Jan. 12, 1954 F. P. LE TOURNEAU ET AL 2,665,984

METHOD FOR MAKING COMBINED LINE AND HALFTONE NEGATIVES

Filed Feb. 27, 1950

2 Sheets-Sheet 1

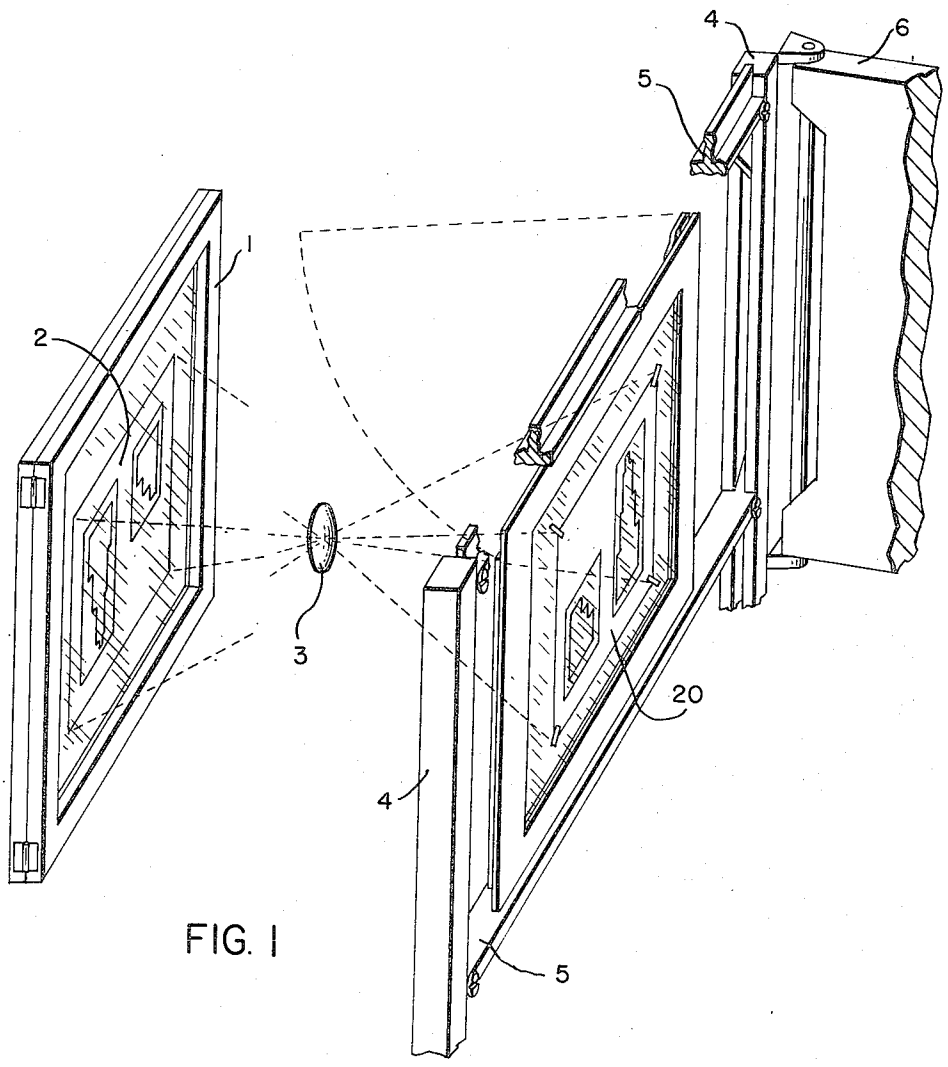


FIG. 1

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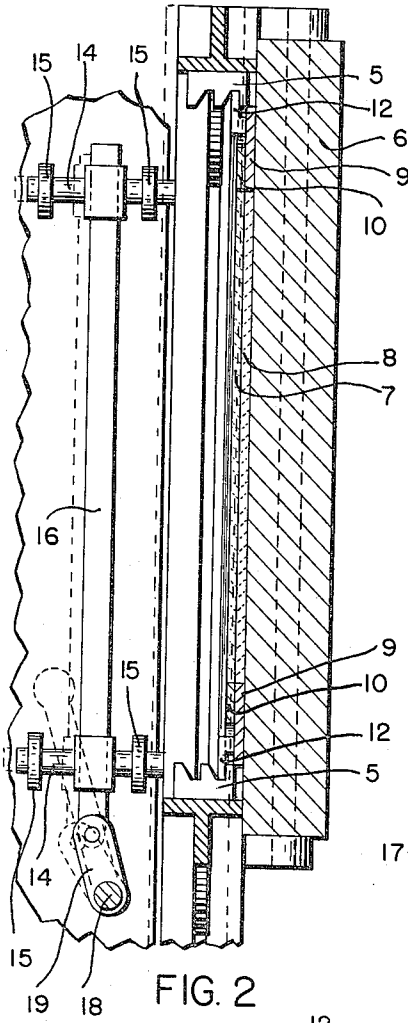


FIG. 2

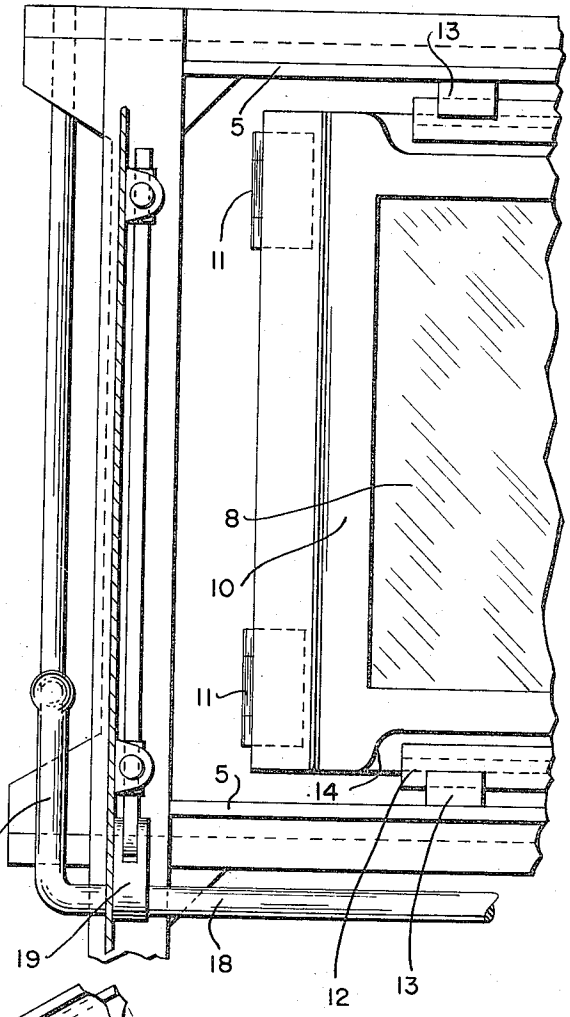


FIG. 3

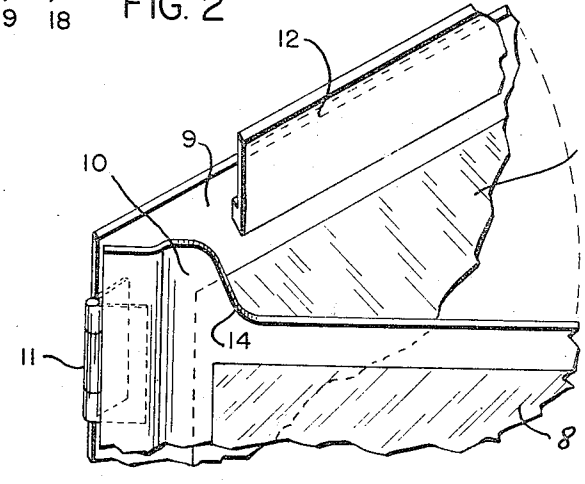


FIG. 4

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METHOD FOR MAKING COMBINED LINE AND HALFTONE NEGATIVES

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Application February 27, 1950, Serial No. 146,557

2 Claims. (Cl. 95—5)

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This invention relates to the art of printing and has special reference to the method and means for making of combined line and half-tone negatives, thus providing a very effective short cut in plate making.

In the printing trade, it is often necessary to print pictures and reading matter in one operation; however, pictures cannot be printed satisfactorily as they are taken, they must be given a so-called screen finish in order to get the necessary shading or color tone of the original picture. This is done by using a so-called half-tone screen when making the negative of the pictures on the copyboard, to prepare the negative for transferring the pictures to the photo-sensitive plates for producing the plate for printing.

In printing ordinary lettering or the like, best results are obtained without the half-tone feature as the latter leaves very ragged edges on the letters rather than clear and sharp print as desired.

In order to procure the best results, half-tone pictures and straight line printing must be combined on the plate which is used for printing. However, no efficient means has been presented to the trade to-date for producing a satisfactory combined negative, quickly and inexpensively, from which a printing plate may be made.

In the past, it has been quite a job to make such plates. One of the common methods being to "shoot" the pictures with a half-tone screen, shoot the printed matter on plain film with a separate operation, then the parts of the two negatives obtained are stripped together to form a complete sheet from which the printing plate may be made. This method has many disadvantages, though it is in common use, as it requires the assembly of two separate sheets for placing the copy on the copy board, and requires the use of much more film which is wasted as it is cut away when the individual parts are stripped together to form the sheet. It is quite a difficult task to assemble the parts of the negatives in the exact positions required and requires a great deal of skill. The parts may easily slip slightly out of alinement when the stripping is being done as it is entirely a hand cutting and glueing process. In addition, much time and labor are required to complete each sheet from which a printing plate may be made.

Another method used is to make a drop out negative in which the copy is shot in one exposure and the film is developed until the background will be black. However, this method

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gives a very ragged appearing line due to the half-tone screen.

A third method used is to paint out the portions of the copy from which the dots of the half-tone screen are to be eliminated with a fluorescent paint. This method requires a skilled artist and much time to accomplish, and sometimes the results are not too good.

It is, therefore, one of the principal objects of this invention to provide an improved method and means for preparing combined line and half-tone negatives for the making of printing plates whereby said negatives may be made quickly, easily, and with least complicated procedures.

Other objects are to eliminate a large proportion of the skilled artistry required for preparing the copy from which the negatives are made, to eliminate the stripping required to prepare a complete negative sheet, and to eliminate film waste in the making of a complete negative sheet from which printing plates may be made.

Another object is to provide a combined viewer and mask holder which can be used within the copying camera for preparing the complete negative sheet with least work and artistry.

Another object is to provide a method and means which is efficient yet will not require the learning of new and special techniques, that is, one who now works in the trade will have little difficulty making the adjustment to the new system.

These and other objects and advantages will become more apparent as the description of the invention proceeds.

In the accompanying drawing forming a part of this application:

Fig. 1 is a diagrammatic perspective view illustrating the invention.

Fig. 2 is a vertical sectional view through the rearmost end of a camera, such as are used in printing establishments, showing the combined viewer and holder in place.

Fig. 3 is a fragmental rear elevational view of the parts shown in Fig. 2.

Fig. 4 is a fragmental perspective view of the combined viewer and mask holder.

In the drawing, the reference numeral 1 indicates the copyboard as used to hold copy 2 for photographing to make a film negative from which printing plates are made. The numeral 3 indicates the lens of a conventional copying camera, 4—4 indicate the spaced supports for a conventional screen holder (not shown), and 5—5 indicate the vertically movable horizontal supports for said screen holder. The numeral 6

indicates the film holder of the camera, which in this case is shown as a door hinged to the camera frame, the door being one of the vacuum holder types, and being adapted to be pivoted horizontally into operating position or out of the way when the conventional ground glass viewer, (not shown) is in use. This latter viewer is usually pivotally carried on the camera frame on the side opposite to the film holder. All of this structure is conventional, and, it is deemed, needs no further explanation here.

In practicing our invention, we employ the conventional screen holder 4—4—5—5 to carry our combined viewer and mask holder 7—8, the latter comprising a plate of transparent clear material, such as glass, indicated at 7, and a plate of ground glass or the like, indicated at 8. The plates 7 and 8 are each carried in a suitable frame 9 and 10, respectively, and are, preferably, hinged together as at 11. The plates are held in the frame so as to abut each other, and so that the mask holder 7 may abut the half-tone screen or the film, as shown in Fig. 2 of the drawing.

The frame 9 is provided with a projecting lug 12 along its opposed upper and lower edges so that the viewer and holder may be installed in the conventional screen holder 4—4—5—5 as shown, the latter having grooved members 13 which receive the conventional screen holder, which also receive the lugs 12—12 and hold the viewer and holder in position in the camera. The frame 10 is, of course, cut away as at 14 to make room for the lugs 12.

It will be seen, from the above, that the clear transparent plate 7 is held in fixed position in the conventional screen holder, and that the ground glass 8 is movable so as to rest against the clear glass as shown in Fig. 2, or to be swung away from the clear glass as shown in dotted lines, Figs. 1 and 4.

It is to be noted that the conventional screen holder of copying cameras is reciprocably mounted at the rear end of the camera so that the relation of the screen to the film holder may be adjusted. The mechanism for supporting and reciprocating the screen holder comprises a pair of shafts 14—14 carried on each side of the camera by means of pairs of arms 15—15 which are perforated to slidably receive the shafts 14—14. The screen holder is carried by said shafts at one end of the latter, and a link arm 16 joins the shafts together rigidly. An operating arm 17 is provided on a shaft 18, and a cam 19 is provided on the shaft 18 adjacent each outer end of the frame. The cams 19 are connected to their adjacent link arms 16 as shown. It is deemed apparent that the screen holder can be reciprocated by the operating arm 19 to adjust the relationship of the holder to the film holder 6. This latter feature will be employed to advantage in the practice of the instant invention.

To prepare a combined line and half-tone negative by the instant method, the copy 2, for a complete sheet or printing plate, is mounted on the copyboard 1, and the combined ground glass and clear glass viewer and holder is mounted in the conventional screen holder. The operating arm 17 is employed to place the ground glass 8 in the exact position which will later be occupied by the unexposed film. The position of the ground glass can readily be accomplished by one skilled in the art of negative production, of course. With the glass 8 in proper position, the clear glass 7 is against the rear face of the ground glass, and toward the camera operator. With the necessary lighting and the camera shutter open, the image of the copy will be very clearly seen on the ground glass, and the image may be brought into focus and position on the ground glass for proper exposure on the film.

Next, a sheet of transparent mask material, such as cellophane, of suitable color, such as red, is secured against the clear plate 7 to cover the area of the image. The image may readily be seen, of course, through the mask material, and the mask material may be cut out to uncover the portions of the copy image which it is desired to expose with the first exposure made with the camera. The portion of the image which is not uncovered, or over which the mask material still is secured, will not be exposed on the film, as the color red will filter out all light which would affect the film. It is deemed obvious that different types of film may require a different color mask material as all types of films do not have the same color sensitivity.

As an example, we will say that the portion of the image which was unmasked was the illustration or picture portion, and it is necessary to expose this portion on the negative through a half-tone screen. With the mask material cut out, the ground glass viewer may be removed from in front of the clear glass mask holder, as by swinging it inwardly into the camera bellows, and the screen holder is moved forward by the operating arm 17. This is to permit the film holder 6 to occupy the exact position which the ground glass previously occupied so that focus and image placement will be exactly correct. A film is placed on the film holder, and in this case, is held by a vacuum suction against the inner face of the door 6.

Because this is to be a half-tone shot, a half-tone screen, of the contact type, is placed over the film and the door is swung into place across the back of the camera. The mask holder, with the mask attached thereto, is moved rearwardly against the film holder. This brings the mask 20 into contact with the half-tone screen, which in turn is in contact with the film. The film is now exposed in the usual manner, however, only the unmasked portions thereof will be affected by the light.

The film holder is then swung away and the half-tone screen is removed from in front of the film. The mask material which was cut away from the mask material 20 is then replaced where it was taken from and the originally used mask material is removed. The film holder is then swung back into place, the mask holder is moved back to contact the film, and the film is again exposed. This time, however, the half-tone screen is not used and the copy is photographed directly on to the film.

The film is then developed, and a complete sheet negative is obtained which needs no stripping at all, and which is very convenient to handle. In addition, no film has been wasted, the only waste being the inexpensive mask material. There is no time and labor expended in stripping two negatives together, and no problem of alinements of parts is presented in such stripping, of course.

An added result is obtained in the above described method: that is, when the negative is a combined line and half-tone exposure, the results obtained from the line exposure are much improved, as the developing time for the film can be watched and judged by the highlights of the half-tone, and therefore, the line exposure will have its desired "solid black" when printed.

It is very difficult to judge the developing of a line exposure alone, as is well known in the art.

While we have here shown one specific form of viewer and mask holder for the practice of our invention, it is deemed apparent that other forms of holders may be used within the scope of the invention.

Having thus described our invention, what we claim is:

1. The method of masking out portions of an image to prevent same from appearing on a film in a camera when said film is exposed which comprises; inserting a viewing glass in the position to be occupied by said film, placing a transparent sheet adjacent the rear face of said glass, securing masking material to said sheet to cover the portions of said image which are to be masked out, moving said viewing glass out of line with light causing said image, moving said sheet and mask to a position immediately forwardly of the position formerly occupied by said viewing glass, and placing said film in the position previously occupied by said viewing glass whereby said mask is adjacent said film when the latter is exposed.

2. The method of making a combined line and half-tone negative from copy held before a camera which comprises; inserting a clear transparent mask holder within said camera behind a ground glass viewer on which an image of said copy is projected, securing mask material to said mask holder to cover portions of said image which are not to be exposed, removing said viewer from before said holder, placing a film

in the position formerly occupied by said viewer, placing a half-tone screen in front of said film, placing said mask holder and mask immediately in front of said screen and film, exposing said film, replacing said viewing glass in its original position with said holder after said screen and film have been removed, placing masking material over the portions of said image which had been exposed and removing the previously used mask material, removing said viewer, replacing said film in the place of said viewer with said mask and holder directly in front thereof, exposing said film a second time, and developing said film.

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