Oct. 1, 1957 H. P. KEIL 2,808,262

FEED TRAY SIDE GUIDE LOCK FOR DUPLICATING MACHINES

Filed Nov. 16, 1953 3 Sheets-Sheet 1

Fig. 1.

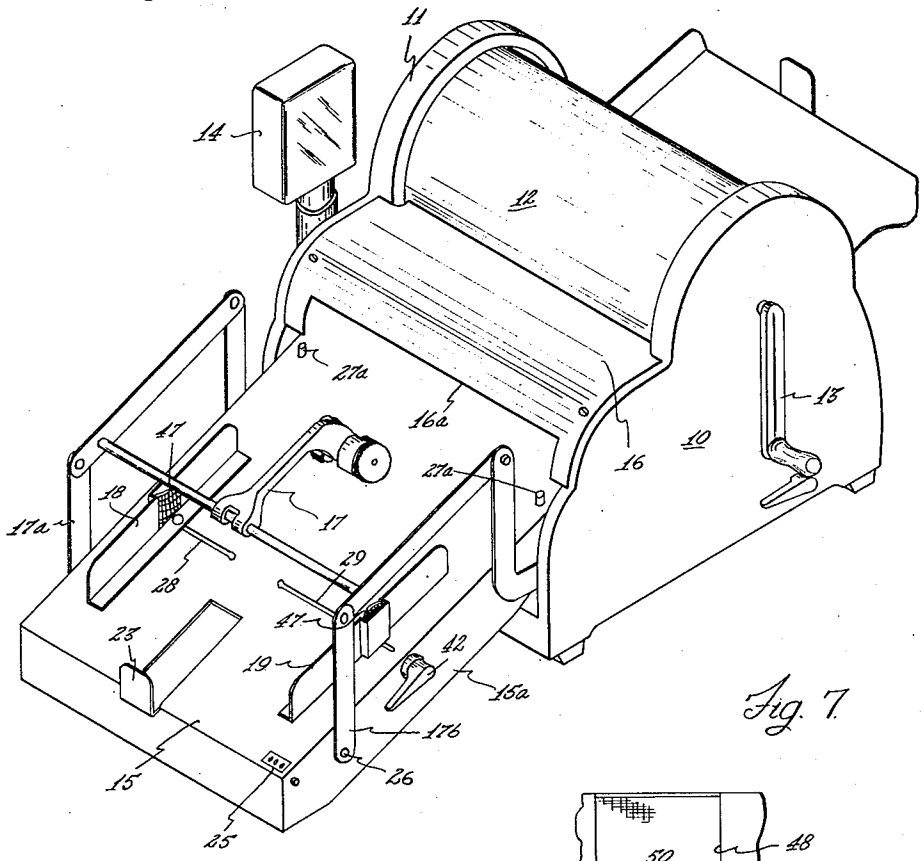

Fig. 7.

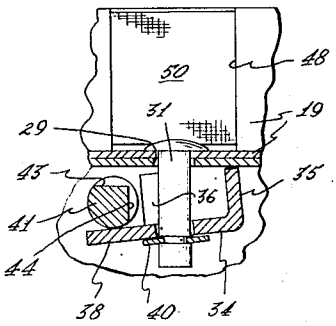

Fig. 8.

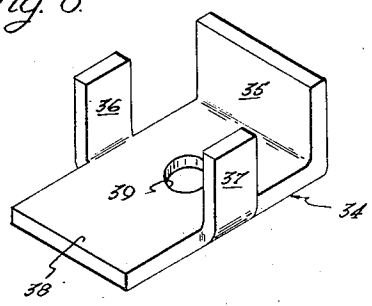

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Fig. 2.

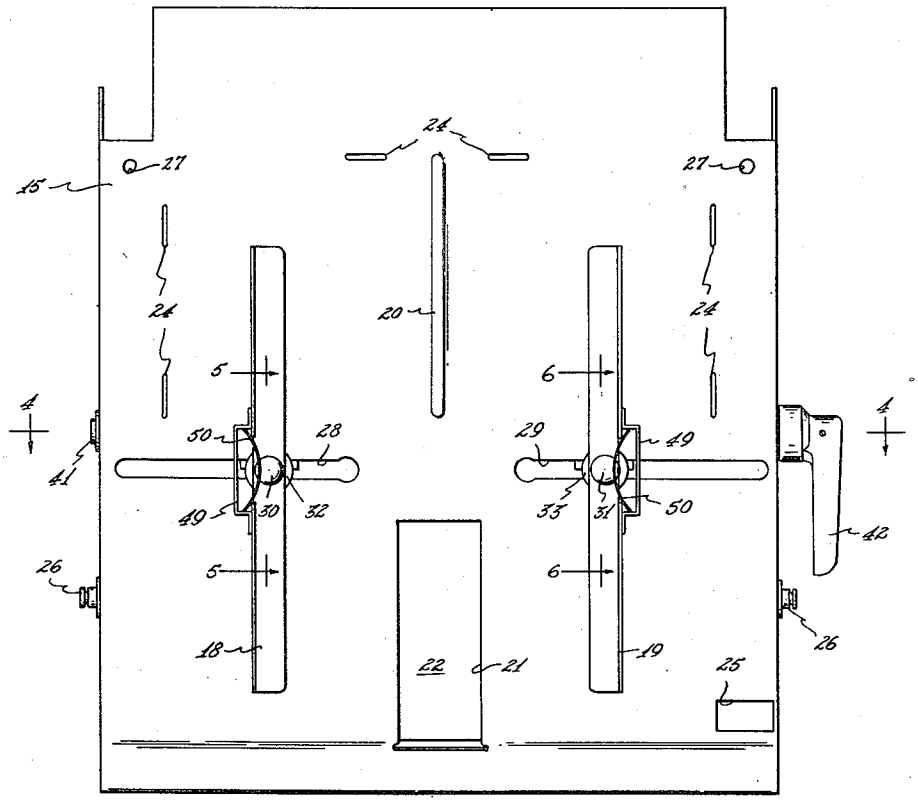
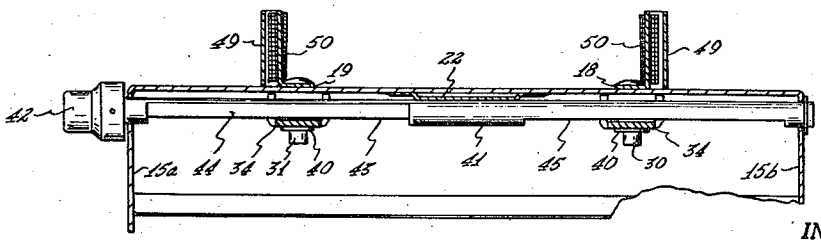


Fig. 4.



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FEED TRAY SIDE GUIDE LOCK FOR DUPLICATING MACHINES

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Fig. 3.

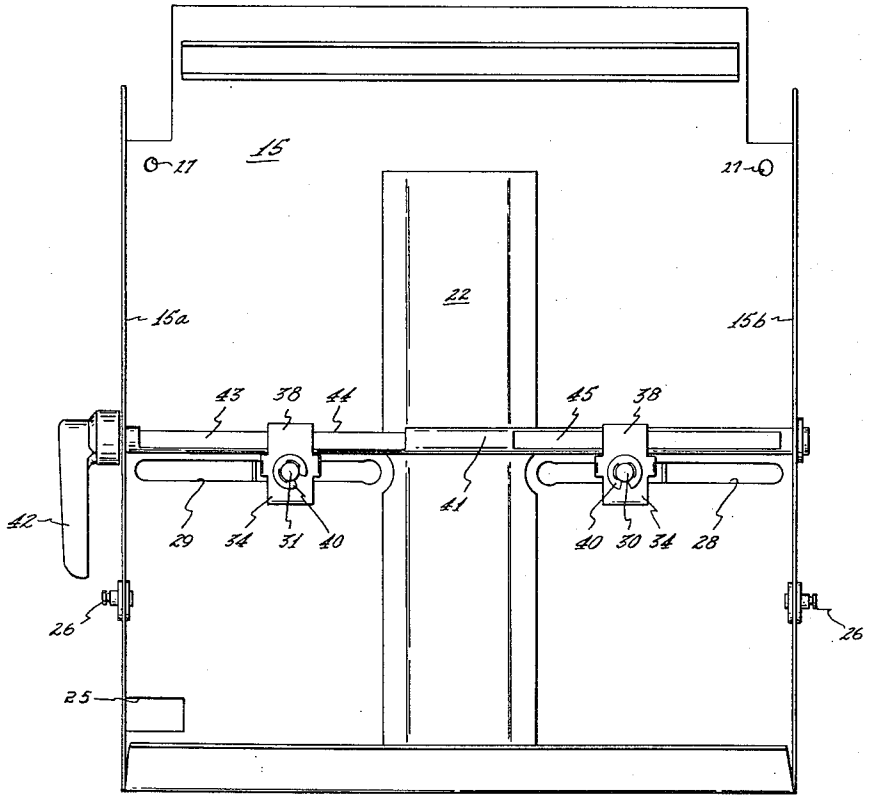


Fig. 6.

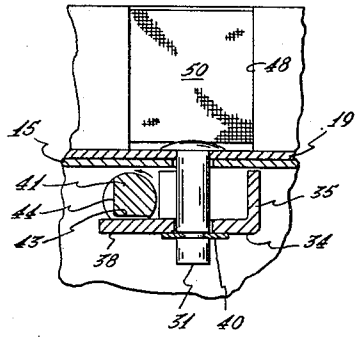
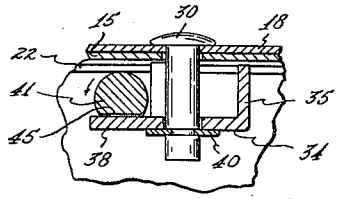


Fig. 5.



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FEED TRAY SIDE GUIDE LOCK FOR DUPLICATING MACHINES

Henry P. Keil, Chicago, Ill., assignor to The Fixture Hardware Corporation, Chicago, Ill., a corporation of Illinois

Application November 16, 1953, Serial No. 392,334

5 Claims. (Cl. 271—61)

My present invention relates to improvements in a feed tray side guide lock for duplicating machines.

It is the purpose of my invention to provide means on a copy sheet feed tray to lock the side guides in position, simply and with one lever, thus allowing the operator to have one hand free to position the guides efficiently while he locks first one and then the other.

My invention utilizes a mechanism whereby the locking or releasing of each side guide is accomplished by a single lever which is mounted at the side of the tray itself leaving the entire tray top and the side guides free of clamps, levers or springs.

A further purpose of the invention is to provide a novel means to hold a stack of copy sheets in such a manner that the top sheet is held most firmly, the holding means, however, being quite resilient so that the stack of copy sheets may be easily removed and inserted whenever necessary.

My invention utilizes a single operating cam rod extending transversely under the feed tray, and having an operating handle at one end. Each side guide member has a headed pin fixedly attached thereto, which extends downwardly through a slot in the feed tray and has a bracket secured to the lower end. The brackets have portions thereon which extend under the cam rod. When the cam rod is rotated to the correct position, there is clearance enough to allow the brackets to slide back and forth to position the side guides as desired, but when the cam rod is rotated 90 degrees, the bracket on the left side guide member is wedged down and that side guide is locked. Another 90 degree rotation also locks the right member so that neither side guide may be moved.

The nature and advantages of my invention will appear more fully from the following description and the accompanying drawings wherein a preferred form of the invention is shown. It should be understood, however, that the drawings and description are illustrative only and are not intended to limit the invention except insofar as it is limited by the claims.

In the drawings:

Figure 1 is a perspective view of a duplicating machine utilizing my invention;

Figure 2 is a plan view of a feed tray in cooperation with my improved side guide lock mechanism;

Figure 3 is a view looking upward into the underside of the feed tray shown in Figure 2;

Figure 4 is a sectional view taken on the line 4—4 of Figure 2;

Figure 5 is an enlarged sectional view taken on the line 5—5 of Figure 2;

Figure 6 is an enlarged sectional view taken on the line 6—6 of Figure 2;

Figure 7 is a view similar to Figure 6 but showing the side guide locked in position; and

Figure 8 is a perspective view of the bracket used in my side guide lock mechanism.

Referring now to the drawings and to Figures 1, 2 and 3 in particular, my invention is shown in cooperation

with a duplicating machine wherein the numerals 10 and 11 indicate the side frames of the machine. The drum of the machine is indicated at 12, and has an operating handle 13. A moistening liquid container 14 is mounted on the side frame 10. A copy sheet feed tray 15 is mounted on the side frames 10 and 11 in front of the drum 12. A cover plate 16 is positioned between the feed tray 15 and the drum 12 to protect the moistening rollers (not shown) and other mechanism of the machine. A copy sheet feeding device 17 is mounted on the feed tray 15 and linked to the machine so that it rocks backward and forward to advance the copy sheets one at a time from a stack of sheets on the tray.

The feed tray 15 is provided with two side guide members 18 and 19 to align the stack of copy sheets for feeding sheets beneath the cover 16 at 16*a*. A raised rib 20 is provided on the tray 15 to keep the copy sheet stack bowed up at the center so that the sheets may be easily gripped by the feeding device 17.

A slot 21 is formed in the feed tray 15 and extends forward a short distance from the rear edge of the tray 15. A channeled member 22 is attached to the underside of the tray below the slot 20 to provide a mounting for a slidable paper support 23. The paper support 23 is positioned to hold the rear of the copy sheet stack.

Several indentations 24 are formed in the feed tray 15 to indicate the limits of the area wherein the copy sheet stack is to be placed. A rectangular aperture 25 in the feed tray is adapted to expose the face of a counting device which keeps a tally of the sheets fed through the machine. Lugs 26 on the sides 15*a* and 15*b* of the feed tray 15 receive rock arms 17*a* and 17*b* which carry the paper feeding device 17. Apertures 27 at the front end of the feed tray 15 are adapted to receive pins 27*a* which are attached to the machine and which support the feed tray in position.

Transverse slots 28 and 29 in the feed tray 15 are adapted to receive the shanks of guide pins 30 and 31. The pins 30 and 31 extend through the side guides 18 and 19 respectively, to secure them for transverse movement on the feed tray 15. Washers 32 and 33 are positioned between the side guides 18 and 19 and the slots 28 and 29, to allow the side guides 18 and 19 to slide easily along the slots 28 and 29.

Each of the pins 30 and 31 carries at its lower end a lock bracket 34, best shown in Figure 8. This lock bracket 34 has a bent up lip 35 at one end, and two side lips 36 and 37. A flat portion 38 extends outwardly at the end opposite the lip 35. A central aperture 39 receives the pin 30 or 31. A clip ring 40 on each pin 30 and 31 secures the bracket 34 against downward movement on the pin 30 or 31.

A cam rod 41 extends transversely across the underside of the feed tray and is positioned in relation to the slots 28 and 29, such that the flat portions 38 of the brackets 34 lie directly under the rod (see Figures 4, 5 and 6). The cam rod 41 is journalled in the side portions 15*a* and 15*b* of the feed tray 15. At one end of the cam rod 41 is a handle 42, by which the rod 41 may be rotated. The cam rod 41 has flattened portions 43 and 44 formed in it, the portions 43 and 44 being at right angles to each other and extending from a point near the handle 42 to a point just short of the center of the rod 41. A third flattened portion 45, in the same plane as the portion 43, extends from a point just past the center of the rod 41 to a point near the opposite end of the rod 41. When the handle 42 is turned so that it lies horizontal and faces away from the drum 12 of the machine, the flattened portions 43 and 45 of the rod 41 are adjacent the portions 38 of the brackets 34. Figures 4, 5 and 6 show the cam rod 41 in this position. There is sufficient clearance between the flat portions 43

and 45 and the brackets 34 so that the side guides 18 and 19 may be moved freely along the slots 28 and 29. When the cam rod 41 is rotated 90 degrees so that the handle 42 is pointing up, the flattened portion 44 becomes adjacent to the portion 38 of the bracket 34 which is attached to the side guide 19. This side guide then may still be moved when the rod 41 is in this position. The side guide 18, however, is secured in place. The flattened portion 45 on the cam rod 41 has been rotated away from the portion 38 on the bracket 34 which is attached to the side guide 18. The rounded cam portion of the cam rod 41 forces the extension 38 of the bracket 34 downward. The turned up lip 35 engages the bottom surface of the tray and acts as a fulcrum point about which the bracket 34 is forced to turn. This turning movement of the bracket 34 moves the pin 30 down to clamp the side guide 18 to the tray 15. An additional 90 degrees rotation moves the flattened face 44 of the cam rod 41 away from the bracket 34 on the side guide 19. This side guide is then also clamped in place by the enlarged round cam portion of the rod bearing down on the bracket 34. Figure 7 shows the side guide 19 in the clamped position.

The side lips 36 and 37 on the brackets 34 cooperate with the rod 41 to guide the brackets 34 and keep them from rotating out of position on the pins 30 and 31. If the bracket tries to rotate so that the portion 38 is moved away from the rod 41, one of the side lips 36 or 37 comes in contact with the cam rod to stop the movement.

The center portion of the cam rod 41 bears against the channeled member 22 (see Figure 4) and is held by the channel member 22 against bending upwardly under the pressure exerted upon it by the brackets 34.

The side guides 18 and 19 have thereon copy sheet holding devices generally indicated by the numerals 46 and 47. The devices 46 and 47 are identical so it is believed that a description of one will suffice for both.

The side guide member 18 or 19 has a slot 48 in its vertical portion 18*a* or 19*a*. A U-shaped plate 49 is fixed to the outside of the side guide 18 or 19 around the slot 48. A piece of wire mesh 50 slightly wider than the plate 49 and tapered so that it is wider at the top than at the bottom, is bowed slightly and slipped down between the plate 49 and the vertical portion 18*a* or 19*a* of the side guide 18 or 19. Since the wire mesh 50 is bowed, it extends through the slot 48. This wire mesh 50 presses against the side of the copy sheet stack and keeps it in place. Being tapered, the upper part of the wire mesh 50 protrudes farther from the slot 48 than the lower portion so that the top sheet of the stack is gripped most firmly. The wire mesh 50 is, however, resilient so that it will bend back under pressure to allow the sheets to be removed or inserted when necessary. The member 50 is a wire mesh screen of abrasive material that acts as a gripper for the edges of the copy sheets.

This feed tray side guide mechanism is extremely simple to operate. The locking handle 42 is first moved to a horizontal position facing away from the drum 12. The flattened portions 43 and 45 are then adjacent the brackets 34 on the side guides 18 and 19, and the guides may be moved freely. The operator then places the stack of copy sheets in the desired position. When the stack is in place, the operator moves the side guide 18 firmly against the copy sheet stack and while he holds it steady with one hand, he moves the handle 42 ninety degrees until it points up. The side guide 18 is now locked. The operator then moves the side guide 19 until it is pressed firmly against the other side of the stack, holds it with one hand, and rotates the handle 42 another ninety degrees where it is in a horizontal position pointing toward the drum 12.

When the side guides are to be moved to a new position, the operator merely moves the handle 42 until it points away from the drum 12 and is in its original position. Both guides are then free.

It is believed that the nature and advantages of my invention will appear fully from the foregoing description and the accompanying drawings.

Having thus described my invention, I claim:

1. In a duplicating machine, a feed tray, side guides seated on said feed tray adapted to receive a stack of sheets therebetween, transverse elongated slots in said feed tray, a securing pin in each side guide, said pins extending downwardly through the elongated slots, a lock bracket attached to each pin beneath the feed tray, a rod extending transversely of the feed tray between the underside of the feed tray and the lock brackets, cam portions on the rod operable to wedge the brackets down upon turning the rod, and a handle on the rod to rotate the rod.

2. In a duplicating machine, a feed tray, side guides seated on said feed tray adapted to receive a stack of sheets therebetween, transverse elongated slots in said feed tray, a securing pin in each side guide, said pins extending downwardly through the elongated slots, a lock bracket attached to each pin benaeth the feed tray, a rod extending transversely of the feed tray between the underside of the feed tray and the lock brackets, said lock brackets each having its center portion attached to one securing pin and having a flat portion extending outwardly under the rod, cam portions on the rod operable to wedge the flat portions of the brackets down upon rotating the rod, said brackets each having an upturned lip thereon at the end opposite the flat portion, said upturned lip engaging the feed tray when the flat portion is wedged down, and a handle on the rod to turn the rod.

3. In a duplicating machine, a feed tray, side guides seated on said feed tray adapted to receive a stack of sheets therebetween, transverse elongated slots in said feed tray, a securing pin in each side guide, said pins extending downwardly through the elongated slots, a lock bracket attached to each pin beneath the feed tray, a rod extending transversely of the feed tray between the underside of the feed tray and the lock brackets, said rod having cam portions each extending lengthwise of the rod for a distance equal to the length of the elongated slots in the feed tray, one cam portion extending circumferentially of the rod for a distance greater than the other cam portion whereby to wedge one bracket and then both brackets upon turning the rod, and a handle at one end of the rod to turn the rod.

4. In a duplicating machine, a feed tray, side guides seated on said feed tray adapted to receive a stack of sheets therebetween, transverse elongated slots in said feed tray, a securing pin in each side guide, said pins extending downwardly through the elongated slots, a lock bracket attached to each pin beneath the feed tray, a rod extending transversely of the feed tray between the underside of the feed tray and the lock brackets, said rod having cam portions each extending lengthwise of the rod for a distance equal to the length of the elongated slots in the feed tray, one cam portion extending circumferentially of the rod for a distance greater than the other cam portion whereby to wedge one bracket and then both brackets upon turning the rod, a central cylindrical portion on the rod between the cam portions, means on the bottom of the feed tray engaging said central cylindrical portion and preventing the rod from bending upward at its center, and a handle on the rod to turn the rod.

5. In a duplicating machine, a feed tray, side guides seated on said feed tray adapted to receive a stack of sheets therebetween, transverse elongated slots in said feed tray, a securing pin in each side guide, said pins extending downwardly through the elongated slots, a lock bracket attached to each pin beneath the feed tray, a rod extending transversely of the feed tray between the underside of the feed tray and the lock brackets, said lock brackets each having its center portion attached to one

securing pin and having a flat portion extending outwardly under the rod, cam portions on the rod operable to wedge the flat portions of the brackets down upon rotating the rod, said brackets each having an upturned lip thereon at the end opposite the flat portion, said upturned lip engaging the feed tray when the flat portion is wedged down, said brackets having upturned portions on the sides thereof adjacent the rod to prevent the brackets from rotating on the securing pins, and a handle on the rod to turn the rod.

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