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STOP DEVICE FOR SHEET FEEDERS

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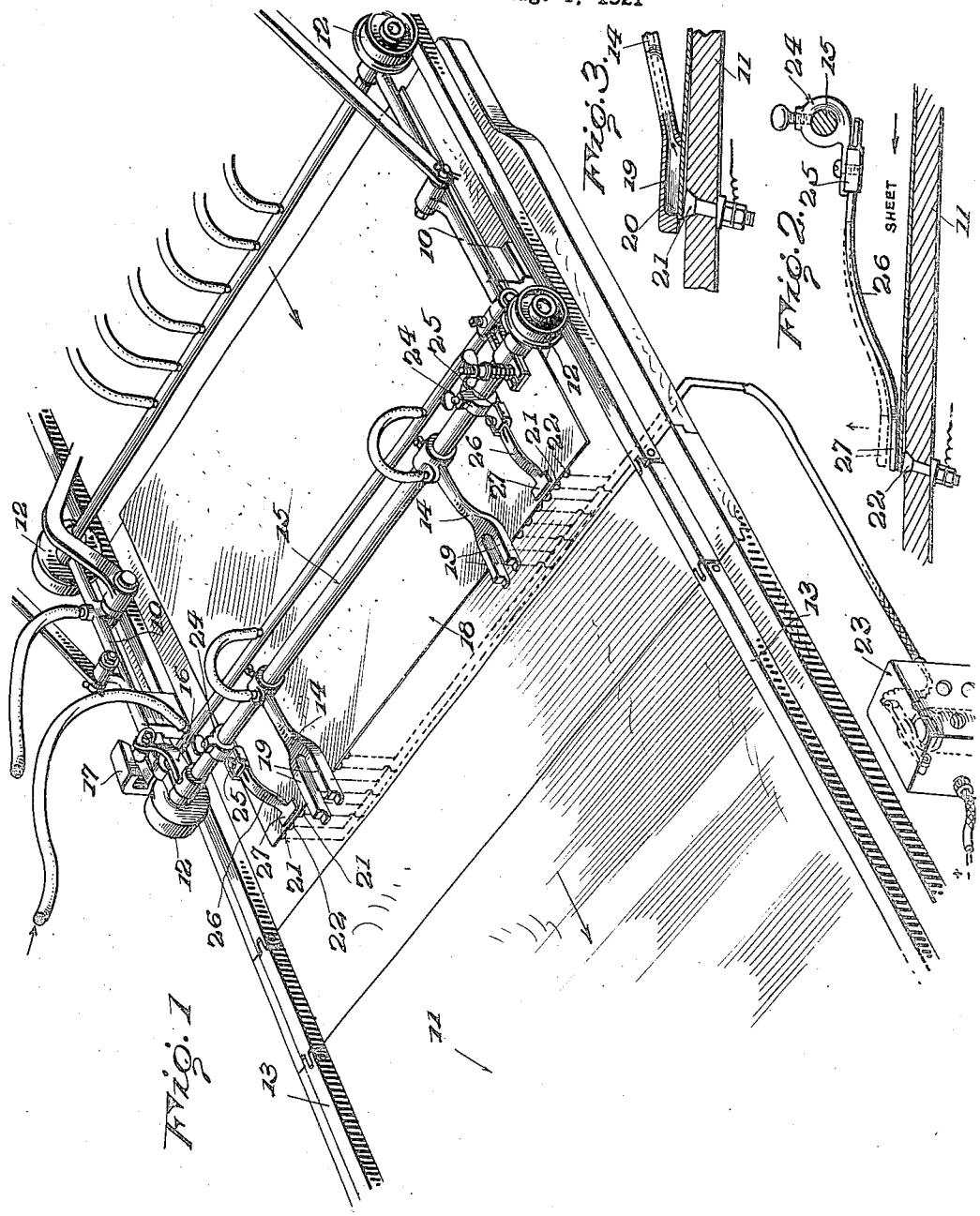


Fig. 1

Fig. 3.

Fig. 2.

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UNITED STATES PATENT OFFICE.

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STOP DEVICE FOR SHEET FEEDERS.

Application filed August 4, 1921. Serial No. 489,822.

To all whom it may concern:

Be it known that I, WALTER H. SMITH, a subject of the King of Great Britain, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Stop Devices for Sheet Feeders, of which the following is a specification.

My invention pertains to stop devices for sheet feeders and particularly to stop devices for use in connection with sheet feeders of the kind in which a separated sheet is moved forward from one position to another. In sheet feeders of this character, it is desirable that the sheet be placed accurately in its first position before being moved forward to its second position, and that the feeder be stopped if the sheet should, for any reason, not be thus accurately placed, or if, through some failure, the sheet should not reach its first position. It is an object of my invention to provide a simple and efficient device by means of which such automatic stoppage of the feeder is effected. Other objects of my invention will appear from the following specification and the claim annexed thereto.

I have shown in the accompanying drawing, and described in the following specification, one form of stop device constructed in accordance with my invention, the same being applied to a sheet feeder of the kind described in my copending application Se. No. 460,243, filed April 11, 1921. I wish it understood, however, that changes may be made in the form herein described and shown, and that the invention may be employed in other than the described connection, without exceeding the scope thereof as defined in the appended claim.

In the drawing:

Fig. 1 is a perspective view showing part of a sheet feeder of the kind described in my said copending application, having applied thereto a stop device constructed in accordance with my invention;

Fig. 2 is a detail sectional view showing the rocking contact member; and

Fig. 3 is a detail section through an arm of one of the feed forks.

In my said copending application, I have described a feeder which includes a feed carriage 10 having a movement forward and back on the feed board 11 of a printing press, rollers 12 of the carriage running upon tracks 13 mounted on the said feed board. The carriage 10 is provided at its rear part with feed members (not shown) which separate a sheet, designated 18, from a pile and, during the forward movement of the carriage, bring such separated sheet to a position such as is shown in Fig. 1 of the drawing. At the next forward movement of the carriage, whilst the rear feed members are bringing forward another sheet, front feed forks 14 carry the sheet 18 forward to a position in which it is seized by the cylinder grippers of the press. Fig. 1 shows the feed forks 14 just about to carry forward again the sheet 18, which, on the preceding forward movement of the carriage, was brought to the intermediate position shown.

The feed forks 14 are mounted on a rock shaft 15 provided with an arm 16 carrying a roller which engages a fixed cam 17 secured to the feed board 11. The effect is that as the carriage returns to its rearmost position, in which the forks 14 are over the sheet 18, the roller on the arm 16 strikes the fixed cam 17, whereby the shaft 15 is rocked and the forks 14 are caused to descend upon the sheet. Each arm 19 of the forks 14 is formed with a lengthwise suction slot 20, which connects with a suitable source of vacuum; so that when the forks 14 move down onto the sheet, the latter adheres to them by reason of the suction existing at the slots 20.

By the stop device of my present invention, the feeder is stopped whenever a sheet shall not have been fed forward into position to be taken by the forks 14, and is also stopped when the sheet, although fed forward, has not come accurately to its correct position. I effect this by providing the feed board, at each side thereof, with a set of positive contacts 21 and a set of negative contacts 22, the contacts 21 being alternated with the contacts 22. Each set of contacts is connected with one side of a suitable electric circuit having connected therein a suitable device 23 for causing stoppage of the feeder whenever the circuit is completed. On the rock shaft 15, near each end thereof, I provide a longitudinally adjustable sleeve 24, carrying a socket 25 in which is adjustably mounted the stem 26 of a contact member 27. The contact members 27, of course, rock upward and downward coincidently with the feed

forks 14, and, if no sheet were in the way, would bridge the contacts 21 and 22, close the circuit and effect a stoppage of the feeder. Ordinarily, however, the sheet 18 will cover the contacts 21 and 22 and prevent the member 27 from making contact with them.

In the use of the device, the sleeves 24 are adjusted on the shaft 15 to accord with the width of the particular sheet being fed, the adjustment being so made that the contact members 27 are located within the side edges of the sheet. The stems 26 of the contact members are adjusted in the sockets 25 in such a way as to bring the front edges of the contact member 27 in line with, or very slightly in advance of, the front ends of the slots 20 of the feed forks 14. With this arrangement of parts, it will be seen that when the sheet 18 is brought to such a position that its front edge is beyond the front ends of the slots 20 of the feed forks at each side of the machine, the contact members 27, when depressed, will rest on the sheet and will not make any connection between the contacts 21 and 22. If, through some inaccuracy of the previous feeding movement, the sheet should not come to its correct position, then its front edge, at one side or the other, might not reach to the front of the suction slots of the feed fork 14 on that side. A result of this might be either that the sheet would be fed forward in a crooked position or else that the feed forks would not perform their function of feeding the sheet forward, the failure being due to diminution of suction by reason of the leakage at the parts where the front edge of the sheet did not completely close the suction openings 20. By the device of my invention, the feeder is stopped under such circumstances as this, because if any part of the sheet is not far enough forward to close the suction slots 20, the contacts 20 and 21 will be uncovered at that point, and the contact member 27, being placed level with, or slightly in advance of, the front ends of the suction slots 20, will bridge the said contacts 21 and 22 and cause the actuation of the device 23. Stoppage of the feeder will similarly take place, of course, in case of failure of the sheet to be fed forward to position to be received by the forks 14.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:

The combination with a feed board, a carriage reciprocable on said feed board, a suction foot rockably mounted on said carriage, and means for rocking said suction foot to cause the latter to descend and engage a sheet in a predetermined position on said feed board, of an automatic stop device comprising two sets of transversely arranged contacts placed so as to be protected by said sheet when the latter correctly occupies said position, one set being disposed at each side of said feed board, a transversely adjustable contact member for each set of contacts, rockable with said suction foot, and an electrical device associated with said sets of contacts for stopping said feeding means.

WALTER H. SMITH.

Witnesses:
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THEO. R. FOSTER.