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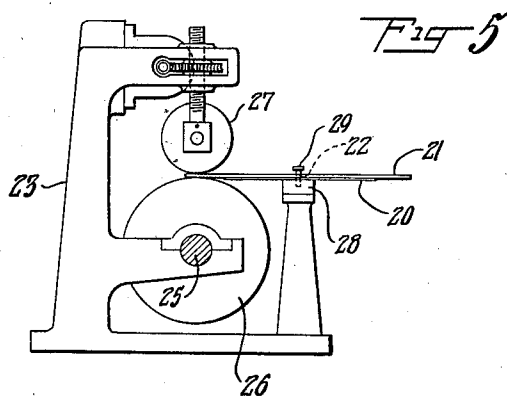
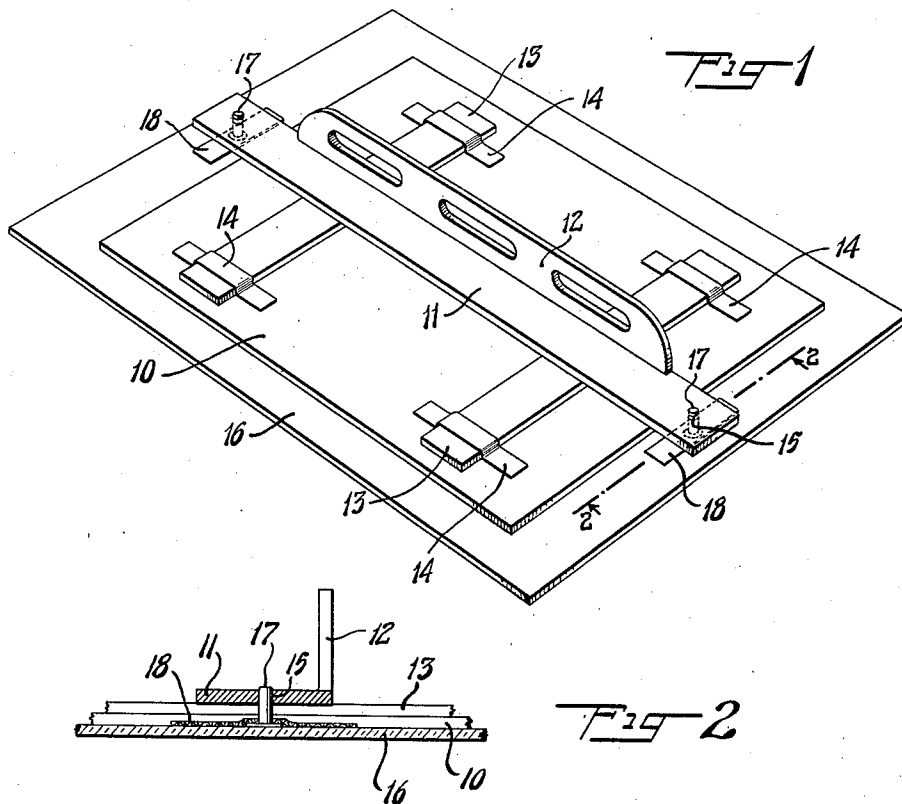
H. BLAAUBOER ET AL

2,334,745

METHOD OF LAYDOWN FOR PRINTING OPERATIONS

Filed Oct. 5, 1940

2 Sheets-Sheet 1



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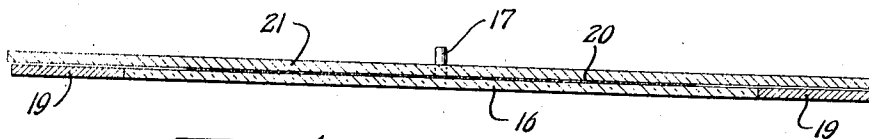
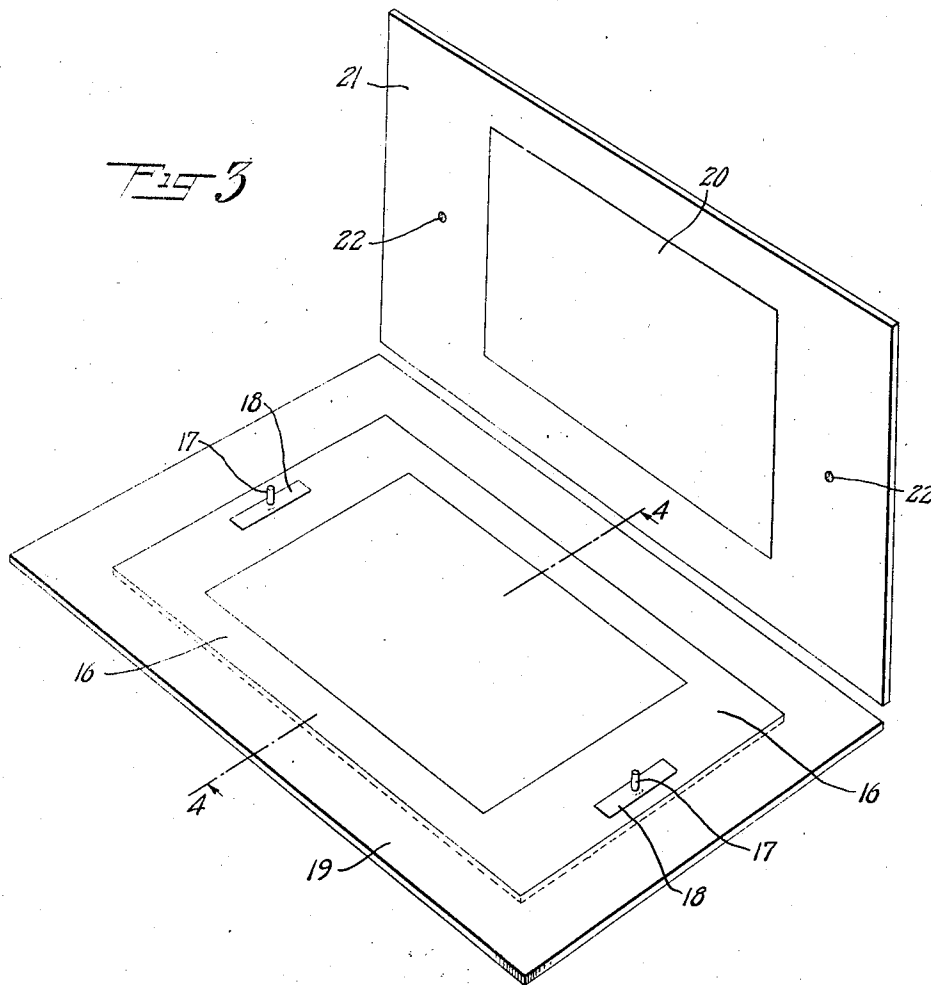
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METHOD OF LAYDOWN FOR PRINTING OPERATIONS

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METHOD OF LAY-DOWN FOR PRINTING OPERATIONS

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8 Claims. (Cl. 95-5.7)

This invention relates to the preparation of printing cylinders or rolls and relates particularly to methods for assembling layouts to be used in the preparation of printing cylinders or rolls for use in multi-color printing operations.

In accordance with the prior practice, it is usual in preparing such printing cylinders to make color separation negatives of the subject matter to be reproduced and from these negatives to make separation positives.

Inasmuch as the final printing cylinder may be of such size that it can print four pages of a newspaper or magazine, four negatives of one separation color, but of different subjects, are assembled to form a suitable layout. This is accomplished by fastening one negative of the set of four different negatives to an arm of a generally H-shaped glass frame. The master assembly formed by the H-shaped frame and the negative fixed to one arm thereof is superimposed upon a glass plate upon which a corresponding positive from one set of separation negatives is laid.

Two of the arms of the glass frame are provided with apertures and, the glass plate is provided with a pair of lugs which are received within the apertures in the arms of the H-shaped frame to thereby locate the H-shaped frame thereon.

With the separation positive beneath the separation negative, the positive is adjusted into register with the negative and taped to the glass plate, after which the master negative assembly is removed.

The other negatives which form four different pages of the assembly, are successively taped to different arms of the H-shaped frame and the positives assembled on the glass plate in a like manner by registering them with the master negative assembly, thus forming a four page, single-color layout.

Glass members are then cut to fit between the assembled positives to provide a smooth surface which will not bend the zinc plate carrying the carbon tissue to be printed by contact with the assembled positives.

After the carbon tissue has been exposed, it is transferred to a printing cylinder which is then staged and etched in the usual manner.

While, as indicated above, this procedure is generally used, it has a number of disadvantages, from a production standpoint, that are rather serious.

In the first place, inasmuch as the positives are assembled upon a flat glass plate and a smooth surface is required for printing or ex-

posing the carbon tissue, it is necessary to cut pieces of glass to fill the spaces between the assembled positives. The spaces between the positives are not always of the same area, and as a consequence, the glass filling strips must be individually cut to shape and size so that they fit accurately between the positives. Therefore, in large printing establishments, the full time work of one or more men is required merely to cut the glass strips or plates to fit between the positives, thereby considerably increasing the cost of preparation of the printing cylinders.

A more serious disadvantage of the present practice is that when a plate has been made for preparing a printing cylinder which will print, for example, four pages of a magazine or newspaper, it is impossible to change this plate without completely tearing down all of the sets of plates and reassembling them as described above.

When the color plates are to be used in preparing cylinders to be used in printing newspapers and magazines in different parts of the country, it quite often happens that they must be changed, for the reason that the issue of the newspaper may be planned to have the color work on pages other than those provided by the color layout plates. Therefore, such changes as transposition of one of the positives to a different location on the master plate require all of the plates to be torn down and reassembled, thus multiplying the work required in preparing the printing cylinders. The same thing happens when, for example, one of the plates is broken. In order to duplicate the broken plate, it is necessary to reassemble all of the plates to assure register of the various color separation positives so that the printing cylinders prepared will print in register.

An object of the present invention is to provide a method of preparing printing cylinders which overcomes the disadvantages of the prior method described above.

Another object of the invention is to provide a simplified method of assembling color separation positives which permits the sets of positives to be assembled and registered individually instead of in groups.

A further object of the invention is to provide a method of assembling sets of separation positives which permits ready duplication of or rearrangement of the subject matters on the printing cylinders.

Other objects of the invention will become apparent from the description of a typical form of process embodying the invention.

In accordance with the present invention, the

various separation positives of, for example, one color set are registered with a master layout including one of the separation negatives and the positives themselves are provided with registering means which assures their accurate location in a master assembly.

Inasmuch as each of the separation positives is provided with a registering means, it can be disposed in any desired position relative to the other separation positives or can be interchanged with them, thereby permitting a layout to be prepared, disassembled or rearranged while omitting the preliminary steps of registering the positive with the negative. Moreover, the positives can be exposed individually to the carbon tissues, and it is unnecessary to build up a layout plate with interposed glass strips in order to provide a flat surface for contact with the carbon tissue on the zinc plate.

For a better understanding of the present invention, reference may be had to the accompanying drawings, in which

Fig. 1 is a perspective view of a device used for registering a negative and a corresponding separation positive and for positioning a registering means on the positive;

Fig. 2 is a view in section taken on line 2—2 of Fig. 1 partly broken away;

Fig. 3 is a perspective view disclosing a method of applying the carbon tissue on a backing plate to the positive for exposing the carbon tissue;

Fig. 4 is a view in section taken on line 4—4 of Fig. 3; and

Fig. 5 is a diagrammatic view showing a method of applying the carbon tissue to the cylinder prior to staging and etching the cylinder.

In accordance with the present invention, separation negatives of the subject matter to be reproduced are taken in the usual way and separation positives are made from the separation negatives.

In order to assure register of each of the separation positives so that there will be no blurring of the lines of the print, one of the negatives 10, for example, a yellow separation negative, is fixed to a frame (shown in Figs. 1 and 2), which consists of a metal bar 11 having an upstanding flange 12 thereon permitting it to be gripped and manipulated. The bar 11 has a pair of glass strips 13 fixed to its lower surface to which the separation negative is secured as by means of strips of tape 14. The negative 10 is fixed in a predetermined relationship to the bar 11, for example, its center may coincide with the center point of the bar 11.

The bar 11 is provided at each end with the apertures 15 which constitute elements for aiding in the registering of the separation positive 16. In registering of the positive 16 with the negative 10, the latter is placed on top of the positive 16 and moved until the lines or designs thereon coincide perfectly. When this is accomplished, the lugs 17, which are secured to a piece of thin tape 18 and have been placed in the apertures 15 of the bar 11, are secured tightly to the surface of the positive 16.

When these lugs 17 have been secured to the positive, it will be apparent that the positive will always be in register with the negative when the lugs 17 are inserted in the apertures 15.

Each of the separation positives of the set corresponding to the negative 10 is treated in a like manner, thereby producing, for example, three separation positives, each of which registers accurately with the separation negative 10.

Inasmuch as the separation positives 16 register with the separation negative 10, they will also register with each other on any device which has apertures corresponding to the location of the apertures 15 on the bar 11.

Advantage is taken of this arrangement of the lugs 17 in preparing the carbon tissues from which the printing cylinder is prepared. This procedure is illustrated in Figs. 3 and 4. The positive 16 with the positioning lugs 17 thereon is placed within a metal frame 19, the upper surface of which lies flush with the upper surface of the positive. This assembly is laid upon a printing table so that light may be flashed through the positive in order to expose the carbon tissue 20 which is secured by gummy material to one face of a zinc plate 21. The zinc plate 21 is provided with a pair of apertures 22 which are spaced the same distance apart as the apertures 15 in the bar 11 to which the negative 10 is secured. Each zinc plate 21 upon which a carbon tissue print is made, is provided with apertures of similar location and spacing. Therefore, when the zinc plate 21 with the carbon tissue 20 is laid on top of the positive 16 with the lugs 17 disposed in the apertures 22, the resulting exposure upon the carbon tissue will have a definite relationship to the registering apertures 22.

It will be understood that the carbon tissue 20 has been exposed to a screen of suitable type prior to its exposure to the positive 16 so that the result of the exposure is a screened carbon tissue negative such as is commonly used in the preparation of printing cylinders.

After the carbon tissue 20 has been exposed, the zinc plate 21 is transferred to the laydown machine which, as illustrated, may consist of a frame 23 having bearing supports for the axes 25 of a copper surfaced cylinder 26. The frame 23 also supports for vertical movement a second roll 27 having a resilient surface for pressing the zinc plate 21 into contact with the cylinder 26. When the cylinder is wetted the carbon tissue 20 will adhere to the cylinder and be stripped from the plate 21 as it is drawn between the cylinder 26 and the roll 27. The plate 21 is positioned accurately with respect to the cylinder 26 by means of the bar 28 which is provided with apertures for receiving the dowels 29 spaced exactly the same as the apertures 22 in the zinc plates 21. To apply the carbon tissue to the cylinder, the roll 27 is raised and the dowels 29 are passed through the apertures 22 into the apertures in the bar 28. The plate 21 is then positioned in a predetermined relationship with respect to the cylinder 26. The roll 27 is then lowered forcing the edge portion of the zinc plate 21 against the cylinder 26. The dowels 29 are removed and the cylinder 26 rotated, drawing the plate 21 into the nip of the cylinder 26 and the roll 27 and transferring the carbon tissue to the cylinder 26.

Thus one page, for example, of one separation color has been applied to the surface of the cylinder. Other carbon tissues corresponding to other pages and of the same separation color may likewise be applied to the cylinder 26 either successively or in groups by locating them in other positions on the bar 28 or by starting them onto the cylinder at a different zone. In this way, four pages of one separation color may be applied to the surface of the cylinder. In a similar way, four pages of another separation color can be applied to another cylinder with the assurance that

the carbon tissues will be in corresponding positions on the several cylinders.

After the carbon tissues have been applied to the cylinders 26, they may be developed, staged in the usual way by applying an acid-resisting material to the portions not to be etched and the remainder of the surfaces etched to produce printing surfaces.

With the cylinders prepared in this way, each of the positives having been so arranged initially that they will have correspondingly positioned registering means and each of the latter successive steps maintaining this registered position, the cylinders themselves will print exactly in register on a web when accurately adjusted in the printing press, thereby assuring the production of clean, sharp color prints.

The principal advantage of the process described above is that each positive and the carbon tissue prints may be handled separately and thus the carbon tissue prints may be located upon the bar 28 in any desired position according to the desired layout of the magazine or the newspaper. In any event, the various carbon tissues made from the separation positives of the same subject, if located in the same relationship to the bar 28 by the dowels 29, will be accurately transferred to the several printing cylinders. This permits the newspaper or magazine to be laid out by the publisher in any desired order without the necessity of going through all of the steps which would normally be required for preparing the entire layout from the initial assembly of the negatives and positives.

In addition, the difficult and skill-requiring task of preparing the master layout on a glass plate is entirely eliminated and the danger of disorganization of the master plate by breakage is entirely overcome.

From the foregoing description of the process embodying the invention, it will be apparent that a greatly simplified and far more flexible process of preparing printing cylinders has been provided and that the process assures a more accurate register of the etched surfaces of the cylinders than could be obtained by the prior processes.

It will be apparent, moreover, that other mechanical agencies may be used for registering the various elements used in the process and that the order of operations may be varied without departing from the invention. Therefore the process and apparatus described above should be considered as illustrative only and not as limiting the scope of the following claims.

We claim:

1. In a process for preparing printing cylinders, the steps of placing a positive transparency of a subject in register with a negative of said subject having registering means thereon, applying registering means to said positive transparency complementary to and interfitting with said registering means on said negative, exposing a carbon tissue through said positive transparency while said registering means on said positive transparency interfits with complementary registering means fixed to said carbon tissue, and applying said carbon tissues directly to a cylinder.

2. In a process for preparing printing cylinders, the steps of placing successive transparent color-separation positives of a subject in register with a separation negative of said subject having registering means fixed thereto, fixing to each of said positives registering means complementary to and interfitting with the registering means on said negative while each of said positives and

the negative are in register, exposing carbon tissues through said positives while the registering means on each positive interfits with complementary registering means fixed to said carbon tissues, and applying said carbon tissues directly to different cylinders.

3. In a process for preparing printing cylinders, the steps of placing positive transparencies of different subjects successively in register with negatives of the corresponding subjects and different carbon tissues, said negatives and carbon tissues having correspondingly positioned registering means fixed thereto, applying to said positive transparencies registering means complementary to and interfitting with the registering means fixed to said corresponding negatives while in contact with said negatives, exposing said carbon tissues through said positive transparencies, temporarily locating said exposed carbon tissues in different positions on a laydown means by locating means complementary to and interfitting with said registering means on said carbon tissues, and transferring said carbon tissues to different areas of said cylinder to produce a complete layout of said different subjects.

4. A process for preparing printing cylinders adapted to print a plurality of subjects comprising registering a positive of a subject with a negative of said subject having registering means affixed thereto, applying to said positive a registering means complementary to and interfitting with the first-mentioned registering means while said negative and positive are in register, exposing through said positive a carbon tissue having registering means corresponding to the registering means fixed to said negative while the registering means on said positive and said carbon tissue are in alignment, producing a second exposed carbon tissue of a different subject having registering means thereon, applying said carbon tissues to a printing cylinder from a laydown means having differently positioned means complementary to and interfitting with the registering means on said carbon tissue to provide a multiple subject layout on said cylinder, and etching said cylinder.

5. A process for preparing printing cylinders, comprising registering a plurality of positives of different subject matters with corresponding negatives of said subject matters, fixing to said corresponding negatives and positives complementary and interfitting registering means, exposing carbon tissues having registering means corresponding to the registering means fixed to said negatives through said positives while the registering means on said carbon tissues and positives are in register, positioning said carbon tissues on a laydown means by registering means in different positions on said laydown means corresponding to the registering means on said positives, transferring said carbon tissues to a cylinder in positions to form a desired multiple subject layout, and etching said cylinder.

6. In a process for preparing printing cylinders, the steps of placing a transparent photographic reproduction of a subject in register with another photographic reproduction of said subject having registering means thereon, applying registering means to said transparent reproduction complementary to and interfitting with said registering means on said another reproduction, exposing a carbon tissue through said transparent reproduction while said registering means on said transparent reproduction interfits with complementary registering means fixed to said carbon

tissue, locating said tissue temporarily on a laydown means by locating means complementary to and interfitting with said registering means on said tissue, and transferring said tissue from said laydown means to a cylinder.

7. In a process for preparing printing cylinders, the steps of placing successive transparent color-separation positives of a subject in register with a separation negative of said subject having registering means fixed thereto, fixing to said positives registering means complementary to and interfitting with the registering means on said negative while said positives are registered with said negative, exposing carbon tissues through said positives while the registering means on each positive interfit with complementary registering means fixed to said carbon tissues, locating each tissue temporarily on a laydown means by locating means complementary to and interfitting with said registering means on said tissue, and transferring each tissue from said laydown means to a different cylinder.

8. In a process for preparing printing cylinders, the steps of placing color-separation positives of different subjects but of the same separation color successively in register with color-separation negatives of corresponding subjects and different carbon tissues, said negatives and said carbon tissues having correspondingly positioned registering means fixed thereto, applying registering means to each positive complementary to and interfitting with the registering means fixed to said negatives while in register with said negatives, exposing said carbon tissues through said separation positives while registered therewith, temporarily locating said tissues in different positions on a laydown means by locating means complementary to and interfitting with said registering means on said tissues, and transferring said carbon tissues to different areas of said cylinder to produce a complete layout of said different subjects of the same separation color.

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