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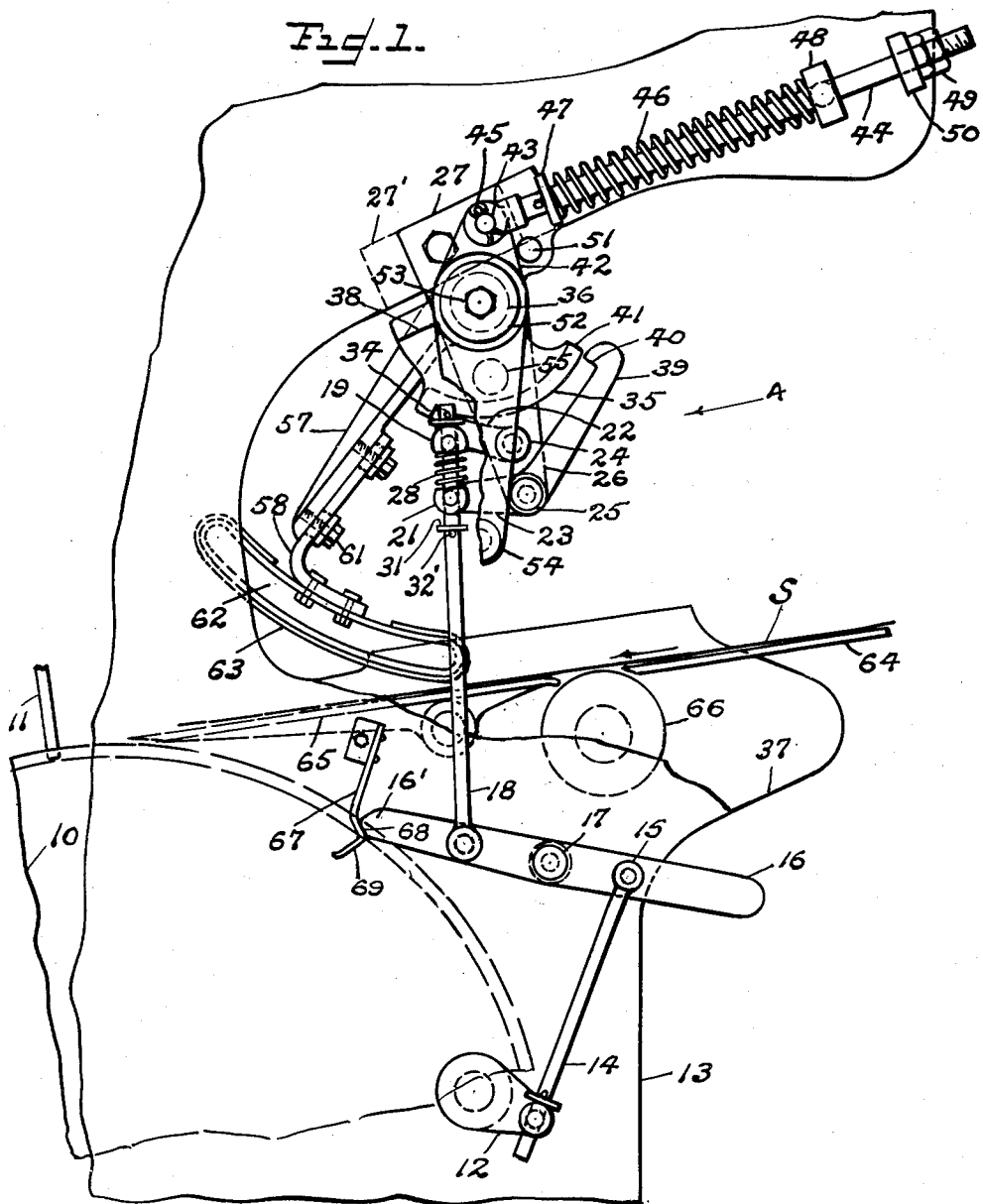
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SHEET FEEDING MECHANISM FOR PRINTING MACHINES

Filed May 9, 1936

3 Sheets-Sheet 1



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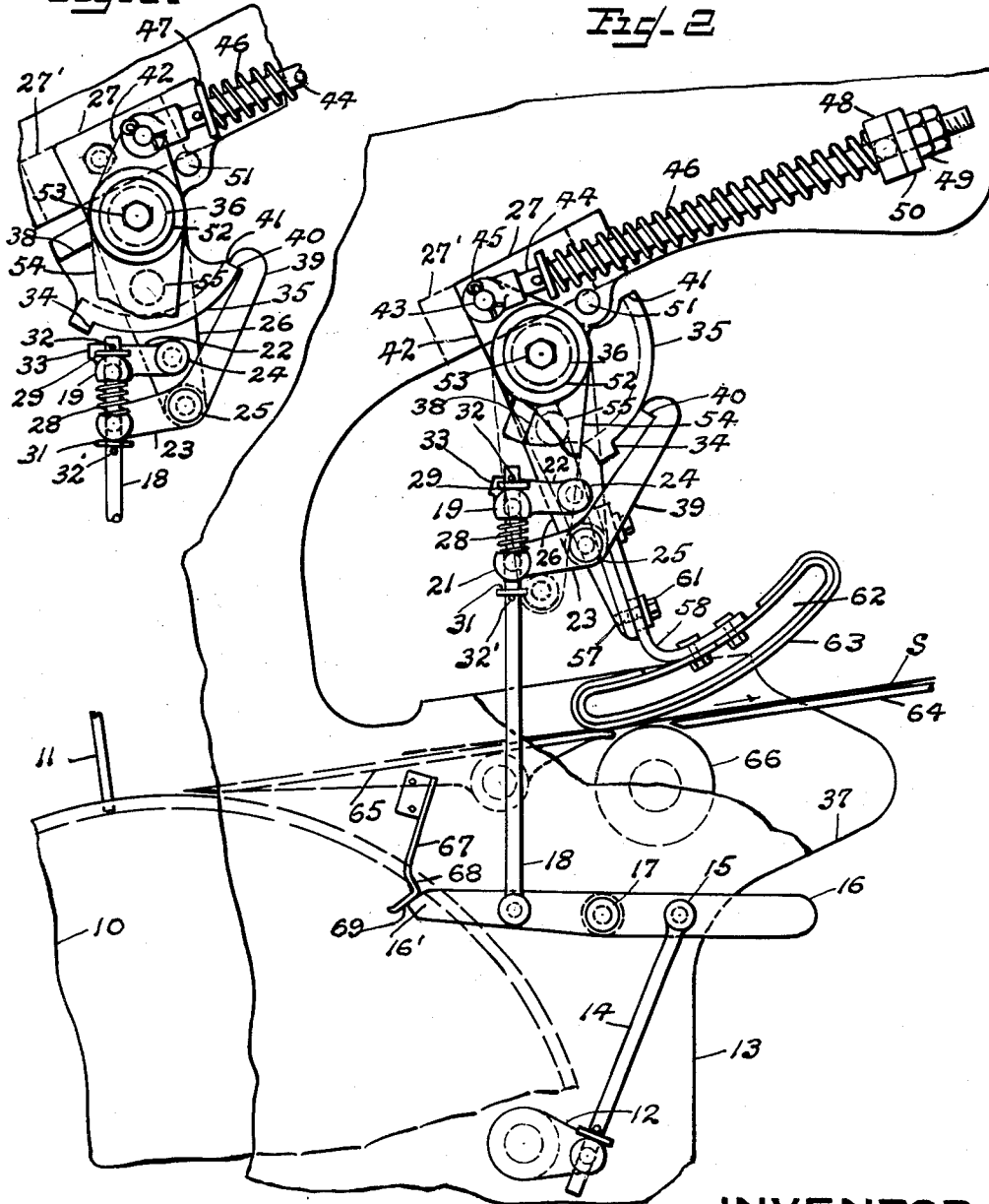
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3 Sheets-Sheet 2

Fig. 3.

Fig. 2



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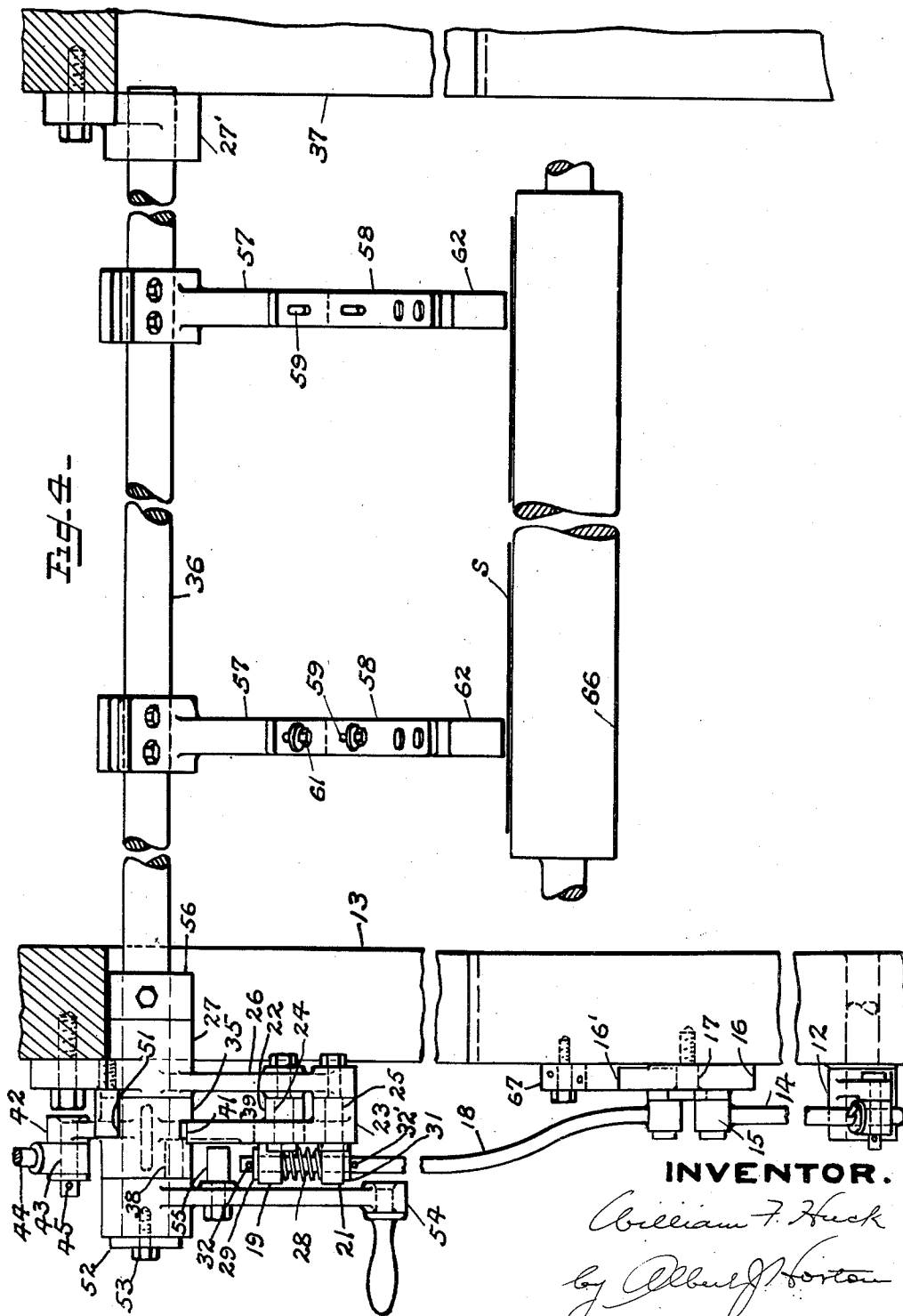
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SHEET FEEDING MECHANISM FOR PRINTING MACHINES

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3 Sheets-Sheet 3



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SHEET FEEDING MECHANISM FOR
PRINTING MACHINES

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2 Claims. (Cl. 271-56)

This invention in general relates to sheet fed printing machines having for its object the provision of means for preventing an improperly fed sheet of material or product from being engaged by the grippers of a forwarding or sheet taking cylinder after the cylinder tripping mechanism has been actuated.

It is also an object of the invention to provide a sheet detaining device for preventing the feeding of an improperly forwarded sheet to a sheet fed printing machine, of generally improved construction, whereby the device will be simple, durable and inexpensive in construction, as well as convenient, practical, serviceable and efficient in its use.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts, and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a fragmentary side elevational view of a sheet fed printing machine showing the invention operatively applied thereto and disclosing same in its normal inoperative position before being actuated by the attached cylinder tripping mechanism;

Figure 2 is a view similar to Figure 1, but showing the position of the parts in sheet retaining position, after the cylinder tripping mechanism has operated to move the latch means, thereby effecting the operation of the sheet retaining means, in order to detain an improperly fed sheet;

Figure 3 is a fragmentary detail view showing the latch means reset in position to retain the sheet engaging member in inoperative position; but with the cylinder tripping mechanism still tripped; and

Figure 4 is an elevational view, partly in section, as seen in the direction of the arrow 4 of Figure 1.

Referring more particularly to the drawings wherein similar characters of reference indicate corresponding parts in the several views of the preferred form of the invention, 10 designates generally a forwarding or sheet taking cylinder rotatably mounted on the frame structure of a sheet fed printing machine. The cylinder 10 has

associated therewith, in the usual manner, a front stop 11 serving as a detaining element for a properly fed sheet until the sheet is engaged by the usual gripper members (not shown).

Operably connected to any suitable member of a conventional cylinder tripping mechanism (not shown) is a lever 12, pivoted on a side member or column 13 of the frame structure and swivelled to a link 14, hinged at 15 to a lever 16, pivotally supported on a stud 17 fastened to the side member 13 and having hingedly secured thereto a link or rod 18, the upper portion of which passes through poppets 19, 21 fastened to levers 22, 23 respectively. The levers 22, 23 are journaled on studs 24, 25 fastened in spaced relation to an extension 26 of a bracket 27 also fastened to the side member 13. Arranged on the rod 18 between the poppets 19, 21 is a coil spring 28, the rod 18 being retained against axial movement in the said poppets by washers 29, 31 and pins 32, 32'. The lever 22 adjacent the poppet 19 is provided with a shoulder 33, which coacts with a shoulder or ledge 34 on a latch member 35, keyed to a shaft 36, journaled at one end in the bracket 27 and at its other end in a second bracket 27', the bracket 27 being suitably secured to the side member 13, and the bracket 27' to the corresponding and opposed side member 37 at the other side of the frame structure. The latch 35 is also provided with another shoulder 38, the function of which will be described hereinafter.

The lever 23 has an integral extension or latch member 39 provided with a projection or shoulder 40, coacting with a shoulder 41 on the member 35, the latter being further provided with an extension 42, having a stud 43, on which a spring rod 44 is retained by a pin 45. The rod 44 is encircled by a spring 46 retained in place thereon between a washer 47 and a poppet 48 arranged on the side member or upright 13. On the outer threaded end of the rod 44, lock nuts 49 are provided which serve to retain a collar 50 on the rod 44, the said collar, which may preferably be of any suitable shock-absorbing material, normally being out of contact with the poppet 48 but serving as a stop to limit the thrust of the spring rod 44, and consequently, the extent of movement of the member 35 and the sheet retaining members hereinafter described, as shown in Figure 2.

To the bracket 27, a stud 51 is secured which serves as a stop for the extension 42 of the latch member 35. Fastened to one end of the shaft 36 by a washer 52 and screw 53 is a hand or operating lever 54, the shank of the said operat-

ing lever being provided with a stud 55 adapted to engage, as described above, the shoulder 38 on the latch member 35. A retaining collar 56 fastened to shaft 36 in conjunction with the latch member 35 which abuts the fixed bracket 27, serves to prevent axial movement of the said shaft.

Fastened on the shaft 36 in spaced relation and arranged between the side members 13, 37 of the frame structure are a plurality of supporting arms or levers 57 to each of which is secured a curved plate 58, each of the latter being provided with slots 59 which, in conjunction with adjusting screws 61, permit adjustment of the supporting arms 58. At the lower end of the curved plates 58, sheet detaining or withdrawing shoes or members 62 are provided, each of the said shoes being formed of a metal strip suitably bent and folded to form a hollow elongated form and covered with a suitable material 63 such as rubber, leather, felt and the like. The sheet detaining shoes 62 are adapted to contact the sheet while passing over sheet guides or supporting members 64, 65 forming a part of the customary feed table, and while being forwarded by the sheet forwarding roller 66, the latter being rotatably mounted on the frame with its upper periphery adjacent the extremities of the sheet guides.

The inner end 16' of the lever 16, when depressed by the thrust of the rod 14 as the tripping mechanism is actuated, will be retained in the depressed position by a detent 67 fastened to the column 13, as best depicted in Figure 2 which illustrates the sheet detaining position of the coacting parts after the cylinder tripping mechanism has moved the rod 14 and the parts connected therewith. The detent 67, it will be observed, has an integrally formed projection provided with an upper angularly positioned face 68 and a lower angularly positioned face 69, which coact or register with corresponding faces formed on lower and upper portions respectively of the inner end 16' of the lever 16. In the untripped position of the device shown in Figure 1, the said inner end of the lever 16 will be engaged on its lower face by the upper face 68 of the detent 67 and thereby maintained in the somewhat raised position shown. In Figure 3, it will be understood, that the positions of the lever 16 and certain of the coacting parts, if shown, would be approximately the same as in Figure 2; i. e., with the inner end of the lever 16 engaged under the lower face 69 of the detent 67, the shoe 62 however, being positioned substantially as shown in Figure 1.

The operation of the device may be summarized as follows:

Assuming a sheet or product S is being forwarded out of proper alignment and prior to its engagement with the front stop 11 and the sheet grippers (not shown) of the forwarding cylinder 10, a sheet detecting mechanism (not shown) will actuate the tripping mechanism (not shown) which in turn will communicate movement to the lever 12 connected therewith, thereby actuating the connecting levers and links mechanically connected to the levers 22, 23 so that, and in the position shown in Figure 1, the projection 33 will be disengaged from the shoulder 34, thereby permitting the spring rod 44 to turn the said latch member 35, and consequently, the shaft 36 to which the sheet engaging shoes 62 are attached, in a counterclockwise direction from the position shown in Figure 1 to that shown in Figure 2, the projection 40 of the latch member 39 mean-

while remaining disengaged from the shoulder 41 on the coacting latch member 35. The turning of the shaft 36 will cause the arms 57 to swing to the right as shown in Figure 2, thereby conveying the sheet engaging shoes 62 shown in the latter figure to a position where they are effective to contact and detain the aforesaid improperly fed sheet or product on the sheet guide 65, further movement of the shoes 62 in the same direction being prevented by the contact of the collar 50 with the poppet 48, as mentioned hereinbefore. The position of the parts, as shown in Figure 2, will maintain, while the machine is operating, the sheet out of engagement with or from being advanced to the sheet grippers until the shoes 62 have been withdrawn by swinging the hand lever 54 to the left (Figure 1), thereby bringing the stud 55 of the said lever into contact with the shoulder 38 of the latch member 35, and consequently, returning the shoes 62 to the normal operative position best shown in Figure 1.

After the spring biased latch member 35 has been released by the withdrawal of the projection 33 from the shoulder 34, and the said member swung to the position indicated in Figure 2, the spring 28 between the poppets 19, 21 will maintain the projection 40 of the lever extension or latch member 39 in contact with the outer periphery of the other latch member 35. The shoes 62 are reset by swinging the hand lever 28 to the left causing a thrust of the stud 55 of the operating lever 54 against the shoulder 38 of the member 35. The shoulder 41 will then engage the shoulder 40 of the lever 23 as shown in Figure 3. In this position, it is to be understood, the "impression" is still tripped. To reset the mechanism to the normal position shown in Figure 1, the lever 16 is manually operated to return the inner end 16' of lever 16 to its contact with the upper face 68 of the detent 67, thereby simultaneously returning the shoulder 33 of the lever 22 into abutment with the shoulder 34 on the latch member 35, as shown in Figure 1. The mechanism is now in the normal untripped position and will remain so until an improperly fed sheet again actuates the tripping mechanism; as described above. This cycle will be repeated whenever a sheet improperly aligned or fed reaches the position shown approximately in Figure 1.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, and it will be further understood that each and every novel feature and combination present in or possessed by the mechanism herein disclosed forms a part of the invention included in this application.

What I claim is:

1. The combination of a sheet fed printing machine having a cylinder tripping mechanism and a feed table on which the sheets are registered prior to being taken by grippers on an impression cylinder, a sheet withdrawing member biased to withdraw a misfed sheet and prevent it from being taken by the grippers, a first latch means adapted to hold the withdrawing member in inoperative position during press operation, means connected to the cylinder tripping means to release the said latch means, a manually operated member adapted to move the withdrawing member to inoperative position, and a second latch means adapted to hold the withdraw-

ing member in inoperative position prior to press operation.

2. The combination of a sheet fed printing machine having a cylinder tripping mechanism and a feed table on which the sheets are registered prior to being taken by grippers on an impression cylinder, a sheet withdrawing member biased to withdraw a misfed sheet and prevent it from being taken by the grippers, a pair of latches effective for maintaining the sheet

withdrawing member in normal inoperative position, a manually operable member for moving the withdrawing member to an initial inoperative position, and other means connected to the cylinder tripping means for disengaging one of the latches and simultaneously engaging the other latch, to maintain the sheet withdrawing member in position for operation to withdraw an improperly fed sheet when the cylinder is tripped.

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