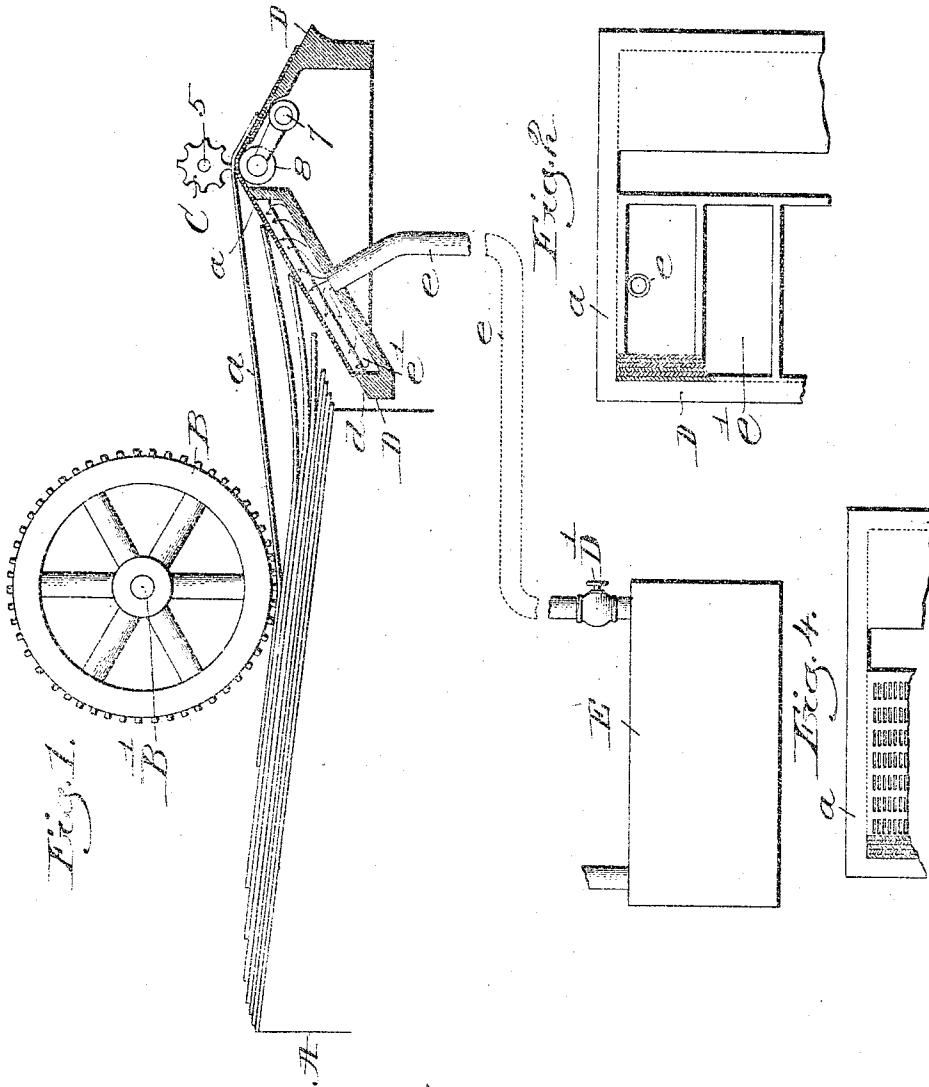


No. 868,317.

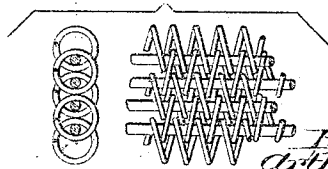
PATENTED OCT. 15, 1907.

A. S. ALLEN.
PAPER FEEDING MECHANISM.
APPLICATION FILED DEC. 30, 1904.



Witnesses:
Fred. L. Spink
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Fig. 3.



Inventor:
A. S. Allen,
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Att'y.

UNITED STATES PATENT OFFICE.

ARTHUR S. ALLEN, OF BROOKLINE, MASSACHUSETTS.

PAPER-FEEDING MECHANISM.

No. 868,317.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed December 30, 1904. Serial No. 238,885.

To all whom it may concern:

Be it known that I, ARTHUR S. ALLEN, a citizen of the United States, and a resident of Brookline, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Paper-Feeding Mechanism, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawings representing like parts.

This invention is intended as an improvement on the class of paper-feeding mechanism shown in United States Patent No. 748,279, dated December 29, 1903, wherein, as described, a ridge has an inclined side next the pile of sheets from which the topmost sheets are started by a wheel or rotary member in contact with the topmost sheet, said sheet being pushed beyond the sheets thereunder and contacting with and being forced up the inclined side of the ridge to be seized by sheet-drawing means located at the apex of the ridge and substantially midway the length of the ridge, the sheets being fed forwardly from the ridge to the press. This ridge is employed to lift the edges of the sheets as they approach the sheet-drawing means to thus lift the leading end of the top sheet sufficiently for the entrance of air therebetween and so prevent the clinging together of the leading ends of two or more sheets which may have been pushed off the pile. When the leading ends of the sheets cling together it is very difficult, if not impossible, for the drawing-off rollers or means to grasp the leading end of each single sheet and draw each sheet separately from the top of the pile of sheets that each sheet may be delivered to sheet-gripping or feeding rollers that pass each sheet singly to the press mechanism.

To overcome all tendency of the leading ends of the sheets clinging together and thus rendering it difficult to handle the sheets singly I have utilized a blast or current of air which is so directed as to act under the leading end of the top sheet as it is shoved or moved off the pile of sheets and up the inclined side of the ridge. I have ascertained that a blast or current of air may be so controlled as to its force as to partially or substantially sustain the weight of the leading end of the top sheet as it is made to leave the top of the pile and during its journey up the incline of the ridge to be grasped by the sheet-drawing or feeding means, of whatever construction, located at or near the apex of the ridge.

Figure 1 is a sectional detail showing a pile of sheets, means for moving the top sheet of the pile up the incline of the ridge, and means for creating a current or blast of air which is delivered through the inclined face of the ridge under the advancing sheets; Fig. 2 is a detail of part of the ridge showing some of the covering through which the air is discharged; Fig. 3 is a detail of the covering, and Fig. 4 shows a modified form of cover.

Referring to the drawing, A represents a pile of sheets, B a combing-wheel which is mounted on a stud B' held

in a counterbalanced frame, the wheel being adapted to act upon and shove the top sheet *a* from the pile; C represents a rotatable wheel fixed on a shaft 5, and 8 a wheel mounted loosely on a stud carried by an arm secured to a rock-shaft 7, the wheel being free to be moved up and down in an opening at the apex of a ridge D, the opening being substantially midway the ends of the ridge, the wheels C and 8 being employed to grasp the leading end of each sheet shoved off the pile by the combing-wheel, or any other usual device, and forced up the incline *a* of the ridge. The parts thus far described may, and are supposed to be, common to United States Patents Nos. 748,279, dated December 29, 1903, and 744,053, dated January 26, 1904.

The invention to be herein described has more especially for its object to prevent the possible clinging together of the leading ends of the paper and insuring that the wheels C and 8 grasp singly the leading end of each sheet as it comes up the incline and draws each sheet singly from the pile of sheets preparatory to passing the sheet forward to the press mechanism as provided for in the second of the patents above named.

Herein the blast of air generated by air-compressing means, either a pump or fan of usual construction, will be stored in the cylinder E, and said air will be led therefrom and connected with the ridge, a portion of which is provided with a space *e'*, through a pipe *e*. The pipe referred to is provided with a valve or gate D' to permit the compressed air confined in the cylinder to be delivered therefrom to the ridge with the desired force or pressure, the air passing from the ridge through suitable holes or orifices at the inclined face of the ridge, the latter being herein shown as provided with a series of air passages to discharge the air under pressure and deliver the same to the under sides of the leading ends of the sheets being shoved off the top of the pile of sheets and up the incline. For the best results I have made the part of the ridge next the pile of sheets hollow as represented in Fig. 1, and I have covered the top of the hollow space with a finery reticulated cover which may be composed either of a series of coils of fine wire intermeshed one with another or in pairs by shoving one wire, preferably right twisted, laterally into the side of another wire-coil, preferably left twisted, as provided for in United States Patent No. 748,279 wherein said wire-coils are employed in connection with the tympan of a press. Herein, however, the filling in the interstices of the wire-coils will be omitted, and preferably the wire-coils will be extended in a direction crosswise of the ridge as thereby the interstices of the coils have a tendency to deliver the fine streams of air spread out, as it were, in the direction of the length of the ridge. Instead, however, of the intermeshed wire-coils forming the covering of the ridge, I may use thin sheet steel having holes punched therein, the holes being preferably elongated in the direction of the length of the

ridge, but this invention is not limited in all instances to having the discharge orifices from the ridge elongated, although elongated orifices are considered more desirable. It will be noticed herein that the top sheets of the pile of sheets A are supported at an incline with relation to a horizontal plane, the particular means for supporting the said pile being illustrated in my application, Serial No. 239,384, filed January 3, 1905.

I believe that I am the first to combine in a sheet-feeding apparatus having a ridge, a blast of air which is delivered through the surface of the ridge and is made to act on the under sides of the top sheets of paper as they are shoved from the pile on their way to usual feeding mechanism coacting with a press, and hence this invention is not limited to the exact means herein shown either for creating or delivering the air so long as air is delivered to, and issues through, the incline of the ridge with a pressure greater than that of the usual atmosphere.

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

1. In paper-feeding mechanism, means to sustain a pile of sheets, a ridge having an inclined side provided with a series of separate interstices, means to shove the top sheets of the pile toward said ridge, means to force air

through said interstices against the under side of the leading end of a sheet of paper leaving said pile and while being moved up said incline, and means located within the ridge and exterior to the apex thereof for engaging the leading ends of the sheets being removed separately from the pile. 30

2. In paper-feeding mechanism, means to sustain a pile of sheets, a ridge having an inclined side provided with a series of interstices, means to shove the top sheets of the pile toward said ridge, and means to force air through said interstices against the under side of the leading end of a sheet of paper leaving said pile, and while being moved up said incline. 35

3. In paper-feeding mechanism, means to sustain a pile of sheets, a ridge having an inclined side provided with a series of interstices, feeding means at the top of said incline to engage the leading end of the uppermost sheet of a pile of paper, a combing device acting on the uppermost sheet of said pile to project it and others below it beyond the end of the pile, and means to force air against the under sides of the leading ends of the sheets of paper leaving said pile and being moved up said incline, the top sheet of the pile to be engaged by the feeding means. 40 45

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses. 50

ARTHUR S. ALLEN.

Witnesses:

MARGARET A. DUNN,
BERTHA F. HEUSER.