared is photographed in the usual manner upon a photoplate or film 3 as illustrated in Fig. 3. As previously stated, the light ruled or printed lines do not photograph and accordingly only the printed headings and the spot markings placed upon the edges or margins of the "copy" shown as at 2*a* appear on the photographic plate. If the lines do show faintly throughout the photoplate, it is preferable to obliterate them; usually, however, this is not necessary. The photoplate 3 is then prepared by replacing the ruled lines by scratching or cutting in the lines connecting the marginal points 2*a* by means of a stylus. The lines can be made of any desired fineness according to the stylus used and the photoplate will then appear as shown in Fig. 4. The photoplate is of course negative, looking at the emulsion side as is shown in both Figs. 3 and 4 and that which appears black in the drawing would actually appear white on the negative, the white of the drawing actually appearing black. The photoplate thus prepared is used in the usual manner in photolithography as the medium from which the zinc plate 4 (Fig. 5) is made, the zinc plate being of course positive to be used in an offset press. The zinc plate is then placed upon the usual offset printing press or planograph by means of which any desired number of prints of the ruled form may be made in the usual manner.

From the foregoing description it will be apparent that by scoring or cutting in the lines upon the negative that have been located by spot markings which appear distinctly thereon we have positive control of the thickness and continuity of the lines and, furthermore, that we have provided a method whereby ruled forms having lines of any degree of fineness may be accurately repro-

duced by using the usual offset printing and photolithographic apparatus. The photoplates may of course be preserved and any number of zinc plates made therefrom as occasion demands without re-photographing and with consistently thin and accurate lines. Ruled forms may accordingly be made by anyone equipped to do photolithographing and offset printing, i. e., it is not necessary to have special pen ruling machines.

We claim:

1. The method of printing ruled forms which comprises the steps of applying relatively heavy markings to emphasize the position of certain lines upon the copy for photographic reproduction, making a photographic negative from the marked copy, cutting in lines connecting respective markings upon the photographic negative, and using the prepared photographic negative for printing positives therefrom.

2. The method of reproducing finely ruled forms which comprises the steps of applying relatively heavy markings to emphasize the position of certain rulings upon the copy for photographic reproduction, making a photographic negative from the marked copy, cutting in lines of the desired degree of fineness connecting respective markings upon the photographic negative, making a positive plate from said negative, and offset printing reproductions of said copy from said positive plate.

3. In the process of offset printing, the step of preparing the photo-negative of the copy which consists in spot marking the copy so as to locate on the negative portions of the copy that cannot be transferred photographically and thereby guide retouching of the negative.

4. In the process of reproducing ruled forms by offset printing, the step of preparing a photo-negative of the copy which consists in spot marking certain lines on the copy to assure that portions thereof appear on the negative and then cutting in such lines on the negative using such markings as guides.

5. In the process of reproducing finely ruled forms by offset printing, the step of applying relatively heavy guide markings to the copy to emphasize the position of the rulings thereon whereby such markings will appear on the photo-negative of the copy to indicate the relative positions of the rulings, and then cutting in the complete rulings upon the negative.

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