

July 2, 1957

R. A. MILLER

2,797,638

DUPLICATING MACHINE FEED TRAY

Filed Dec. 31, 1952

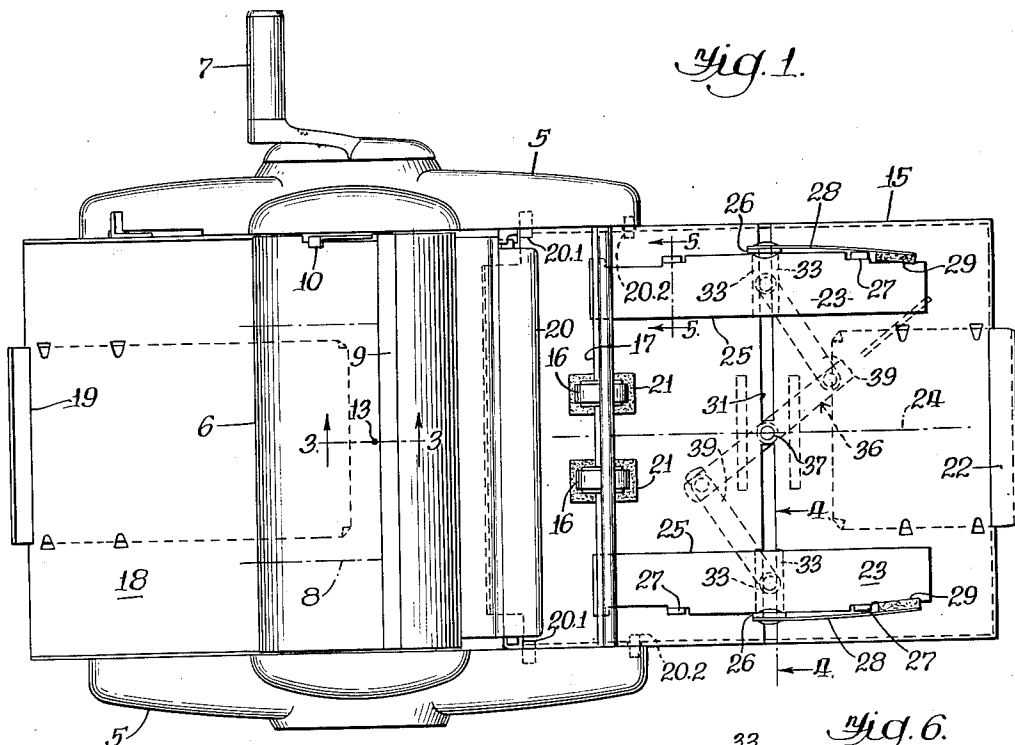


Fig. 1.

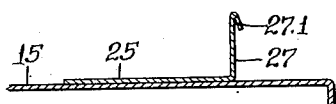


Fig. 5.

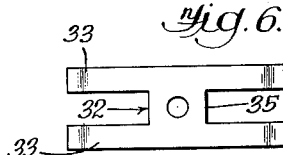


Fig. 6.

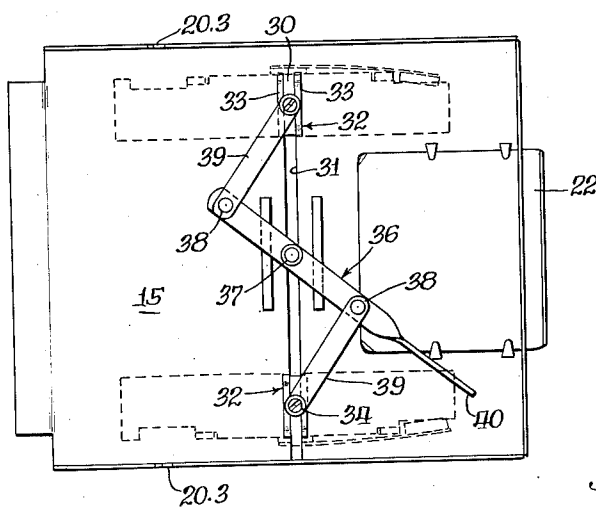


Fig. 2.

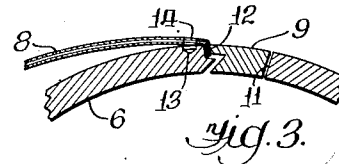


Fig. 3.

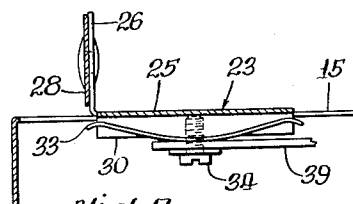


Fig. 4.

INVENTOR.
Richard A. Miller
BY
Soans, Glaister & Anderson
Attorneys

1

2,797,638

DUPLICATING MACHINE FEED TRAY

Richard A. Miller, Chicago, Ill.

Application December 31, 1952, Serial No. 328,879

1 Claim. (Cl. 101—132)

The present invention relates to duplicating machines and is more particularly concerned with means for achieving and maintaining a centered relation between the master sheet on the duplicating machine and the copy sheets being fed thereto.

In duplicating machines of the type which include a rotary drum mounting the master sheet and a coacting impression roller between which the copy sheets are successively passed, there exists the problem of centering the copy receiving sheets with respect to the master sheet on the drum in order to achieve a neat appearing copy of the material being printed. Normally, this is effected through means such as a scale or series of markings on the drum and a similar set of markings across the tray supporting the blank copy sheets. The master sheet may then be fixed on the drum between a pair of defined markings and the copy sheets placed between the corresponding markings on the tray. Provision might be made for preventing lateral displacement of the stack of copy sheets on the tray by such means as a pair of individually adjustable edge portions on the tray.

It is seen, therefore, that the conditioning of the duplicating machine for operation involves an appreciable amount of time being spent in centering the master sheet on the drum and fixing the supply of copy receiving sheets in correspondingly centered relation on the tray. Obviously, this procedure is further complicated when the copy sheets are wider or narrower than the master sheet and the proper compensating factors must be determined in order to achieve a centered relation of the copy with respect to the master sheet.

The principal objects of the present invention are to provide novel and improved means for centering the master and copy sheets, with respect to each other, on a duplicating machine; to provide for readily and automatically positioning the copy sheets in centered relation to the master sheet on the rotary drum of a duplicating machine, through means which are operable by movement of a single lever; to provide means of the type described which is automatically adaptable for use with copy sheets of various widths; and to provide means affording quick registration of the copy sheets with the center portion of the master sheet, which is simple and economical to construct, easily adaptable to existing duplicating machines, and which affords a substantial saving in the time required to set up the duplicating machine for operation.

Other objects and advantages will become more readily apparent as the disclosure progresses with reference to the accompanying drawings, wherein:

Figure 1 is a top plan view of a machine embodying the subject invention, certain parts being shown in dotted outline.

Figure 2 is a bottom plan view of the tray portion of the machine shown in Figure 1.

Figure 3 is an enlarged sectional view of a portion of the rotary drum of the duplicating machine, taken along the line 3—3 in Figure 1.

2

Figure 4 is an enlarged sectional view of a portion of the machine, taken along the line 4—4 in Figure 1.

Figure 5 is a transverse section taken on the line 5—5 of Figure 1.

Figure 6 is a plan view of the spring clip element shown in Figures 1, 2 and 4.

The duplicating machine selected to illustrate the invention includes a pair of side walls 5 rigidly held in place by suitable cross members (not shown) at each end and providing laterally spaced bearing means for rotatably mounting opposite end portions of a drum 6. The drum 6 is manually operable, through means including a crank 7, to rotate in a predetermined manner about its longitudinal axis.

The drum 6 is adapted to carry a master sheet 8 (Figure 3), imprinted with the material to be reproduced, which has one end portion releasably attached to the drum by the clamping action of a relatively movable strip 9 extending the length of the drum. Suitable biasing means (not shown) normally hold the strip 9 in position on the drum to provide therewith a smooth peripheral surface. A lever 10 adjacent one end of the drum is operable to lift the strip 9 partially out of the wedge shaped recess 11 in the drum to expose a longitudinal slot 12, whereby the leading end portion of the master sheet 8 can be inserted in the slot 12. The strip 9 is then released to resume its normal position in the recess 11 to thereby hold the end of the master sheet 8 in a clamped position on the drum, as shown in Figure 3.

The improved means which is provided for quickly centering the master sheet 8 on the drum 6 comprising a small recess 13 disposed at the midpoint of the drum along the edge of the slot 12 which receives the master sheet. A similar circular opening 14 is located at the midpoint in the leading edge portion of the sheet 8, and the registering of this opening 14 with the drum recess 13 insures an exact centering of the master sheet along the length of the drum.

The illustrated duplicating machine also includes a removable tray 15, adapted to be supported intermediate the side walls 5 adjacent one side of the drum 6. The tray 15 provides a support for a stack of blank copy sheets which are successively fed between the rotary drum 6 and an underlying impression roller (not shown) for surface contact with the master sheet 8 in order that the material on the latter may be imprinted on the copy sheet. Suitable means including a pair of rollers 16 which are fixed to a shaft 17 for rotation in response to turning movement of the crank 7 are provided for effecting movement of each copy sheet from the tray 15 through its path underlying the drum 6. The rollers 16 are preferably faced with a yieldable material, rubber or the like, to provide for frictional engagement with the uppermost copy sheet on the tray 15.

A platform 18 is disposed on the opposite side of the drum 6 in a position to receive the printed copy sheets as they leave the drum. A relatively slidable section 19 of the platform 18 provides for extension of the platform surface to accommodate various lengths of copy sheets.

The tray 15 is positionable with its inner end portion extending between the side walls 5 and disposed in underlying relation to the rollers 16 and to a portion 20 of the moisture applying means for the master sheet.

For positioning the inner end of the tray there is provided two pairs of inwardly extending studs 20.1 and 20.2 on the inner faces of the side walls 5 which are disposed to extend, respectively, above and below the tray in engagement therewith. The pins 20.2 engage a pair of slots 20.3 formed in the depending edge portions of the tray 15 to prevent relative movement therebetween. The tray 15 may also include the usual pads 21 of suitable abrasive material to facilitate movement of the copy

sheets to the drum, and an extensible portion 22 which is slidable relative to the tray to provide additional supporting area on the tray.

For effecting a centering of the copy sheets on the tray 15 there is provided a pair of edge-defining members 23 which are movable toward and away from the center line 24 which lies in a vertical plane extending through the centered recess 13 on the drum 6. Each of the members 23 is preferably in the form of a thin rectangular plate 25 having a vertically extending ear 26 disposed along the outer edge midway along the length of the plate, and having a pair of additional upstanding flanges 27 disposed along the outside edge of the plate on opposite sides of the ear 26. A resilient strap 28 is pivotally mounted at one end on the vertical ear 26 with its free end portion movable into engagement with the outside of either one of the flanges 27, as desired. To facilitate the proper engagement of the straps 28 with the flanges 27, the upper edges of the flanges 27 are bent outwardly and downwardly to form cams 27.1 over which the straps ride as they are forced downwardly (Figure 5).

The free end of the resilient strap 28 is preferably provided with a pad 29 of sponge rubber or the like for bearing against the edge of a stack of copy sheets supported on the tray. In this respect, the projecting flanges 27 serve as positioning stops for the strap 28 which is bent slightly toward the center of the tray in order that it may bear firmly against the selected one of the two vertically extending flanges 27. The two positions for the strap 28 are for selective use with copy sheets of different lengths. The illustrated position of the strap 28 is for copy sheets of letter size or larger, and the other flange 27, closer to the rollers 16, is for positioning the strap 28 into edge-engaging relation with a stack of copy sheets of shorter length, as, for instance, post cards.

Projecting downwardly from each of the edge members 23 is a bearing member 30 which rides in a transverse slot 31 formed in the tray. The bearing member 30 is maintained in position in the slot 31 by an H-shaped spring clip 32 having a pair of curved shoe portions 33 engaging the under side of the tray 15 on opposite sides of the slot 31 for sliding movement relative thereto. The spring clip 32 is held in place by means of a screw 34 disposed through aligned openings in the center bar 35 (Figure 6) and the bearing member 30.

The simultaneous movement of the members 23, in equally spaced relation to the center line 24, is controlled by a lever 36 which is mounted for pivotal movement about a vertical axis, defined by a pin 37, which is located at the intersection of the center line 24 and the longitudinal axis of the slot 31. Portions of the lever 36, which are equally spaced from the lever pivot axis 37 and disposed on opposite sides thereof, are pivotally connected as by pins 38 with the edge members 23 through a pair of equal length links 39. The links 39 are connected to the respective edge members, at similar locations on the bearing members 30 along the axis of the slot 31, as by the screws 34.

The end of the lever 36 adjacent the outer or free end of the tray 15 is extended to provide a lever operating handle 40. The above described disposition of the lever and the links 39 connecting it to the edge-defining members 23 is such that movement of the handle 40 effects a resulting simultaneous movement of the members 23, at the same rate, so that the members 23 are al-

ways disposed in equally spaced, parallel relation to the center line 24. Consequently, irrespective of the width of the copy sheet being used, a simple movement of the lever handle 40 to a position wherein the rubber pads 29 on both of the straps 28 engage opposite edges of the stack of copy receiving sheets results in a centering of the latter with respect to the center line 24. And, since the line 24 passes through the centered recess 13 on the drum 6 and the registering center opening 14 in the master sheet, the copy sheets will also be centered with respect to the master sheet.

Thus it is seen that the master sheet and copy sheets are readily disposed in centered relation on the duplicating machine, without recourse to measurements or the use of any locating scale. Furthermore, the centering means for the copy sheets on the tray 15 is automatically effective irrespective of where the stack is initially positioned by the operator between the edge defining members 23.

Although described with respect to a particular apparatus, it is obvious that the present invention relating to a positioning device may be used with other apparatus and, also, that the disclosed embodiment may be modified, without departing from the principles of the invention.

I claim:

In combination with a duplicating machine having a rotary drum for mounting the master sheet to be reproduced, and having a generally horizontal tray adjacent one side of said drum for supporting one or more copy sheets in position for movement into surface contact with the master sheet on the drum, an improved means for centering the copy sheet on the tray comprising, a pair of longitudinally extending edge members mounted on said tray in spaced, parallel relation to each other, each of said edge members including a longitudinally extending base plate mounted on said tray for sliding movement transversely thereof, an elongated member pivotally supported on an intermediate portion of said plate for swinging movement through a vertical plane, and including a pair of means carried by said base plate in position for frictionally engaging said elongated member to selectively yieldably secure said member in fixed relation to said base plate, whereby said elongated member may be positioned to extend toward or away from said drum, and traversing means for simultaneously moving said edge members to and fro with respect to the longitudinal center line of said tray, said traversing means comprising a lever pivotally mounted on said tray for movement about a vertical axis disposed in the vertical plane of said longitudinal axis of said tray, and a pair of links pivotally interconnecting portions of said lever, which are disposed in equally spaced relation on opposite sides of said lever pivot mounting, with portions of said edge members, so that the distances between the points of connection of each of said links with said lever and the associated edge member are equal.

References Cited in the file of this patent

UNITED STATES PATENTS

1,949,764	Schreiber et al. -----	Mar. 6, 1934
2,266,068	Peterson et al. -----	Dec. 16, 1941
2,271,954	Rockhill -----	Feb. 3, 1942
2,512,940	Janke -----	June 27, 1950
2,569,739	Stephenson -----	Oct. 2, 1951