

No. 748,279.

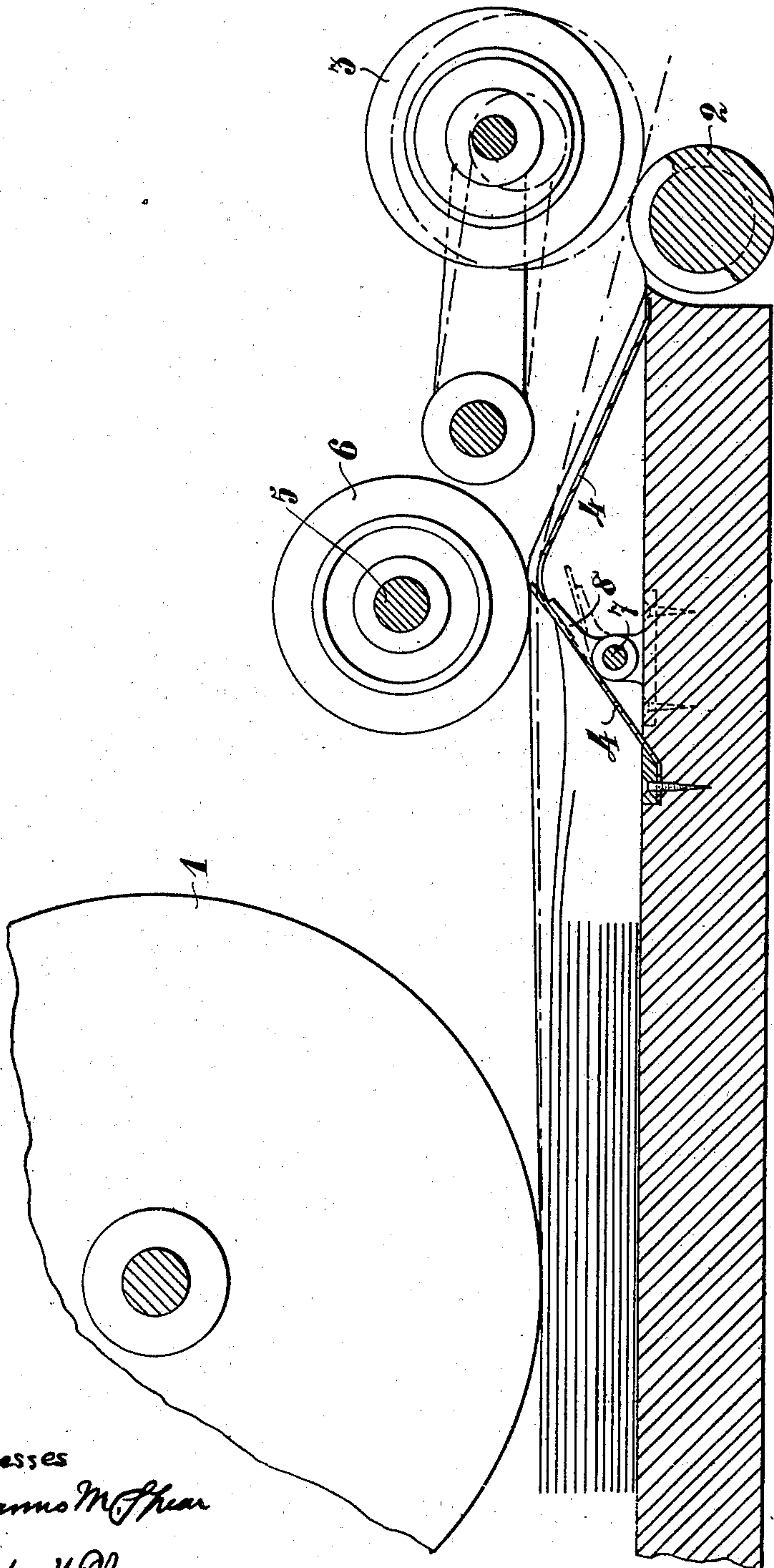
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E. J. HALLBERG.

SEPARATING AND FEEDING DEVICE FOR PAPER FEEDING MACHINES.

APPLICATION FILED JULY 8, 1901.

NO MODEL.



Witnesses

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SEPARATING AND FEEDING DEVICE FOR PAPER-FEEDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 748,279, dated December 29, 1903.

Application filed July 8, 1901. Serial No. 67,522. (No model.)

To all whom it may concern:

Be it known that I, ERNST JULIUS HALLBERG, printer, a subject of the King of Sweden and Norway, and a resident of David Bagares gata No. 5, Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in Separating and Feeding Devices for Paper-Feeding Machines, of which the following is a specification, reference being made to the accompanying drawing.

This invention relates to a paper separating and feeding device.

The device has for its purpose partly to separate a sheet (ordinarily the uppermost sheet) in a pile of sheets of paper placed on the machine-table and fed or "fanned" out by a special device and partly to feed forward the sheet which is the most advanced one among those fed out. In such machines in which the feeding or fanning-out device has to feed the sheets toward a gripping device intended to seize the most advanced sheet it has proved to be exceedingly difficult to prevent one or more of the sheets nearest to the one seized by the gripping device from accompanying this sheet into the gripping device, this circumstance depending partly on a difference in the friction between the several sheets, in consequence whereof the sheets between which the friction is the least are separated and partly on the almost complete absence of air between the sheets in the pile, which is highly compressed.

The purpose of this invention is to eliminate these difficulties by placing between the fanning-out device and the gripping device the separating and feeding device in question.

The accompanying drawing shows a longitudinal vertical section of a part of a paper-feeding machine provided with a separating and feeding device carried out according to this invention.

1 designates the frictional device (in this instance supposed to be a wheel) of the fanning-out device, the friction-wheel being located above a pile of paper placed on the machine-table. Some of the uppermost sheets of the pile are fanned out by the wheel, which is rotated in the direction indicated by the arrow, the uppermost sheet, which is in direct contact with the wheel, having the greatest

speed, while the speed of the next succeeding sheets gradually decreases downward.

2 designates a cylinder constantly rotating in the direction of the arrow, while 3 represents rotatable rollers situated above said cylinder and movable toward the same. These rollers and the cylinder 2 form the above-mentioned gripping device, the purpose of which is to seize the uppermost sheet when the front edge of the same has reached the cylinder. The sheet is seized by means of the rollers moving downward into contact with the cylinder, so that said sheet is in consequence of the rotation of the cylinder drawn away from the remaining ones, and thus fed forward. In order to prevent the succeeding sheets from accompanying the uppermost sheet when the latter is pulled away, the machine-table is in front of the wheel 1 provided with a ridge, preferably formed of an angularly bent or curved plate 4, so that there will be one surface sloping toward the pile of paper and the convex side directed upward. Above the ridge, which extends in the direction across the table—i. e., transversely to the feeding direction of the sheets—is mounted a shaft 5, which rotates continuously during the working of the machine and which at a point in front of the frictional wheel 1 carries a wheel 6, the periphery of which is at a suitable distance from the top of the ridge 4 and which is rotated by the shaft in the direction of the arrow, the periphery of said wheel being, preferably, covered with india-rubber. Beneath the ridge-plate 4 is journaled a shaft 7, on which, just below the wheel 6, is fixed an arm 8, the free end of which moves on the rocking of the shaft 7 toward or from the periphery of the wheel 6 through an aperture in the plate. When the sheets are fanned out, their front edges projecting beyond the edges of the underlying sheets will in consequence of their own weight hang down to some extent, and this hanging down, which is greatest in the uppermost sheet, increases as said sheet approaches the ridge 4. As soon as the front edge reaches the ridge it will glide upward on the same, whereby a space will be formed between the uppermost sheet and the front edge portion of the sheet next below, (as will be seen on the drawing,) in consequence whereof the air

now has an opportunity of entering between said sheets. When the front edge of the uppermost sheet has reached the top of the ridge, it enters between the rotating wheel 6 and the end of the arm 8 resting against the same, whereby the sheet is seized by the wheel, which is thus brought to cooperate with the wheel 1 in feeding the paper forward. At the same moment as the feeding action of the wheel 6 on the sheet commenced the portion of the sheet between the wheels 1 and 6 commenced, in consequence of the greater feeding-power of the wheel 6, to be stretched, and thus to be raised from the fanned-out part of the sheet next below. The ability of the air to enter between the first and the second sheets being thus increased, the separating of the sheets becomes facilitated, so that the uppermost sheet, which is now acted upon by two feeding devices, will be easily and rapidly fed so far that the front edge of the same reaches the cylinder 2. The feeding-machine is in this instance, as in most cases, supposed to be arranged in such a manner that when the front edge of the uppermost sheet has reached the cylinder 2 in order to be then seized by the gripping device the action of the frictional wheel on the sheet is at the same time interrupted by a suitable readjusting mechanism. This mechanism may, by means of a suitable power-transmitting device, be connected with the rocking shaft 7, so that when the readjustment of the mechanism takes place the arm 8 is simultaneously lowered into the position shown in dotted lines, the sheet being then entirely released. When it afterward is seized by the gripping device, it occupies the position shown in dotted lines, and it may now be pulled away from the pile without the risk of the next sheet accompanying the same, as an ample quantity of air can enter between the two sheets.

In some cases the ridge 4 may be used alone—that is to say, the wheel 6 and consequently the arm 8 are superfluous. If the wheel 6 is left out, the cylinder 2 should be placed in rear of its position shown in the drawing, so that the upper surface of the same comes close to the top of the ridge in order that the front edge of the sheet may reach the gripping device as soon as possible after it has moved upward on the slope of

the ridge. During this movement air enters, as mentioned above, between the sheets, and when the uppermost sheet is seized by the gripping device it will be stretched, just as before mentioned, in rear of the ridge, so that still more air enters between the sheets. It is evident that whether the wheel 6 is used or not the ridge 4 may be omitted if the arm 8 is made sufficiently wide. If the wheel is used, the arm is either movable, as mentioned above, or it may be stationary.

The cross-section of the side of the ridge facing the pile may be of any suitable form—for instance, straight, curved, or in the form of steps, &c.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a suitable feeding device adapted to act upon the upper surface of a pile of sheets, a stationary incline in the path of the sheets, adapted to contact with the topmost sheet or sheets after they have been fed forward from the pile, a rocking arm at the upper edge of said incline and forming a continuation thereof, and a feed-wheel cooperating with said arm substantially as described.

2. In combination with a suitable feeding device adapted to operate upon the upper surface of a pile of sheets, a stationary incline in the path of the sheets, but separated from the pile, a rocking arm at the upper edge of said incline and forming a continuation thereof, and a feed-wheel cooperating with said arm, a cylinder or roller in advance of said incline and a second cylinder or roller movable toward and from said first-named roller substantially as described.

3. In combination with a suitable feeding device for operating upon a pile of sheets, of a stationary incline in the path of said sheets arranged to be struck by the sheets after they have been fed forward from the pile and a rocking plate having its lower edge in juxtaposition to the upper edge of said stationary incline, substantially, as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ERNST JULIUS HALLBERG.

Witnesses:

CARL TH. SUNDHOLM,
HANS D. OHLSSON.