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SHEET FEEDING DEVICE FOR HIGH SPEED PRINTING PRESSES.

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1,418,145.

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Fig. 1.

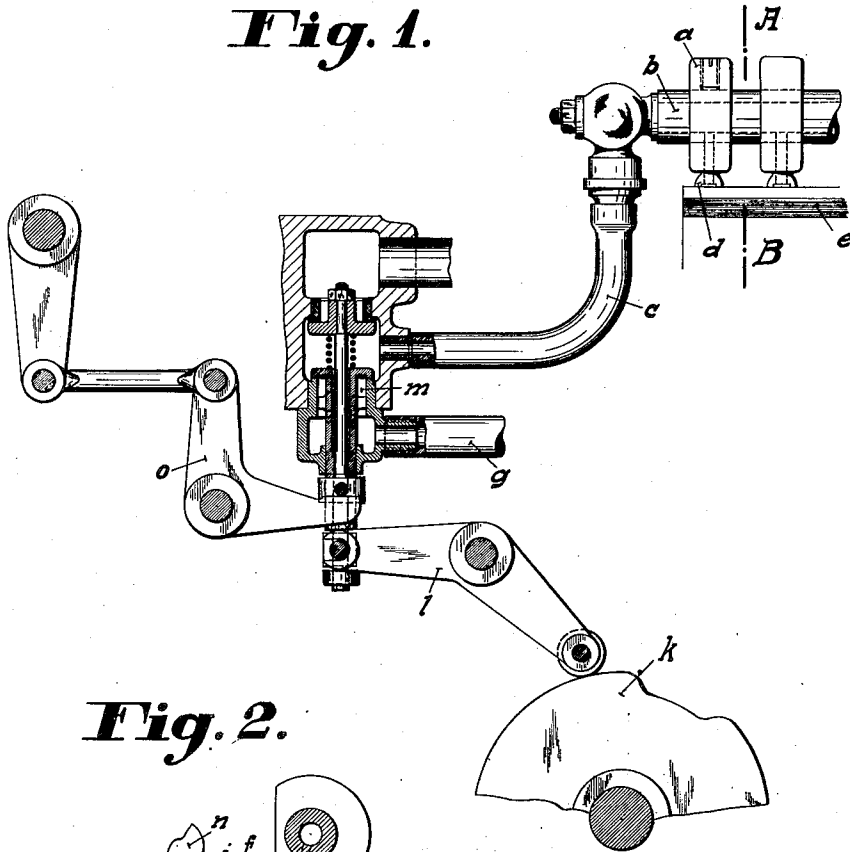
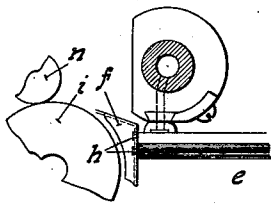


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SHEET-FEEDING DEVICE FOR HIGH-SPEED PRINTING PRESSES.

1,418,145.

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To all whom it may concern:

Be it known that I, JOHANN FISCHER, a citizen of the German Republic, residing at Augsburg, Germany, have invented certain new and useful Improvements in Sheet-Feeding Devices for High-Speed Printing Presses, of which the following is a specification.

The working output of high speed sheet printing presses is limited by the action of the automatic sheet feeding mechanism and it is therefore the main object of this invention to increase the capacity of these devices and, in consequence, of the entire press. The action of the feeding device may be divided into two stages, viz: removing the sheet from the pile by suction and a corresponding tipping of the suction head, and detaching the sheet from the suction head and the consequent transference onto the apron. The work of removing the sheet from the pile requires a certain amount of time which is about equal in most types of presses and feeding devices, and the work of detaching the sheet from the suction head takes place in the known type of devices by the vacuum being destroyed through connection of the suction head with the atmospheric air. Hereby the sheet is caused to fall away from the suction head and, by its own weight, onto the sheet conveyer. These movements, however, require considerable time since the vacuum in the suction head is only slowly destroyed and as the falling down of the sheet onto the conveyer takes place very slowly.

The object of the invention now is to very considerably shorten this time and it provides for an arrangement by means of which compressed air, that is to say air of higher than atmospheric pressure, may be introduced into the suction head at the required movement. In this way the vacuum becomes destroyed with great rapidity and the transfer of the sheet onto the conveyer is also considerably quickened as compared with the known type of apparatus, as the sheet no longer falls by gravity onto the conveyer but is forced down upon same by means of the air pressure. It is evident, that hereby the time taken for the detachment of the sheet from the suction head and for its transference onto the conveyer is very considerably reduced as is also the time required for one rotation of the governor

shaft. This, however, means an improved efficiency of the sheet feeding device and, in consequence, an increased output of the entire press.

According to the invention the compressed air is suitably introduced by means of a regulating organ which is adapted to connect the suction and pressure conduit which are provided in most of the high speed printing presses having automatic sheet feeding devices. This regulating organ is controlled by the governor shaft of the machine. It may also be connected with the pressure cutting-off valve of the paper feeding device in such a manner, that compressed air will be able to enter the suction conduit on the pressure being cut off. As an alternative, the said regulating organ may be directly actuated by the pressure cutting-off device.

The invention is illustrated in the accompanying drawings,

Fig. 1 is a general view, partly in section, of the sheet feeding mechanism and

Fig. 2 is a section on line A—B of Fig. 1.

In these drawings *a* is the suction head which, being rotatably arranged upon the suction pipe *b* and in connection with the suction conduit *c*, is adapted to rest with its suction nozzle *d* upon the upper sheet of a pile of sheets *e*. Blowers *f* which, as will be seen from Fig. 2, are arranged at the side of the pile *e* and in connection with the pressure conduit *g* are adapted to blow compressed air through passages *h* sideways into the pile in order to loosen the sheets. As soon as a sheet has been lifted the suction head tips up and thereupon performs a turning movement in known manner in the direction of the conveyer roller *i*. At the moment when a sheet is to be deposited upon the apron a cam, eccentric or the like *k* on the governor shaft comes into action and lifts, as by means of a lever arrangement *l*, the regulating valve *m*, which is arranged between the pressure conduit *g* and the suction conduit *c*, thus allowing compressed air to enter the suction head. Hereby the sheet falls away from the suction head, settles down on the conveyer roller where it is seized by the descending india rubber roller *n*. A second lever arrangement *o* serves to connect the regulating valve with the shaft of the automatic cut-off. Thus, compressed air is admitted into the suction conduit at the very moment at which the cut-off is actuated;

the sheet becomes immediately released, whereby the action of feeding the sheet is terminated.

What I claim is:

5 1. In a vacuum feeding device for high speed printing presses including suction and pressure conduits, means for periodically admitting compressed air into the suction conduit for the purpose of effecting a rapid de-
10 posit of the sheet from the suction head onto the conveyer device.

2. In a vacuum sheet feeding device for printing presses the combination with a suction and a pressure conduit of a regulating
15 valve adapted to connect the one to the other, and mechanically controlled means to effect the actuation of the said valve so as to ad-

mit air under pressure into the suction conduit at the moment a sheet is to be deposited onto the apron.

3. In a vacuum sheet feeding device for printing presses a suction conduit, a pressure conduit, a regulating organ between the suction and the pressure conduit and means to actuate said regulating organ from the gov-
25 ernor shaft on the one hand and from the pressure cut-off device on the other hand.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

JOHANN FISCHER.

Witnesses:

ALEXANDER DE SOTO,
ANDREW GILCHRIST.