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I. M. NEWGARD
DUPLICATING MACHINE
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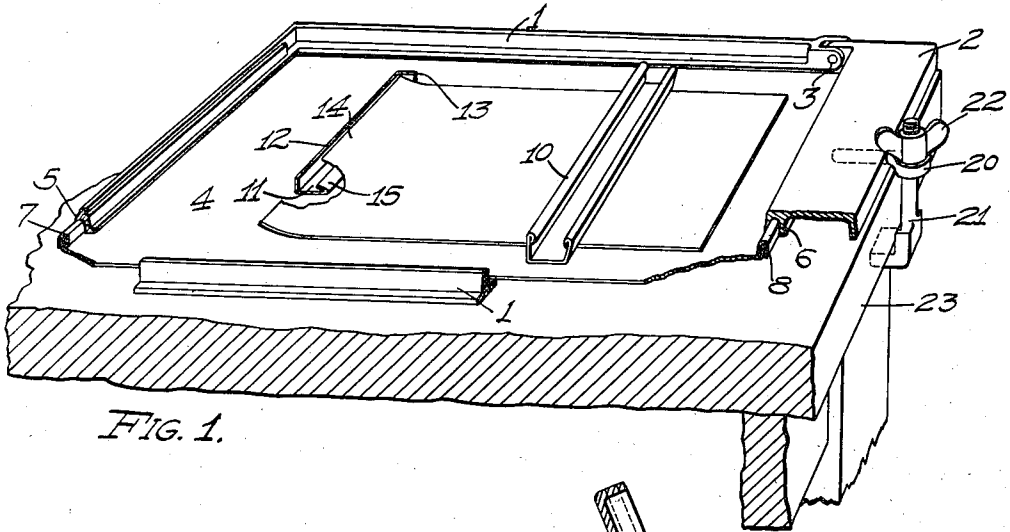


FIG. 1.

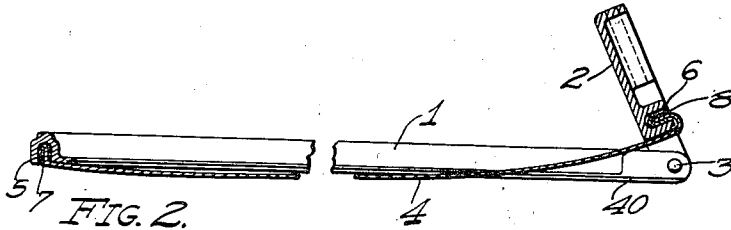


FIG. 2.

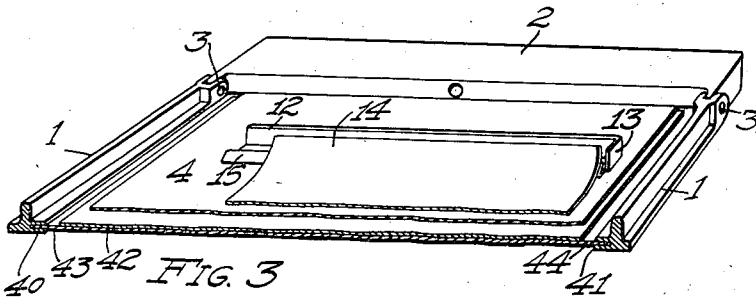


FIG. 3.

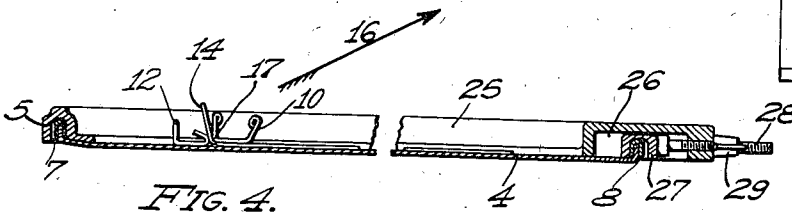


FIG. 4.

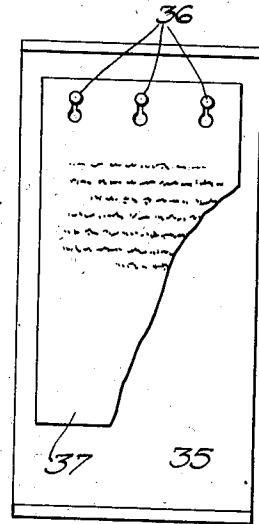


FIG. 5.

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DUPLICATING MACHINE

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12 Claims. (Cl. 101—131)

This invention relates to duplicating machines and has particular reference to a device capable of performing both hectographic and stenciling operations without the necessity of making any changes in the machine whatsoever.

The general object of the invention is to provide a simple and inexpensive device for performing such double function. To this end my object is to provide a skeletonized device for use on a table, or other suitable flat surface, and which uses such surface for its base. In this manner do I not only provide a very inexpensive device, but also eliminate a great deal of weight, making the device truly portable, even by children, and for this reason ideal for use in schools and in the home. The further objects and advantages features of the invention are hereinafter fully described and illustrated in the appended drawing, of which:

Fig. 1 illustrates, in perspective, the device of my invention set on a table, the front portion of the device and table being partly cut away for the sake of clearness.

Fig. 2 is a cross sectional side elevation, substantially through the center of the device,

Fig. 3 is a perspective view of the device, viewed from one end and with the front portion of the device cut away in order more clearly to illustrate the important features of the invention,

Fig. 4 is a cross sectional side elevation illustrating a modified form of the device, and

Fig. 5 illustrates details of construction the importance of which is hereinafter fully explained.

The device of my invention comprises a rectangular frame and this frame is, in Figs. 1, 2 and 3, shown made in two parts, 1 and 2, and these parts are pivotally assembled at 3. The frame is of a size to support a flexible printing medium 4, which for convenience hereinafter is termed the film, and it is at each end made with a downwardly directed groove, 5, 6, in which the ends of the film 4 are shown seated. For the purpose of seating, the film is provided at each end with a metal clip 7 and 8, of the proper thickness to fit the grooves.

The method of seating the film is best indicated in Fig. 2, in which the part 2 of the frame is shown upwardly turned on the pivots 3. By relatively rotating the frame parts in this manner, it is noticed that the grooves 7 and 8 are brought closer together, thereby to permit seating of the film. But in returning the parts to their initial, aligned position, as shown in

Figs. 1 and 3, it is found that the film becomes stretched very tightly and that it is held firmly in position. The frame is now laid on a table, as indicated in Fig. 1, and the device is in condition for operation.

The exposed side of the film is covered with a gelatinous substance, such as ordinarily employed in hectographing or duplicating devices, and a sheet of paper, the original to be copied, is laid, face down, on this film. A suitable instrument, such as a roller or bar, in this case a channeled squeegee bar 10, is now caused to travel back and forth over the top of the paper to bring it into complete contact with the film, the gelatinous surface of which absorbs ink from the paper. Copies are subsequently made, all as well known in the duplicating art. It is important to note, and it is well known to those versed in the art, that the paper adheres tenaciously to the film and is difficult to remove without tearing the paper or damaging the film, making the removal a slow operation.

It took me a long time to devise simple and effective means of overcoming this difficulty. Realizing that a paper stop would be necessary in order properly to locate each succeeding sheet of paper, the problem was solved by combining, in one member, means for locating the sheets of paper along one edge and corner and for simultaneously maintaining the same edge of the paper elevated above the film surface. Such means is here shown to consist of a member having a flat base 11, in contact with the film, and being made with vertical walls rising from this base to form locating stops 12 and 13 for the paper sheets. This locator, once placed on the film, is found to adhere so firmly that impact contact, due to ordinary manipulation of the device, is insufficient to dislodge or even move the locator.

A sheet of paper is now laid on the film with one end abutting the stops 12 and 13, causing a narrow strip 14 of the paper to rest on the base 11, separated from the film. It is noticed that the front edge of the locator base is shown, at 15, to be bent back at an acute angle to provide an inclined rest for the strip 14 of the paper, for the purpose which now will be explained. The channeled squeegee bar 10 is employed, in preference to a roller, because its use facilitates the removal of the paper from the film. The squeegee bar is best manipulated by inserting the four fingers of the hand into its channel and by placing the thumb against its vertical wall 10. When now the bar is drawn

along the paper, towards the locator, it is found that, as it reaches the curved front edge, it causes the paper strip 14 to rise from the incline 15 and to swing over against the wall 10.

5 The operator now slips his thumb behind this upturned portion, presses it with the thumb against the wall 10 and pulls the bar, with the paper, in the general direction of the arrow 16, see Fig. 4, and turning the bar, with a natural
10 movement of the hand, in the same direction, to keep the paper folded around the corner 17.

To prevent the frame from sliding on a smooth surface during the operation of the device, it is well to provide means for clamping the frame in position, and such means may conveniently take the shape of a perforated member 20, detachably seated in the frame part 2 and engaged by a threaded clamping member 21. A threaded nut 22 operates to draw the member 21 tightly against the underside of the table top 23. Only one such clamp is here shown, but additional clamps may, of course, be embodied in the device at any point found in need of clamping.

In Fig. 4, the frame is shown made in one piece, 25, and a grooved bar 27 is shown seated within the channelled frame end portion 26. This bar is made with a threaded projection 28, which extends through the frame wall and is, outside the wall, engaged by a nut 29. The film end 30 is seated in the groove of this bar, and the latter is thereupon drawn outward, by means of the nut 29, to stretch the film. In all other respects, the device may remain as hereinbefore described.

35 The printing medium 4 may be a gelatinous hectograph film, as hereinbefore considered, or it may be a fabric pad for use in stenciling. Such a pad, capable of absorbing a quantity of ink, is shown at 35 in Fig. 5, and it is shown made with a series of buttons 36, for engagement by the perforations of a stencil sheet 37. In this manner, a convenient and effective means of holding a stencil on an inkpad is provided, and this inkpad may be suspended in the frame in place of the gelatin film 4 and used for stenciling without in any way changing the device or modifying its operation.

Whether a gelatin film or ink pad is used, such printing medium must be made with an impervious backing to prevent ink from penetrating to the table. Good material is oil cloth, as the soft side takes gelatine coating nicely. For the ink pad, oil cloth with very thick flanneled face is preferable.

55 The device of my invention has no base. Its support furnishes the only base. The gelatinous hectograph film is elastic enough to make up for any unevenness in the surface of the support, and so good results are attained. Where, however, the stenciling inkpad is substituted, it may be necessary, in order to obtain uniform printing, to place a resilient pad beneath the inkpad. For the purpose of such pad, I have shown grooves 40, 41 cut in the inner edge of the side members of the frame, as best shown in Fig. 3. A suitable, resilient pad 42 is made with marginal fins 43, 44, of the proper thickness to slide into and to fit these grooves. When the frame part 2 is turned up, as indicated in Fig. 2, this pad may readily
70 be inserted in the grooves 43 and 44. Or the pad may be attached to the frame in any other convenient manner.

The various structures combining to form the device of my invention may be modified, the instrumentalities shown being merely illustrative

of the invention. The film slots 5, 6 may, for example, be placed horizontally to open in opposite directions, instead of being downwardly directed as shown.

I claim:

1. A self supporting rectangular frame comprising two solid yoke-shaped members having their ends pivotally joined, the frame having its cross members at each end provided with downwardly directed slots for holding a flexible printing medium, the latter being insertable in said slots when the two frame parts are swung out of line on their pivots but becoming tightly stretched when the frame parts are again swung into continued alinement.

2. The combination with a frame fitted to hold a film, of a locator comprising a base seatable on said film and held in place by adhesion, said locator having back and end stops for sheets of paper rising from said base and made with its front edge curved backward to hold the edge of said paper elevated above said film.

3. In a duplicator having a gelatinous film, a paper locator having a base seatable on said film and adhesively retained, said locator being made with walls rising from said base for locating the paper and having its front edge curved backward over the base, in combination with a squeegee bar for pressing the paper against the film, which bar, upon approaching the said curved edge, causes the paper resting on the edge to rise away from the edge and to swing toward said bar.

4. A rectangular frame made in two parts pivotally joined intermediate its ends and having its cross members at each end provided with parallel slots for holding a printing medium, the latter being insertable in said slots when the two frame parts are swung out of line on their pivots but becoming tightly stretched when the frame parts are again returned to continued alinement, a resilient backing for said printing medium, there being in the pivotally connected side members opposed longitudinal grooves for receiving said backing.

5. A rectangular frame comprising side members and two cross members rigidly combining said side members, the side members being made in two parts pivotally joined intermediate their ends and near one end thereby to provide one relatively long and one relatively short frame portion, the end members being fitted to receive the ends of a flexible printing medium which medium is insertable when the short frame portion is swung out of line and becomes stretched when the short frame again is brought into line with the long frame, and means attachable to the end member of the short frame portion for clamping the frame to a support.

6. A rectangular frame made in two portions pivotally joined, the frame joints being near one end of the frame, providing one relatively long frame portion for resting on a support and a relatively short portion capable of being swung upward for attaching a flexible printing medium, the end members of the frame being made with downwardly directed grooves for seating the ends of said printing medium, the latter being insertable in the grooves of the members when the short portion is elevated but becoming stretched when the short portion is again swung downward into alinement with the long portion, and a detachable backing, the inner longitudinal edges of the frame having inwardly directed grooves

for receiving and holding the edges of said backing.

7. The combination with a flexible printing medium and a flexible backing therefor, of a rectangular frame made in two portions pivotally joined, the end members of the frame being made with downwardly directed grooves for seating the ends of said printing medium, the latter being insertable in said grooves when the frame portions are swung out of line on their pivots but becoming stretched when the portions are again turned into continued alinement, there being in the inner edges of the frame sides inwardly directed opposed grooves for receiving said flexible backing.

8. The combination with a support, of a rectangular frame placeable on said support, said frame being made in two portions pivotally connected intermediate its ends, the end members being fitted to receive the ends of a flexible printing medium which medium is insertable when the frame portions are swung out of line but becomes stretched when the portions are again swung into continued alinement, and detachable means for clamping the frame on said support, the end member of the frame being fitted to receive and hold said detachable means.

9. The combination with a table, a flexible printing medium, and a flexible backing, of a rectangular frame placeable on the flat top of said table and made in two parts pivotally joined intermediate the ends of the frame, the frame ends being fitted to receive the ends of said printing medium when the frame parts are swung out of line and to stretch the said printing medium when the said parts are again swung into continued alinement, and detachable means for clamping the frame to the top of the table,

the frame being fitted to receive and to hold said means, the frame sides being made with opposed inwardly directed grooves for receiving said flexible backing.

10. A rectangular frame made in two parts pivotally joined intermediate its ends and having its cross members at each end fitted to receive a flexible printing medium, said medium being attachable when the two frame parts are swung out of line on their pivots, whereupon one frame part is laid on a flat support and the other part lowered on to the support, thereby to stretch the printing medium, the weight of the frame maintaining the parts in contact with the support against the tension of the printing medium.

11. A rectangular frame made in two parts pivotally joined intermediate its ends and having its cross members at each end grooved to receive a flexible printing medium, the latter being insertable in said grooves when the frame parts are swung out of line on their pivots and becoming stretched when the frame is laid flat on top of a support, the weight of the frame being sufficient to maintain it in contact with the support.

12. In a duplicator, in combination, a rectangular frame made from two solid parts pivotally joined intermediate its ends and having its cross member at each end provided with slots, a flexible rectangular printing medium having its ends reinforced with metal clips shaped to fit said slots, the printing medium being attachable to the frame by inserting said clips into the said slots when the two frame parts are swung out of line on their pivots to be stretched when the parts again are brought into continued alinement.

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