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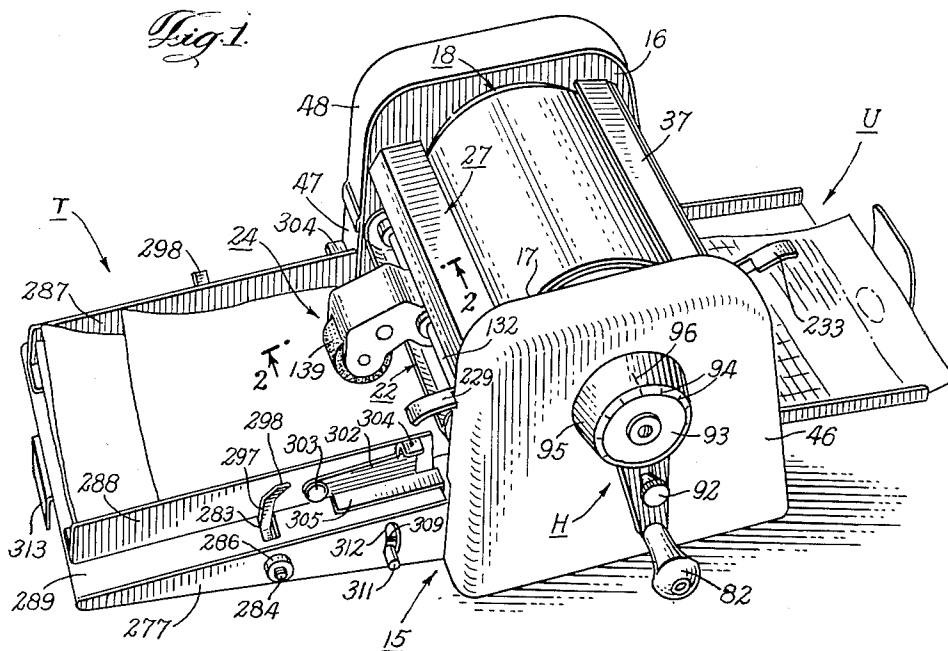
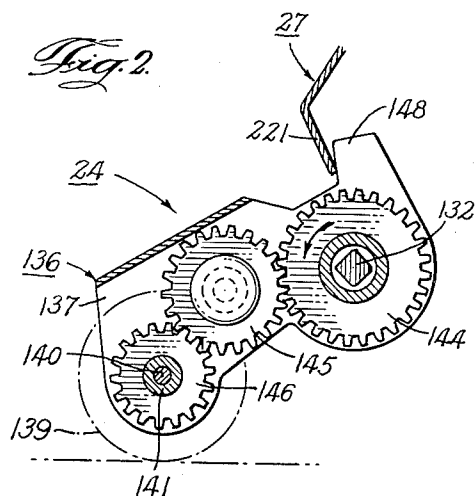
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3,046,007

PAPER FEED TRAY FOR DUPLICATING MACHINES

Original Filed Feb. 4, 1957

3 Sheets-Sheet 1



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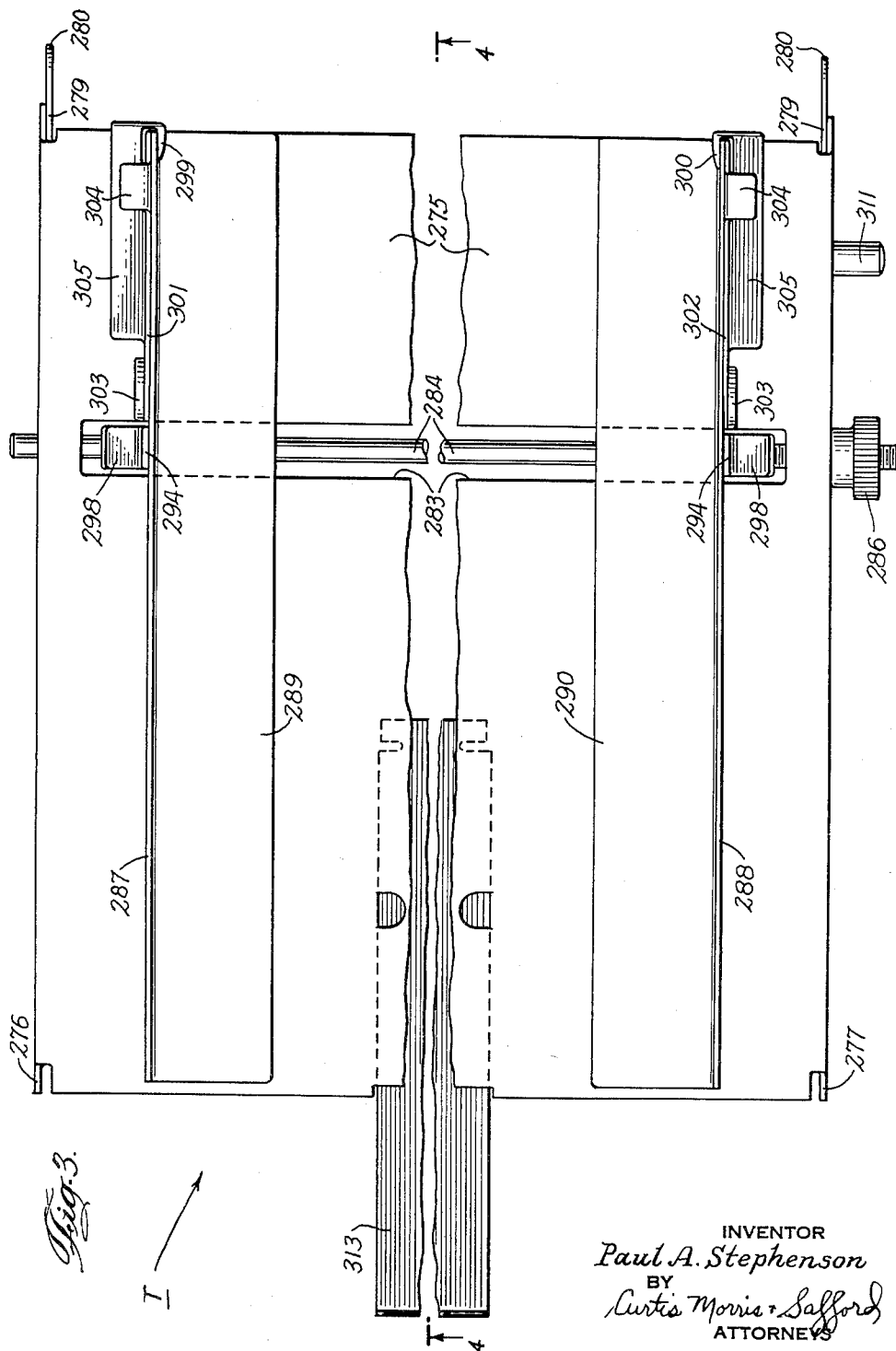
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3 Sheets-Sheet 2



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PAPER FEED TRAY FOR DUPLICATING MACHINES

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Division of application Ser. No. 666,369, June 18, 1957, now Patent No. 2,993,438, dated July 25, 1961. Continuation of application Ser. No. 638,022, Feb. 4, 1957. This application Jan. 15, 1960, Ser. No. 2,655

7 Claims. (Cl. 271-61)

The present invention relates to duplicating machines used to make copies of writings from a master sheet and more particularly to trays for holding a stack of sheets to be fed into a duplicating or other similar machine.

This application is a division of my prior application for U.S. Letters Patent Serial No. 666,369, filed June 18, 1957, now Patent No. 2,993,438, and entitled Duplicating Machines. Application Serial No. 666,369 is, in turn, a continuation of application Serial No. 638,022, filed February 4, 1957 and now abandoned.

In my prior application Serial No. 666,369, referred to above, a spirit duplicating machine is illustrated and described having a novel combination and arrangement of elements which facilitates the initial set-up and adjustment of the parts, indicates the relationship between the master and copy sheets to produce any line register desired and controls the feed of paper to the moistening means and master sheet on a rotating drum among other features of novelty.

One of the objects of the present invention is to provide an adjustable tray for holding a stack of copy sheets which facilitates the lateral alignment of the stack with the master sheet of a duplicating machine.

Another object is to provide a tray of the type indicated with a plurality of detents which may be raised individually or simultaneously to overlie the front of the stack to restrain the feeding of underlying sheets as the upper sheet is advanced.

Still another object is to provide a tray of the type indicated which is of a simple and compact construction, economical to manufacture and one which facilitates the initial setting up of the duplicating machine to run a particular job and when shifting from one job to another.

In this specification and accompanying drawings I have shown and described a preferred embodiment of my invention; but it is to be understood that the illustrated embodiment is not intended to be exhaustive or limiting of the invention. On the contrary, the drawings are for the purpose of illustration only in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of applying it in practical use, so that they may modify and adapt the invention in various forms and to other types of duplicating machines each as may be suited to the conditions of a particular use. As is apparent, different features of the invention may be incorporated in trays for duplicating machines of other constructions and types than that shown in the drawings.

In the drawings:

FIGURE 1 is a perspective view of a duplicating machine incorporating the novel paper feed tray of the present invention;

FIGURE 2 is a sectional view taken on line 2-2 of FIGURE 1 to show the gearing for operating the friction roller of the paper feeding mechanism;

FIGURE 3 is a plan view of the paper feed tray showing the control fingers for regulating the feeding of the top sheet of a stack mounted thereon;

FIGURE 4 is a longitudinal sectional view taken on

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line 4-4 of FIGURE 3 to show the mechanism for lifting the control fingers; and

FIGURE 5 is a transverse sectional view taken on line 5-5 of FIGURE 4 to show the means for adjusting the side plates and control fingers laterally for paper of different width and for margin control.

FIGURES 1 and 2 of the drawings illustrate a duplicating machine with which the tray T of the present invention may be used. The duplicating machine comprises side plates 16 and 17 mounting a rotatable drum 18 on which a master sheet is detachably connected. The drum 18 is rotated manually by a handle H having a relatively rotating dial 93 and hub 95 with index markings 94 and 96 and a latch 92 for releasably connecting the dial and hub as explained in detail in parent application Serial No. 666,369, referred to above. A control bar 27 actuated by a handle 229 controls operation of the sheet feeding mechanism 24. The sheet feeding mechanism 24, as illustrated in FIGURE 2, comprises a friction roller 139 adapted to engage the top sheet of a stack of sheets on the table T. Friction roller 139 is mounted on a shaft 140 journaled between side plates 137 of a frame 136 and the shaft is driven by a spur gear 146 through a sleeve 141. Spur gear 146, in turn, is driven by gears 145 and 144 on frame 136 and the frame and friction roller 139 are mounted to rock bodily on a square shaft 132 to engage and disengage the friction roller with the top sheet of a stack of sheets on the tray T. The frame 136 is rocked to feeding and releasing positions by a flange 221 on the control bar 27 engaging a lug 148 on the frame. Frame 15 of the duplicating machine has closure covers 46 and 47 one of which comprises a supply tank 48 for liquid spirits. The side plates 16 and 17 of the machine frame 15 are held in spaced relation by cross struts such as 37 and a receiving tray U is provided at the opposite side of the machine for receiving printed copy sheets.

The paper feed table T constituting the subject matter of the present invention, is mounted on the front of the duplicating machine as shown in FIGURE 1, and is shown in detail in FIGURES 3 to 5. The table T has spaced side plates adjustable laterally relative to each other and in unison. Control fingers at one end of each side plate are operable individually or simultaneously for controlling the feed of paper from either or both sides of the sheets. When thin paper is fed into the machine, it is desirable to use both control fingers, but when heavier paper or cards are to be used a single control finger is sufficient.

Table T comprises a flat top plate 275 having depending flanges 276 and 277 at each side and depending flanges 278 at the front and rear. A bracket plate 279 is attached to the rearward end of each flange 276 and 277 and each bracket plate has a rearwardly projecting hook 280 and an inwardly projecting lug 281, see FIGURE 4. The table T is mounted on frame 15 by engaging the hooks 280 with pins (not shown) projecting outwardly from each side plate 16 and 17, see FIGURE 1. The lugs 281 then engage the front edge of the side plates 16 and 17 to position the flat plate 275 horizontally at the front of the machine.

Referring to FIGURES 3, 4 and 5, the flat top plate 275 has a transverse slot 283 formed therein which extends throughout substantially its entire width. Underlying the slot 283 is a shaft 284 having its ends projecting through aligned holes in the depending side flanges 276 and 277. One end of shaft 284 is threaded at 285 and extends through an adjusting nut 286 rotatably mounted in the depending flange 277. Thus, by turning nut 286 the entire shaft 285 moves longitudinally and transversely relative to the table.

Side plates 287 and 288 for holding a stack of copy sheets S in alignment therebetween project vertically from the top plate 275 of the paper feed table and have in-

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wardly projecting horizontal flanges 289 and 290 resting on the top of the table. Each horizontal flange 289 and 290 has an inverted U-shaped bracket 291 depending therefrom through the slot 283 and closely fits the sides thereof, see FIGURES 4 and 5 to position the side plates in parallel relationship at right angles to the slot. Shaft 284 extends through aligned holes in the depending legs 292 and 293 of each bracket.

As shown most clearly in FIGURE 5, a latch plate 294 overlies the cross bar 295 of each bracket 291 with an end projecting laterally beyond the bracket and downwardly to provide a spring latch finger 296 yieldingly engaging the top of shaft 284. Each latch finger 296 holds its respective side plate 287 and 288 in position on the table top plate 275. An actuating handle arm 297 has one end attached to the side of the spring latch finger 296 and projects upwardly and outwardly at its end to provide a finger grip 298 spaced from its side plate 287 or 288. By pinching the finger grip 298 toward its side plate 287 or 288 the spring latch finger 296 is flexed away from shaft 284 to permit the side plates to be slid laterally on the shaft. Thus, either side plate may be easily and quickly adjusted toward or away from each other for engagement with the sides of a stack of copy sheets of any width and to align the copy sheets with the master sheet at any position across the table. Furthermore, by rotating nut 286, the shaft 284 and side plates 287 and 288 may be moved bodily to obtain the desired alignment with the master sheet.

The control fingers 299 and 300 for controlling the feed of copy sheets S from a stack of sheets S mounted on the table comprise thin narrow detents overlying the rear of the table and projecting forwardly. Each control finger 299 and 300 projects laterally and forwardly from the end of arms 301 and 302 mounted adjacent to the outside face of the respective side plates 287 and 288. The opposite or forward end of each arm 301 and 302 is pivotally mounted on a pin 303 projecting laterally from its respective side plate 287 or 288. The arms 301 and 302 are in the form of sheet metal plates having laterally projecting finger handles or tabs 304 at the upper edges and laterally projecting flanges 305 at their lower edges adapted to rest on the top plate 275. The flanges 305 project beyond the table top and then downwardly in an arc about the pivot pins 303 and have inwardly projecting abutment feet 306.

A U-shaped actuating bail 307 has a transverse bar 308 underlying the abutment feet 306 of the respective arms 301 and 302. Arms 309 and 310 project forwardly from the ends of bar 308 and their ends are pivotally mounted on shaft 284 adjacent its ends. One of the arms 310 of the bail 307 has a pin 311 projecting laterally through an arcuate slot 312 in the side flange 277 depending from the top plate 275 of the table.

After a stack of copy sheets is mounted on the table T, either arm 301 or 302 may be lifted individually to position its detent control finger 299 or 300 on the top sheet S of a stack or the bail 307 may be lifted by handle pin 311 to lift both detent control fingers onto the top sheet. During such lifting movement, the edges of the copy sheets yield and flap by the detents. During rotation of the friction roller 139 of the paper feed mechanism 24, the top sheet S of the stack slips with respect to the next lowermost sheet until the end of the sheet pulls out from under the control fingers 299 and 300 while holding the remainder of the sheets of the stack from advancing with the top sheet.

While a single embodiment of the invention is herein illustrated and described, it will be understood that changes may be made in the construction and arrangement of elements without departing from the spirit or

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scope of the invention. Therefore, without limitation in this respect, the invention is defined by the following claims.

I claim:

1. A paper feed table for a duplicating machine comprising a generally horizontal top plate, side plates mounted on the top plate for movement toward and away from each other, a control finger adjacent each side plate and adapted to overlie the end of the top plate, means for mounting the control fingers on the side plates for movement laterally with the side plates and upwardly relative to the side plates and a stack of sheets on the table to overlie the top sheet of the stack adjacent the side plates in any lateral position of the latter, and a manually operable member underlying the table and connected to raise the plurality of control fingers simultaneously.

2. A paper feed table in accordance with claim 1 in which the top plate has depending flanges at opposite sides, the manually operable actuating member is a U-shaped bail having ends pivotally mounted in the side flanges depending from the top plate, and a handle at the side of at least one depending flange and connected to rock the bail on its pivoted ends to simultaneously raise the plurality of control fingers.

3. In a duplicating machine, a paper feed table having a horizontal top plate, side plates mounted on the top plate for movement toward and away from each other, an arm pivotally mounted on each side plate and having an actuating lug projecting laterally therefrom, a control finger on the arm and overlying the end of the table top and an actuating foot depending from the arm below the table, and a manually operable actuating bar underlying the feet depending from the arms whereby each arm and control finger may be raised independently of the other or both arms and control fingers may be raised simultaneously by the actuating bar.

4. A duplicating machine in accordance with claim 3 in which the actuating bar is in the form of a U-shaped bail having parallel arms projecting from its opposite ends and pivotally connected to the table, and a handle projecting from one of the parallel arms of the bail for rocking the bail.

5. A duplicating machine in accordance with claim 3 in which the horizontal top plate has a transverse slot and depending flanges at its sides, a shaft underlying the transverse slot in the table, said side plates having brackets depending through said slot and mounted to ride on said shaft, a latch on each bracket for gripping the shaft, and means for releasing each latch to adjust the side plate relative to each other.

6. A duplicating machine in accordance with claim 5 in which one end of the shaft is threaded, a nut mounted in one of the depending flanges and engaging the threaded portion of said shaft, and said nut moving said shaft and side plates latched thereto when the nut is turned in the flange whereby to adjust both side plates simultaneously.

7. A duplicating machine in accordance with claim 5 in which the actuating bar is in the form of a U-shaped bail having parallel arms projecting from its opposite ends, and the ends of the arms being pivotally mounted on the shaft.

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