July 6, 1948. E. H. GROGAN 2,444,505

CONTACT PRINTING FRAME FOR AUTOMATIC PRINTING MACHINES

Original Filed Feb. 16, 1945

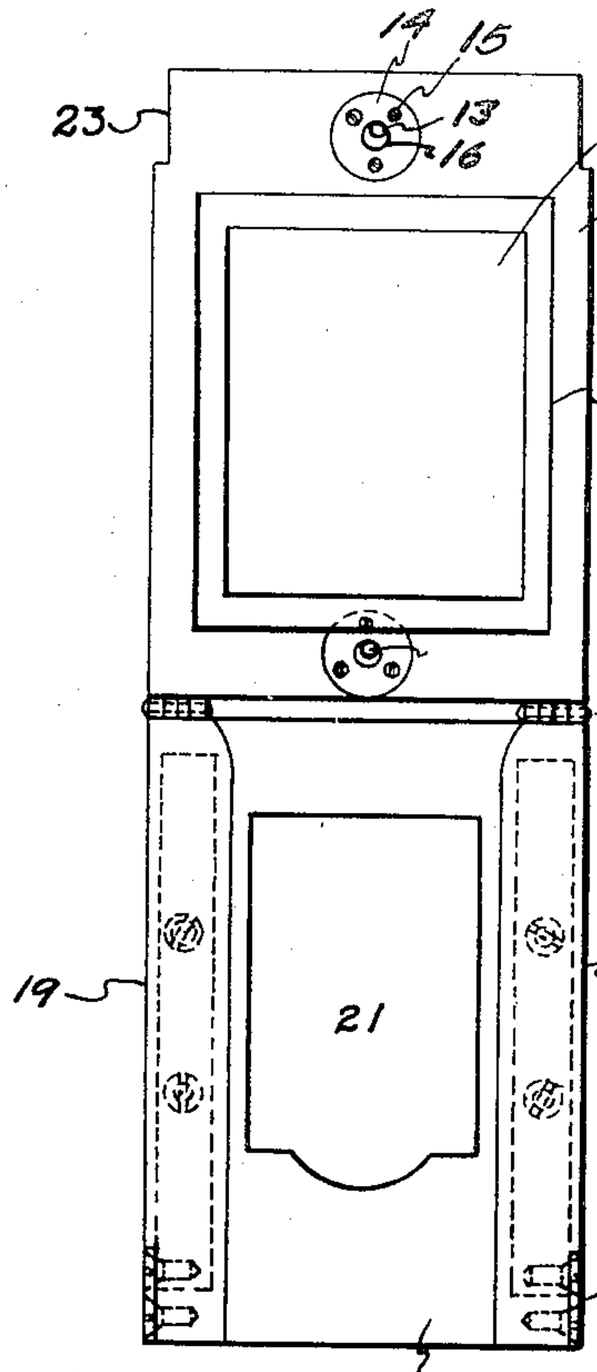

FIG. 1

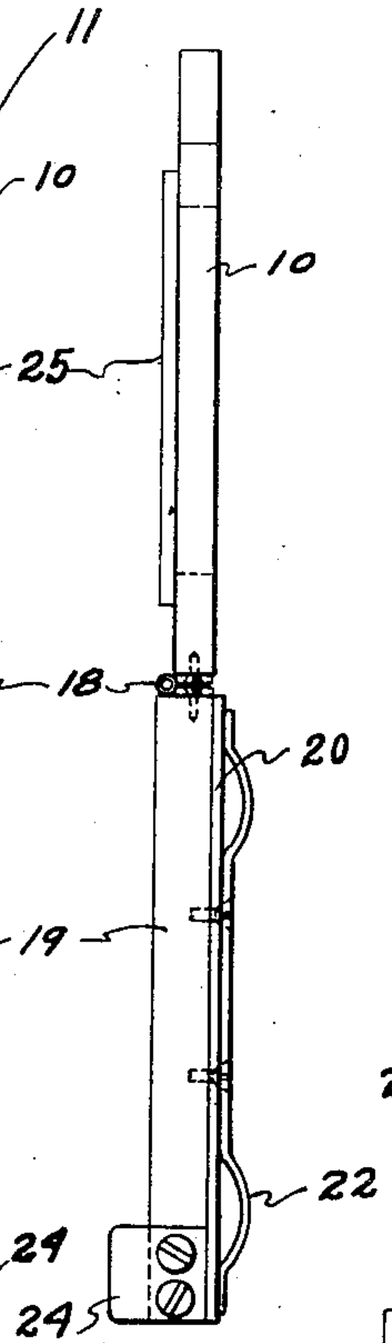

FIG. 2

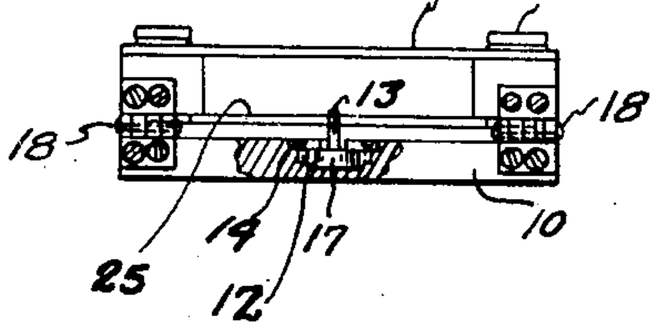

FIG. 3

FIG. 4

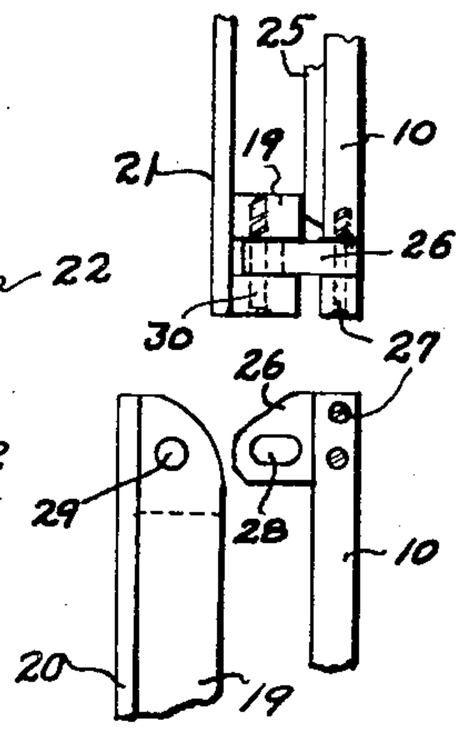

FIG. 5

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CONTACT PRINTING FRAME FOR AUTOMATIC PRINTING MACHINES

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4 Claims. (Cl. 95—77)

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This invention is a division of my co-pending application Serial No. 579,719 filed February 26, 1945, now Patent 2,426,092, August 19, 1947.

More particularly it relates to a novel form of negative holder for use in automatic photo printers such as is disclosed in the above application.

The invention is illustrated and may be understood by referring to the accompanying drawings. Fig. 1 is a view of the inside of the open holder. Fig. 2 is a view of the open holder from the side. Fig. 3 is an end view of the closed holder. Fig. 4 is an end view of a modified hinge and Fig. 5 is a side view of the hinge parts.

This plate holder is designed to slide into a machine, such as is illustrated in the parent application, on an appropriate track in the casting forming the frame. It is moved into position in front of an opening through which light passes to effect exposure of a sensitized card, which brings the opening in the back of the holder opposite a platen which is thrust into the opening at appropriate intervals to hold a sensitized card firmly in printing position until the exposure is made and then moves out of the opening to permit the exposed card to be released and an unexposed card to be introduced. The plate holder is closed as in Fig. 3 when in the printing machine.

The plate holder consists of a frame 10 having an opening 11 therein slightly larger than the picture to be printed. The plate or negative is laid over this opening.

At each end of frame 10 is a recess 12. In the recess is placed a pin 13, which passes through a plate 14, covering the recess and fitting flush with the inner surface of frame 10. Plate 14 may be held in place, for example, by screws 15. There is an opening 16 in plate 14 through which pin 13 passes. This opening is larger in diameter than pin 13. In the recess, and forming part of pin 13 is a head 17, which may be flat and of slightly smaller diameter than recess 12. The diameter of head 17 is at least as much smaller than recess 12 as the difference in diameter of pin 13 and opening 16. This permits the pin to be shifted slightly in position. The head 17, is of sufficient thickness that it may be held firmly in place when plate 14 is fastened in position.

Hinged to frame 10 by hinges 18 are bars 19. These comprise two bars of metal or wood or other appropriate material, which are spaced apart a distance sufficient to permit the free passage of a falling card between them. They are tapered near the hinge in order to guide a card into the proper position as it falls through the

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opening in the top of the assembled plate holder. Back plate 20 has an opening 21, the dimensions of which correspond to the platen of the printing machine, except for the semicircular opening provided for purposes of adjusting the plate or film. Attached to each of the bars 19 are springs 22, which may be used to hold the plate holder firmly in the machine. After the plate holder is in position it is held by set screws.

Opening 11 in frame 10 may be overlaid with a mask which provides a margin of proper shape and size on the printed card. The mask, not shown, fits over pins 13, the positions of which are adjusted until the mask is accurately placed. A transparent plate 25 is placed over the mask and the negative is placed on the plate. The plate holder is then closed and the members 19 rest upon the edges of the film and the glass plate holding them firmly in place. The position of the negative can be adjusted by holding the two halves of the plate holder slightly apart and moving the film as desired by reaching through the semicircular aperture in back plate 20. When the film is in proper position, the halves of the holder are clamped tightly together and will then hold the negative immovably in its proper position.

Bars 24 correspond with the notch or recess 23 and preferably exert a slight spring pressure so that the two halves of the plate holder are held firmly together and in their proper relationship to each other. This avoids the necessity of special clamps.

It will be noted that frame 10 is slightly thinner than members 19 and is so hinged as to permit an even pressure on the glass plate and film when the two halves are closed.

A modification of this permitting the use of glass of varying thickness is shown in Figs. 4 and 5. A hinge member 26 is held firmly in position in a notch in member 10 by means of screws 27. The part of the hinge to be associated with member 19 contains an elongated hole 28. This member fits into a notch in the end of member 19, which has a hole 29 extending through it and threaded on its inside portion to receive a machine screw 30. The machine screw serves as a bearing or pivot for member 26 so that member 19 may be pivoted. When the transparent plate 25 is placed between members 10 and 19 and the halves closed, the inside surface of member 19 rests upon the surface of plate 18 pressing evenly over its length regardless of the thickness, since pivot pin 30 can slide back and forth for a small distance in hole 28. This

prevents breakage of the plates due to minor variations in thickness.

Members 19 have a plate attached to the back of each so that it forms a frame. The plate contains an aperture having a semicircular recess at one end, the main opening being to permit entrance of the platen and the recess being for the purpose of film adjustment above described. The two bars are of sufficient thickness to form a passageway for the cards falling down the chute of the printer. They should be of sufficient thickness that the card will not be impeded by any part of the plate holder. In the modification shown in Figs. 4 and 5, the hinged member is flush with the sides and ends so as to avoid any possible obstruction to the falling cards.

The upper end of members 19, that is the top end, is curved slightly so as to guide the falling card into the passageway between the film and the plate 20. The opening in 20 is slightly smaller than the card so that it cannot fall out or stick and is sufficiently large to accommodate the entrance of the platen. A spring 22 is attached longitudinally to each of these bars and is bent as illustrated in Fig. 2. Set screws thrust against the bowed part of these springs when the plate holder is placed in position in the machine.

An important feature of the plate holder is the device for holding the mask in position. This consists of a pin 13 attached to a head 17, the member being of a rivet-like shape. The head fits into a recess 12 in plate 10. The diameter of the recess is larger than head 17. A plate 14 fits over and closes the recess, being flush with the inside of member 10. It contains an opening substantially larger than the pin 13 so as to permit the pin being moved slightly, thus changing the position of the mask which is fitted on it and is held by a hole of a size corresponding to that of pin 13. The plate 14 is held in place by screws 15 and presses firmly against member 17 to prevent its moving, after the screws have been tightened.

Although I have described preferred embodiments of the invention, I do not intend to be limited to the exact structures illustrated.

I claim as my invention:

1. A contact printing frame for photographic negatives for printing cards in an automatic photo-printing machine having a printing platen which automatically thrusts a sensitive card to be printed into contact with a negative and holds it there during exposure, said frame comprising a first hinged section and a second hinged section, the first hinged section having an aperture for positioning a negative, a transparent plate covering the aperture, the second hinged section formed in the shape of a channel, said channel forming with said first hinged section a slotted opening extending through said printing frame when said sections are closed, said slotted opening providing a passageway through which sensitized cards can freely pass, the sides of said channel further disposed to form guiding means for guiding said sensitized cards through said slotted opening, said channel shaped section forming the back of the frame and having an aperture therein corresponding to the aperture for the negative, and means holding said hinged sections firmly together when the frame is closed.

2. In a contact printing frame for an automatic photo-printing machine for printing cards from photographic negatives, said machine having a printing platen which automatically thrusts a sensitive card to be printed into contact with a negative and holds it there during exposure, the improvement comprising a contact printing frame having a first hinged section and a second hinged section, the first hinged section having an aperture for positioning a negative, the second hinged section comprising a pair of substantially parallel bars one bar along each edge thereof, forming a slotted opening extending through said printing frame when said sections are closed, said slotted opening providing a passageway through which sensitized cards can freely pass, said pair of bars further disposed to form guiding means for guiding said sensitized cards through said slotted opening, a plate attached to said bars forming a back, said plate having an aperture of the size and shape corresponding to the size of a card to be printed, and means holding said hinged sections firmly together when the frame is closed.

3. A contact printing frame for photographic negatives for printing cards in an automatic photo-printing machine having a printing platen which automatically thrusts a sensitive card to be printed into contact with a negative and holds it there during exposure, said frame comprising two hinged sections, the first of said hinged sections having an aperture for positioning a negative, a recess positioned outside of said aperture, adjustable means for holding a mask in predetermined relationship to said negative and said aperture, said mask holding means comprising a pin having a base, said base positioned in said recess, said base smaller than said recess thereby permitting limited movement of said base in said recess, a cover for said recess having an opening larger than said pin through which said pin extends whereby limited movement of the pin is obtained, means for attaching said cover over said recess such that said base is firmly held in a predetermined position in said recess, the second of said hinged section comprising a pair of side members and a back defining a slotted passageway through said frame when the hinged sections are closed, said back having an aperture of the size and shape corresponding approximately to a sensitized card to be printed, and means holding said hinged sections firmly together when the frame is closed.

4. In a contact printing frame for an automatic photo-printing machine for printing cards from photographic negatives, said machine having a printing platen which automatically thrusts a sensitive card to be printed into contact with a negative and holds it there during exposure, the improvement comprising a contact printing frame having a first hinged section and a second hinged section, the first hinged section having a transparent section for positioning a negative, a recess positioned outside of said section, adjustable means for holding a mask in predetermined relationship with said negative in said section, said mask holding means comprising a pin having a base, said base positioned in said recess, said base being smaller than said recess thereby permitting limited movement of said base in said recess, a cover for said recess having an opening larger than said pin through which said pin extends whereby limited movement of the pin is obtained, said cover being flush with the inner surface of said first hinged section, means for attaching said cover of said recess such that said base is firmly held in a predetermined position in said recess, the second hinged section comprising a pair of substantially parallel bars one

bar along each edge thereof, said bars forming a slotted opening extending through said printing frames when said sections are closed, said slotted opening providing a passageway through which sensitized cards can freely pass, said pair of bars further disposed to form guiding means for guiding said sensitized cards through slotted opening, a plate attached to said bars forming a back, said plate having an aperture of the size and shape corresponding approximately to a sensitized card to be printed, and friction means associated with one of the hinged sections and engageable with the other hinged section to hold the sections firmly together when the holder is closed, said members being flush with the sides of said plate holder.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
761,945	Cherrill	June 7, 1904
1,434,455	Simon	Nov. 7, 1922
1,552,127	Ellingson	Sept. 1, 1925
1,745,900	Lowen	Feb. 4, 1930
2,199,305	Dewey	Apr. 30, 1940
2,251,184	Bohannon	July 29, 1941
2,257,444	Abadjieff	Sept. 30, 1941

FOREIGN PATENTS

Number	Country	Date
217,788	Switzerland	Nov. 15, 1941