

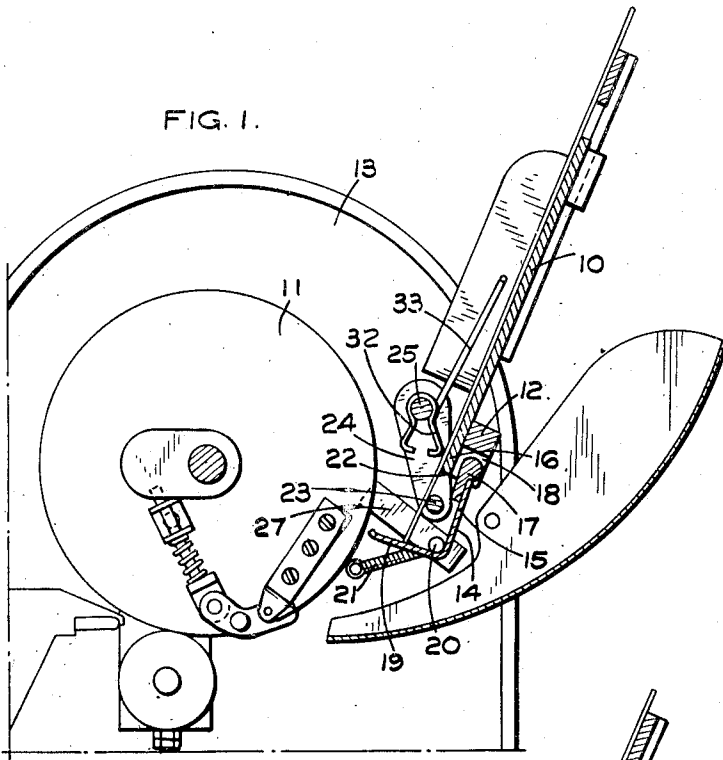
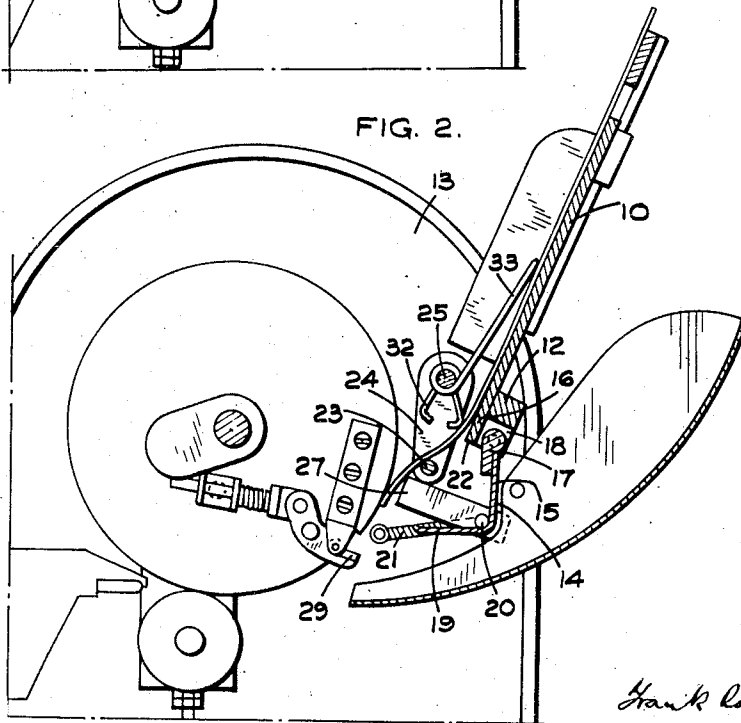
Sept. 20, 1949.

F. R. FORD
MASTER SHEET CHANGE MECHANISM
FOR DUPLICATING MACHINES

2,482,408

Filed April 9, 1947

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 3.

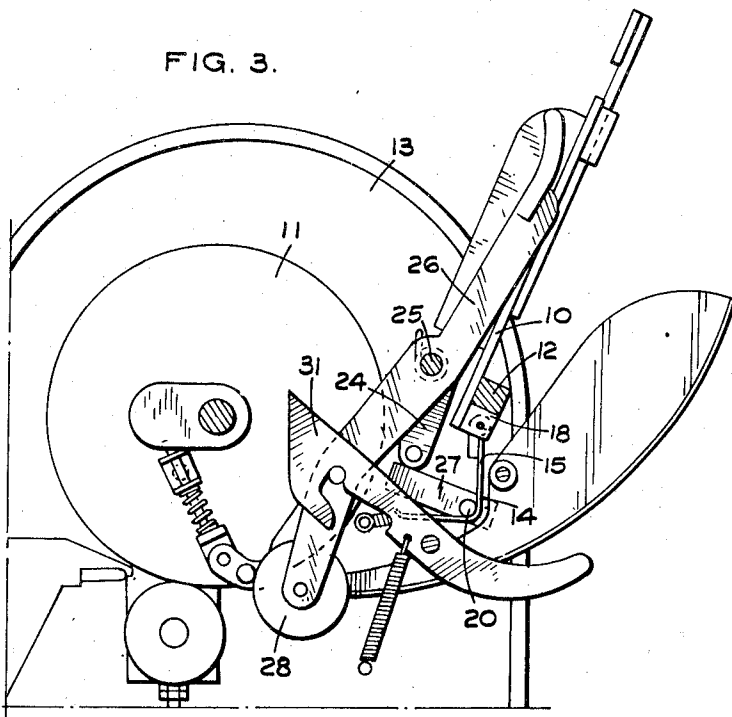
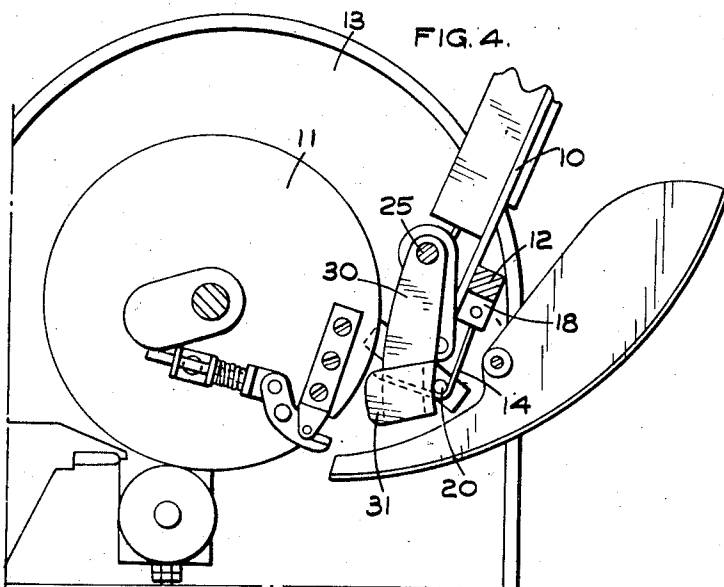


FIG. 4.



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MASTER SHEET CHANGE MECHANISM FOR
DUPLICATING MACHINES

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Application April 9, 1947, Serial No. 740,447
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Patent expires November 16, 1965

4 Claims. (Cl. 101—132)

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This invention relates to duplicating machines of the general class in which a copy sheet and a master sheet bearing in reversed script the matter to be reproduced are passed in pressure contact between a cylinder which carries the master sheet and a pressure roller, the copy sheet being moistened before being brought into contact with the master sheet.

More particularly the invention has reference to that type of machine which includes a clamping strip or member extending longitudinally of the cylinder and adapted to secure the leading edge of the master sheet thereto, and means whereby the master sheet may be automatically released from the cylinder and replaced by a fresh one without stopping the machine.

In my prior Patent No. 2,380,744 I have described a machine of the above type in which the new master sheet to be applied to the cylinder is slid down an inclined feed tray, its leading edge passing beneath rollers or flanges on a freely-suspended loading bar and eventually engaging a stop plate which extends perpendicular to the plane of the tray at some distance below the lower end of the latter.

When the master-change mechanism is actuated the leading edge of the sheet is deflected towards the cylinder and clear of the stop plate by means of a bar carried by crank arms on a rock-shaft, the oscillation of which simultaneously brings spring fingers against the upper part of the sheet to prevent it from shifting relatively to the tray.

The present invention has for its object to provide certain improvements in or modifications of the construction above described.

One part of the present invention concerns the stop for the master sheet, which in the previous construction aforesaid is rigidly connected to the lower end of the tray and hence of necessity is spaced sufficiently far from the cylinder to clear the open clamp on the latter.

According to this part of the invention the stop plate or member is hingedly mounted and normally disposed with its edge closely adjacent to the cylinder, means being provided for automatically retracting the stop member immediately before the open cylinder clamp reaches the position at which it picks up the new master sheet.

There is thus no risk of the new master sheet shifting downwardly upon the feed tray whilst being offered to the cylinder and before the clamp has reached the pick-up position.

The hinged stop member may be spring-biased towards its operative position, and its automatic

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retraction may be effected simultaneously with the actuation of the sheet-deflecting means aforesaid.

To eliminate any possibility of damage due to failure of the automatic retracting means to operate in time, means may be provided whereby the open clamp will if necessary positively remove the stop member from its path through the medium of an interposed member.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a sectional view in side elevation showing one form of the present invention with the stop in its initial position;

Figure 2 is a view similar to Figure 1 showing the stop in its retracted position;

Figure 3 is a view similar to Figure 2 but also showing the actuating and retaining levers; and

Figure 4 is a view similar to Figure 1 showing the means employed to remove the stop member from the path of the clamp if failure of the automatic retracting means occurs.

In the construction illustrated the feed tray 10 is disposed in an inclined position substantially tangentially of the cylinder 11, the lower end of the main portion of the tray being secured to a rigid tie-bar 12 connecting the side members 13 of the machine.

The lower or stop portion of the feed tray comprises a sheet metal plate 14 bent into angle section and having one flange 15 thereof hingedly connected at its longitudinal edge 16 to the back side of the tray.

For example, this edge of the plate may be secured by screws or other means to a metal strip or member 17 which is formed or provided at its end with aligned spigots engaging hinge lugs 18 carried by the tray.

This flange of the angle-section plate when the latter is in its normal position lies substantially parallel to and somewhat to the rear of the plane of the tray, the other flange 19 of the plate extending perpendicularly to such plane and constituting the operative portion of the stop member. The free edge of this flange 19 is normally disposed immediately adjacent to the cylinder surface.

The stop member 14 is provided at both sides with lateral projections 20 conveniently constituted by the ends of a rod or of a pair of short rods which is or are secured in the angle of the plate.

A tension coil spring 21 connecting one of these projections to a fixed point on the adjacent side

member 13 of the machine serves to bias the stop member to its operative position.

Within the channel defined by the stop member and the lower end 22 of the tray 10 is disposed a sheet-deflecting bar 23 corresponding to that of the previous construction above referred to.

This deflecting bar 23 is mounted at its ends in levers 24 carried by a parallel rockshaft 25, which in turn has fixed thereon an actuating lever 26, with which is associated a retaining lever 31, forming part of the master-change mechanism, which latter may be arranged similarly to that described in my prior specification aforesaid. In the present construction a roller 28 is used in place of the cam plate 28 shown in the prior specification referred to, this roller actuating the lever controlling the master clamp.

When the rockshaft 25 is oscillated so that the deflecting bar 23 moves the leading edge of the master sheet clear of the stop member and into contact with the cylinder, the deflecting bar 23, or one of the levers associated therewith, engages an arm 27 extending forwardly from the stop member, or from one of the lateral projections 29 thereon. Such engagement of the arm 27, which conveniently is adjustably secured upon the rod end or other projection 20 acted upon by the tension spring, causes the stop member to be swung back into a position (see Figure 2) in which its edge is outside the orbit of the cylinder clamp 29 when the latter has been opened, for example by means of the roller 28 on the setting lever.

Preferably, additional means are provided which in the event of the stop member from any cause being retracted only partially or not at all will operate to move such member from the danger zone before the open clamp can reach it.

This may be effected by mounting on the rockshaft 25 a freely-oscillatable arm 30 having a lateral lug 31, which at each revolution of the cylinder is struck by the open clamp, and which in the event of any part of the stop member being still within the orbit of the clamp will engage one of the projections 20 on such member so as to swing the latter into a safe position.

Freely suspended on the rockshaft 25 are one or more elements 32 which bear against the front of the sheet and prevent its curling forwardly when it is placed on the tray. The rockshaft 25 is provided with a wire spring 33 which may be fixed to the shaft and which has one, two or more arms which are moved into light-pressure contact with the front of the master sheet when the rockshaft is turned to move the stop into its retracted position.

Preferably, the upper end of the tray is provided with an extensible support for the sheet, such support conveniently comprising a transverse bar or strip having two parallel shanks which can slide through and are frictionally positioned in a pair of lugs provided beneath the feed tray.

What I claim then is:

1. In a duplicating machine a stationary frame, a cylinder rotatably mounted in said frame, a mechanical clamp on said cylinder adapted when open to receive the edge of a master sheet, and when closed to secure same to said cylinder, actuating means on said frame biased to a normal inoperative position but capable of being moved manually into an operative position, said actuating means when in the operative position being adapted to effect automatic opening and closing movements of said clamp at predetermined angu-

lar positions during rotation of said cylinder, means for automatically retaining said actuating means in the operative position after movement thereto, means on said cylinder for tripping said retaining means after closing of said clamp to allow said actuating means to regain its normal inoperative position, a feed tray for a master sheet on said frame disposed approximately tangentially to the cylinder, a stop plate pivotally mounted adjacent the edge of the tray nearest to the cylinder, said stop plate having a flange the edge of which is normally disposed near to the surface of the cylinder, said flange being disposed transversely to the plane of the tray, a rockshaft disposed on an axis parallel to the axis of the cylinder, said rockshaft being disposed between the tray and the cylinder, an actuating lever on said rockshaft having means adapted to be displaced by means associated with said clamp as the cylinder revolves, said rockshaft means being angularly spaced, in relation to the cylinder axis, from said stop plate so as to rock the rockshaft when the clamp is approaching the stop plate, sheet deflecting levers on said rockshaft, carrying a sheet deflecting bar for moving the edge portion of a sheet on the tray towards the cylinder when the rockshaft is rocked, and means for moving said stop plate to bring its flange away from the cylinder before the clamp in its projecting position reaches said stop plate.

2. In a duplicating machine a stationary frame, a cylinder rotatably mounted in said frame, a mechanical clamp on said cylinder adapted when open to receive the edge of a master sheet, and when closed to secure same to said cylinder, actuating means on said frame biased to a normal inoperative position but capable of being moved manually into an operative position, said actuating means when in the operative position being adapted to effect automatic opening and closing movements of said clamp at predetermined angular positions during rotation of said cylinder, means for automatically retaining said actuating means in the operative position after movement thereto, means on said cylinder for tripping said retaining means after closing of said clamp to allow said actuating means to regain its normal inoperative position, a feed tray for a master sheet on said frame disposed approximately tangentially to the cylinder, a stop plate pivotally mounted adjacent the edge of the tray nearest to the cylinder, an arm on the stop plate projecting towards the cylinder, said stop plate having a flange the edge of which is normally disposed near to the surface of the cylinder, said flange being disposed transversely to the plane of the tray, a rockshaft disposed on an axis parallel to the axis of the cylinder, said rockshaft being disposed between the tray and the cylinder, an actuating lever on said rockshaft having means adapted to be displaced by means associated with said clamp as the cylinder revolves, said rockshaft means being angularly spaced, in relation to the cylinder axis, from said stop plate so as to rock the rockshaft when the clamp is approaching the stop plate, and sheet deflecting levers on said rockshaft, carrying a sheet deflecting bar for moving the edge portion of a sheet on the tray towards the cylinder when the rockshaft is rocked, said sheet deflecting levers engaging said arm when the rockshaft is rocked whereby the stop plate is moved pivotally to bring its flange away from the cylinder simultaneously with the deflection of the edge portion of the master sheet towards the cylinder.

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3. In a duplicating machine a stationary frame, a cylinder rotatably mounted in said frame, a mechanical clamp on said cylinder adapted when open to receive the edge of a master sheet, and when closed to secure same to said cylinder, actuating means on said frame biased to a normal inoperative position but capable of being moved manually into an operative position, said actuating means when in the operative position being adapted to effect automatic opening and closing movements of said clamp at predetermined angular positions during rotation of said cylinder, means for automatically retaining said actuating means in the operative position after movement thereto, means on said cylinder for tripping said retaining means after closing of said clamp to allow said actuating means to regain its normal inoperative position, a feed tray for a master sheet on said frame disposed approximately tangentially to the cylinder, a stop plate of angle section pivotally mounted about an axis extending along one of its edges, said stop plate being disposed at the delivery end of the tray, a spring acting on said stop plate and tending to move it towards the cylinder, an arm on the stop plate projecting towards the cylinder, said stop plate having a flange the edge of which is normally disposed near to the surface of the cylinder, said flange being disposed transversely to the plane of the tray, a rockshaft disposed on an axis parallel to the axis of the cylinder, said rockshaft being disposed between the tray and the cylinder, and sheet deflecting levers on said rockshaft, carrying a sheet deflecting bar for moving the edge portion of a sheet on the tray towards the cylinder when the rockshaft is rocked, said sheet deflecting levers engaging said arm when the rockshaft is rocked whereby the stop plate is moved pivotally to bring its flange away from the cylinder simultaneously with the deflection of the edge portion of the master sheet towards the cylinder.

4. In a duplicating machine a stationary frame,

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a cylinder rotatably mounted in said frame, a mechanical clamp on said cylinder adapted when open to receive the edge of a master sheet, and when closed to secure same to said cylinder, actuating means on said frame biased to a normal inoperative position but capable of being moved manually into an operative position, said actuating means when in the operative position being adapted to effect automatic opening and closing movements of said clamp at predetermined angular positions during rotation of said cylinder, means for automatically retaining said actuating means in the operative position after movement thereto, means on said cylinder for tripping said retaining means after closing of said clamp to allow said actuating means to regain its normal inoperative position, a feed tray for a master sheet on said frame disposed approximately tangentially to the cylinder, a stop plate pivotally mounted adjacent the edge of the tray nearest to the cylinder, said stop plate having a flange the edge of which is normally disposed near to the surface of the cylinder, said flange being disposed transversely to the plane of the tray, a projection at the end of said stop plate and a freely oscillatable arm on said rockshaft having a lug in the orbit of the open clamp, said freely oscillatable arm engaging the projection at the end of the stop plate so as to rock it away from the cylinder.

FRANK RONALD FORD.

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