Dec. 24, 1940. A. J. LEVENHAGEN 2,226,003

SHEET FEEDING MECHANISM AND FRICTION CONTROL MEANS THEREFOR

Filed Nov. 30, 1939 3 Sheets-Sheet 2

Fig. 2.

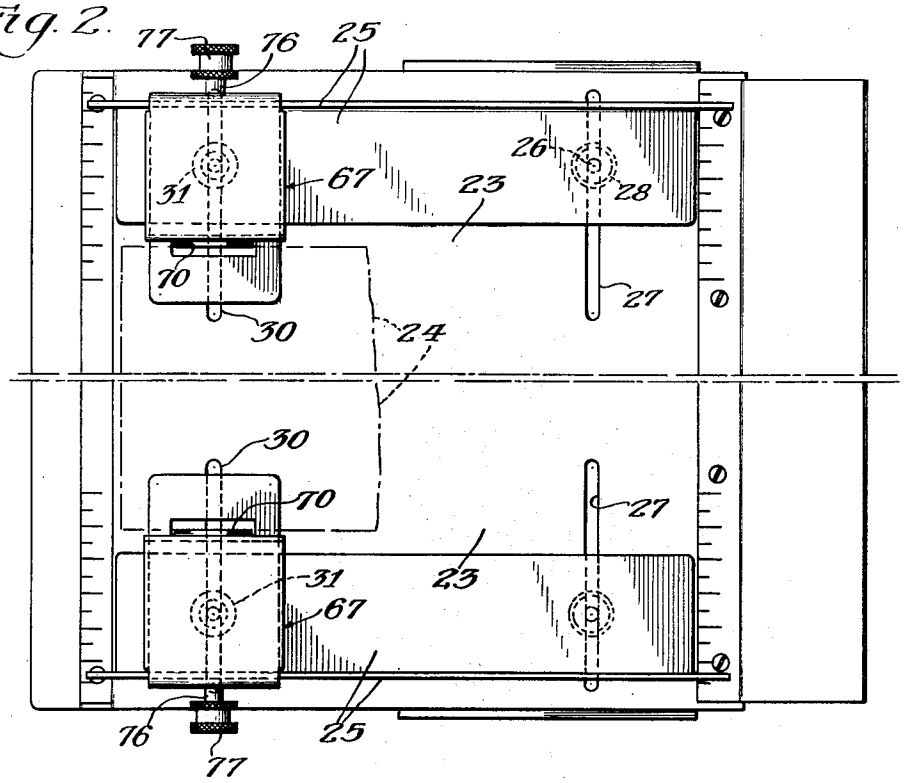
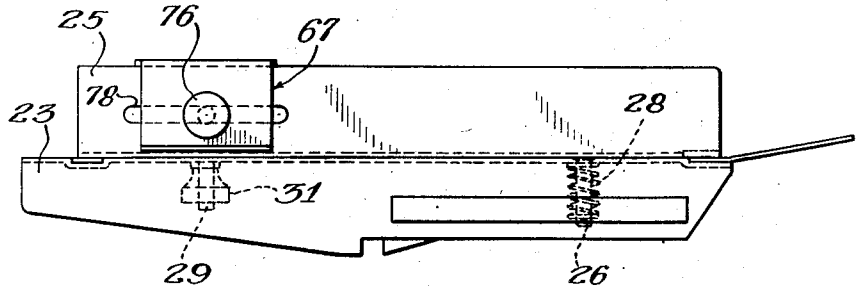


Fig. 3.



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Fig. 4

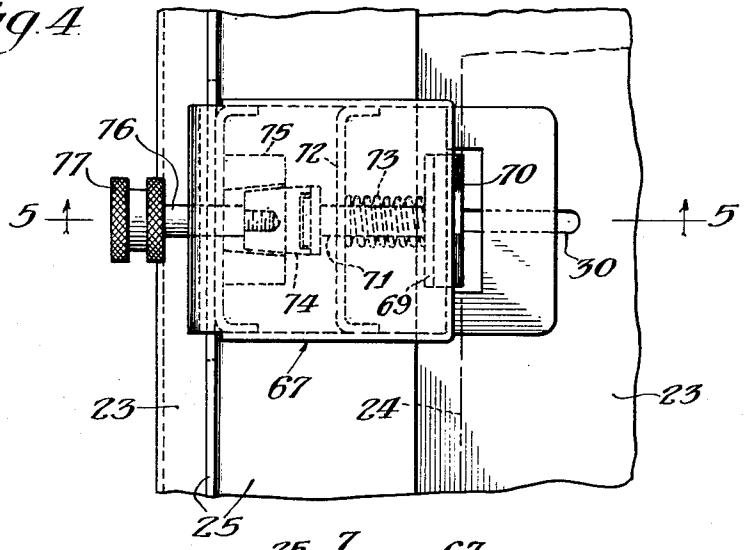


Fig. 6.

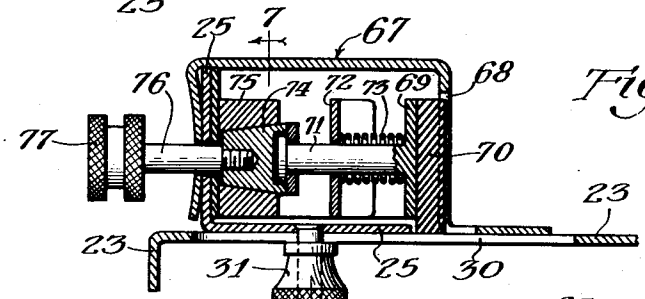


Fig. 5.

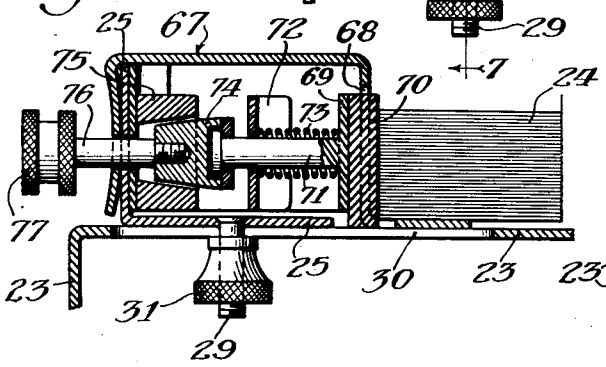
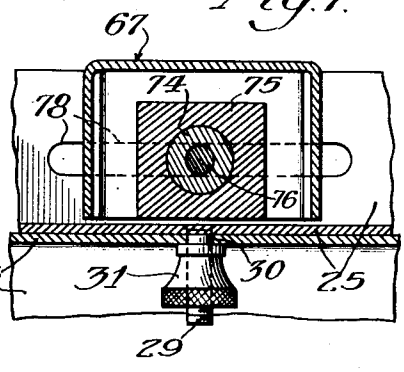


Fig. 7.



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UNITED STATES PATENT OFFICE

2,226,003

SHEET FEEDING MECHANISM AND FRICTION CONTROL MEANS THEREFOR

Arthur J. Levenhagen, Chicago, Ill., assignor to Ditto, Incorporated, Chicago, Ill., a corporation of West Virginia

pplication November 30, 1939, Serial No. 306,834

9 Claims. (Cl. 271—59)

This invention relates to sheet feeding mechanisms and friction control means therefor of a type adapted for use with duplicating machines or the like, being shown in connection with a liquid process duplicating machine of an approved construction in which a pile of copy sheets is supported on a table or tray for delivery one at a time for duplicating purposes. It is the object of this invention to provide a new and improved form and arrangement of parts by which pressure plates are pressed against the side faces of a pile of sheets so as to apply a braking effect on the several sheets with respect to their forward movement from the pile.

In the arrangement illustrated, pressure plates having inside facings of rubber are mounted movably in position in housings carried by side bars transversely adjustable on the table upon which the pile of sheets is supported, light coiled springs being provided for pressing the pressure plates yieldingly inwardly for applying the desired pressure against the side faces of the pile of sheets. The pressure plates as shown are provided with pins or bolts which extend outwardly beyond the housings and the side bars so as to be available conveniently for effecting a movement of the pressure plates transversely of the table for moving the plates into and out of frictional engagement with the pile of sheets, such pins or bolts being formed preferably of two or more parts and being provided with head portions on their outer ends to serve as bearings for the application of pressure to the pressure plates. In the preferred arrangement as shown, the pins or bolts are provided with releasable holding means arranged so that when the plates are moved outwardly against the action of the coiled springs the holding devices are brought automatically into action for retaining the plates releasably in their outwardly displaced positions and so that upon the application of a fairly light blow or other pressure inwardly on said head portions of the pins or bolts the holding devices are released for permitting the pressure plates to return to their normal positions in engagement with the pile of sheets. In the construction shown, the holding devices are in the form of tapered members on the pins or bolts working in correspondingly tapered sockets carried by the housings or brackets, arranged so that the sockets have an effective holding engagement with the cooperating tapered members so as to hold them by friction in their outwardly displaced positions when the pins or bolts are moved outwardly and manipulated for pressing the tapered members lightly into engagement with the sockets.

It is another object of this invention to improve mechanisms of this type in sundry details hereinafter pointed out. The preferred means by which the several objects have been attained are shown in the accompanying drawings, in which—

Fig. 1 is a longitudinal sectional view through a duplicating machine embodying the preferred form of the improvements;

Fig. 2 is a top plan view of the supporting table or tray of the machine, shown more or less diagrammatically with some of the parts omitted and some parts partially broken away;

Fig. 3 is a side face view of the parts shown in Fig. 2;

Fig. 4 is a top plan view of a fragmentary portion of the table or tray of the machine with a pressure plate and its associated parts in position thereon;

Fig. 5 is a transverse vertical sectional view taken substantially at the line 5—5 of Fig. 4;

Fig. 6 is a view similar to Fig. 5 but showing a changed position of certain of the parts; and

Fig. 7 is a vertical sectional view taken substantially at the line 7—7 of Fig. 6.

Referring now to the several figures of the drawings, in which corresponding parts are indicated by the same reference characters, 10 indicates the framework of a duplicating machine having a drum 11 rotatably mounted thereon by means of a heavy shaft 12 by which the drum is driven. In the arrangement illustrated, a shaft 13 carried by the drum is provided with a plurality of grippers 14, only one of which is shown, by which a master sheet 15 is releasably secured in position on the face of the drum. A platen roller 16 is rotatably mounted between oppositely disposed levers 17 pivotally mounted upon the framework, coiled springs 18 being provided in connection with the levers 17 for pressing the platen roller 16 upwardly into pressure relationship with the drum 11.

Means is provided, as is usual in machines of this type, for forwarding copy sheets to the bite of the drum and the platen roller 16 and for applying a film of solvent to the copy face of each copy sheet in turn as it is forwarded to the drum. Such means in the arrangement shown comprises cooperating forwarding rollers 19 and 20, the roller 19 being driven in coordinated relation to the drum 11 for causing the copy sheets forwarded by the rollers 19 and 20 to move at the same speed as that of the face of the drum 11. In the arrangement shown, as is usual in ma-

ment shown, this releasable holding means comprises a holding member in the form of a conical block 74 carried by the outer end portion of the pin 71 in position to engage cooperating holding members in the form of conical socket members 75, the openings of which taper outwardly away from the pile of sheets 24. The conical socket members 75 are fixed rigidly in position upon the brackets 67 in concentric position with respect to the tapered conical members 74, the arrangement being such that when the pressure plates are moved outwardly against the action of the springs 73 the tapered conical members 74 are brought into frictional engagement with the sockets (see Fig. 6) so as to hold the parts releasably in such outwardly displaced position. For effecting the desired movement of the tapered blocks 74, and the pressure plates connected therewith, pins 76 are provided connected by means of screw-threads with said tapered blocks 74 and provided with heads 77 on their outer ends for convenient manipulation of said pins 76. As is best shown in Fig. 7, the pins 76 extend outwardly through longitudinally extending slots 78 in the side bars 25 so as to enable the brackets 67 to be shifted longitudinally of said side bars 25 when desired.

With the parts in the positions as shown in Fig. 5, the blocks of rubber 70 are pressed lightly against the sides of the pile of sheets 24 for applying the desired braking effect thereon. Whenever it is desired that the pressure plates be withdrawn from engagement with the pile of sheets, this is effected by an outward pull on the heads 77 serving to bring the tapered blocks 74 into frictional holding engagement with the socket members 75. When the outward pressure on the heads 77 is relaxed, the cooperating gripping parts 74 and 75 are enabled by their wedging engagement with each other to retain the pressure plates in their outwardly displaced positions against the action of the springs 73. When the pressure plates are to be returned to their operative positions in engagement with the sides of the pile of sheets, this is effected by a light blow on the outer faces of the heads 77 serving to release the tapered blocks 74 from the socket members 75 for permitting the springs 73 to move the pressure plates inwardly.

By the provision of the improved arrangement as above described, a very convenient control of the pressure plates is provided whereby the holding means serve automatically to hold the pressure plates outwardly when they are moved outwardly and to hold them inwardly when they are moved inwardly.

While the form and arrangement of parts as above described are preferred, the invention is not to be limited to the arrangement shown except so far as the claims may be so limited, it being understood that changes might well be made in the construction and arrangement of the parts without departing from the spirit of the invention.

I claim:

1. In a mechanism of the type described, the combination of a support for a pile of sheets, pressure plates movably mounted in position so as to be movable transversely of the support into and out of engagement with the side faces of a pile of sheets on said support, spring means normally pressing said pressure plates inwardly to their operative positions, and means for holding said pressure plates in outwardly displaced positions comprising cooperating holding members connected with said pressure plates and said support respectively adapted by a gripping engagement with each other to hold the pressure plates outwardly against the action of said spring means and releasable by inward pressure on said plates for permitting said spring means to return the plates to their normal operative pressure positions.

2. In a mechanism of the type described, the combination of a support for a pile of sheets, pressure plates movably mounted in position so as to be movable transversely of the support into and out of engagement with the side faces of a pile of sheets on said support, spring means normally pressing said pressure plates inwardly to their operative positions, and frictional operating means adapted to hold said pressure plates in outwardly displaced positions comprising cooperating holding members connected with said pressure plates and said support respectively adapted by a frictional gripping engagement with each other to hold the pressure plates outwardly against the action of said spring means and releasable by inward pressure on said plates for permitting said spring means to return the plates to their normal operative pressure positions.

3. In a mechanism of the type described, the combination of a support for a pile of sheets, pressure plates movably mounted in position so as to be movable transversely of the support into and out of engagement with the side faces of a pile of sheets on said support, spring means normally pressing said pressure plates inwardly to their operative positions, and means for holding said pressure plates in outwardly displaced positions against the action of said spring means comprising obliquely disposed means held rigidly in position with respect to said support at opposite sides of the machine and other obliquely disposed members connected with said pressure plates adapted to have releasable holding engagement with said first-named obliquely disposed members when said pressure plates are moved outwardly away from the pile of sheets on the support.

4. In a mechanism of the type described, the combination of a support for a pile of sheets, pressure plates movably mounted in position so as to be movable transversely of the support into and out of engagement with the side faces of a pile of sheets on said support, spring means normally pressing said pressure plates inwardly to their operative positions, and means for holding said pressure plates in outwardly disposed positions against the action of said spring means comprising outwardly converging members held rigidly in position with respect to said support at opposite sides of the machine and outwardly tapered members connected with said pressure plates respectively adapted to have releasable gripping engagement with said outwardly converging members when said pressure plates are moved outwardly away from the pile of sheets on the support.

5. In a mechanism of the type described, the combination of a table for supporting a pile of sheets, brackets mounted on said table at opposite sides thereof at the rear end portion of the machine so as to be adjustable transversely of the table, pressure plates movably mounted in position so as to be movable transversely of the table in openings in the inner faces of said brackets for movement into and out of engagement with the side faces of a pile of sheets on the ta-

ble between said brackets, outwardly extending pins on the outer faces of said pressure plates, springs on said pins between said plates and portions of said brackets normally pressing said pressure plates inwardly to their operative positions, and means for holding said pressure plates in outwardly displaced positions comprising cooperating holding members connected with said outwardly extending pins and said brackets respectively adapted by a gripping engagement with each other to hold the pressure plates outwardly against the action of said springs and releasable by inward pressure on said plates for permitting said springs to return the plates to their normal operative pressure positions.

6. In a mechanism of the type described, the combination of a table for supporting a pile of sheets, side bars in the form of angles mounted on said table at opposite sides thereof so as to be adjustable evenly transversely of the table, brackets mounted on the inner faces of upwardly extending portions of said angular side bars at the rear end portions of said side bars so as to be adjustable transversely of the table with said side bars, pressure plates movably mounted in position so as to be movable transversely of the table in openings in the inner faces of said brackets for movement into and out of engagement with the side faces of a pile of sheets on the table between said brackets, springs interposed between said plates and portions of said brackets normally pressing said pressure plates inwardly to their operative positions, and means for holding said pressure plates in outwardly displaced positions comprising cooperating holding members connected with said pressure plates and said side bars respectively adapted by a gripping engagement with each other to hold the pressure plates outwardly against the action of said springs and releasable by inward pressure for permitting the springs to return the plates to their normal operative pressure positions.

7. In a mechanism of the type described, the combination of a support for a pile of sheets, pressure plates movably mounted in position so as to be movable transversely of the support into and out of engagement with the side faces of a pile of sheets on said table, outwardly extending pins on the outer faces of said pressure plates, springs on said pins adapted normally to press said pressure plates inwardly to their operative positions, outwardly tapered members connected with said pins, and outwardly converging parts mounted on said table at opposite sides thereof adapted by a wedging engagement with said tapered members when said pressure plates are moved outwardly to the limit of their motion to hold said pressure plates releasably in their outwardly displaced positions against the action of said springs.

8. In a mechanism of the type described, the combination of a support for a pile of sheets, pressure plates movably mounted in position so as to be movable transversely of the support into and out of engagement with the side faces of a pile of sheets on said table, outwardly extending pins on the outer faces of said pressure plates, springs on said pins adapted normally to press said pressure plates inwardly to their operative positions, outwardly tapered conical members connected with said pins, and conical sockets of decreasing size outwardly mounted on said table at opposite sides thereof adapted by frictional engagement with said first-named conical members when said pressure plates are moved outwardly to the limit of their motion to hold said pressure plates releasably in their outwardly displaced positions against the action of said springs.

9. In a mechanism of the type described, the combination of a support for a pile of sheets, pressure plates movably mounted in position so as to be movable transversely of the support into and out of engagement with the side faces of a pile of sheets on said table, outwardly extending pins on the outer faces of said pressure plates, springs on said pins adapted normally to press said pressure plates inwardly to their operative positions, outwardly tapered conical members connected with said pins, conical sockets of decreasing size outwardly mounted on said table at opposite sides thereof adapted by frictional engagement with said first-named conical members when said pressure plates are moved outwardly to the limit of their motion to hold said pressure plates releasably in their outwardly displaced positions against the action of said springs, and headed pins connected with said outwardly tapered conical members and extending outwardly therefrom for effecting movement of said pressure plates inwardly or outwardly with respect to said pile of sheets.

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Dec. 24, 1940. J. B. LOCKERT 2,226,004

CLAMP FOR TRAWLING LINE FLOAT

Filed Feb. 10, 1940

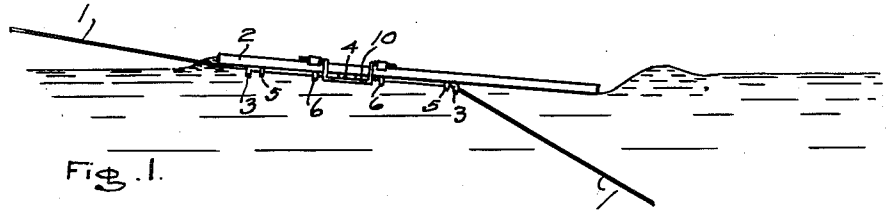


Fig. 1.

Fig. 2

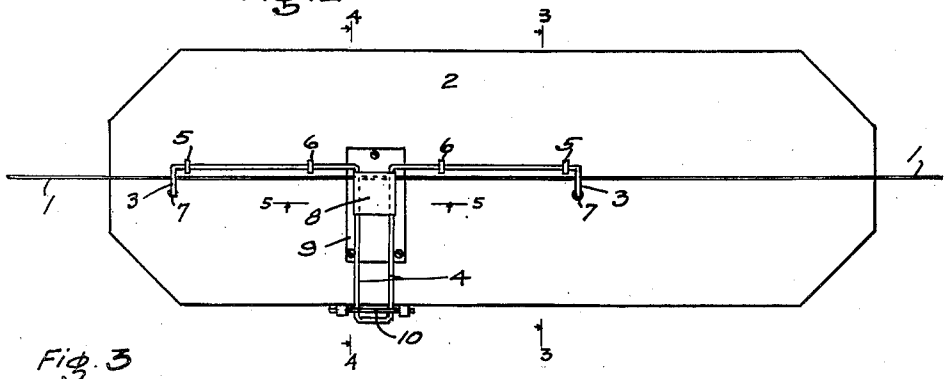


Fig. 3

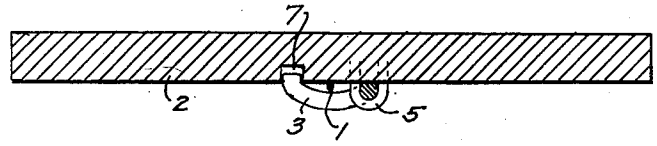
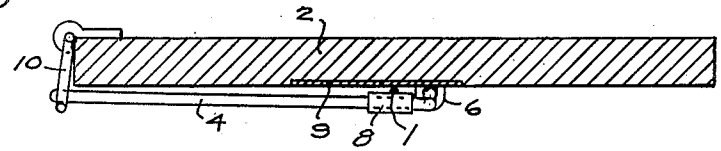


Fig. 4



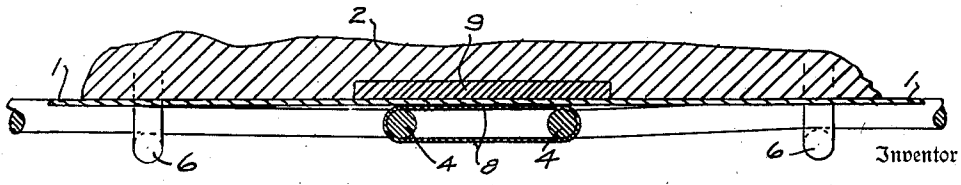


Fig. 5

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