April 26, 1927. A. OLSON 1,626,353

PAPER FEEDER

Filed Oct. 21, 1925

Fig. 1.

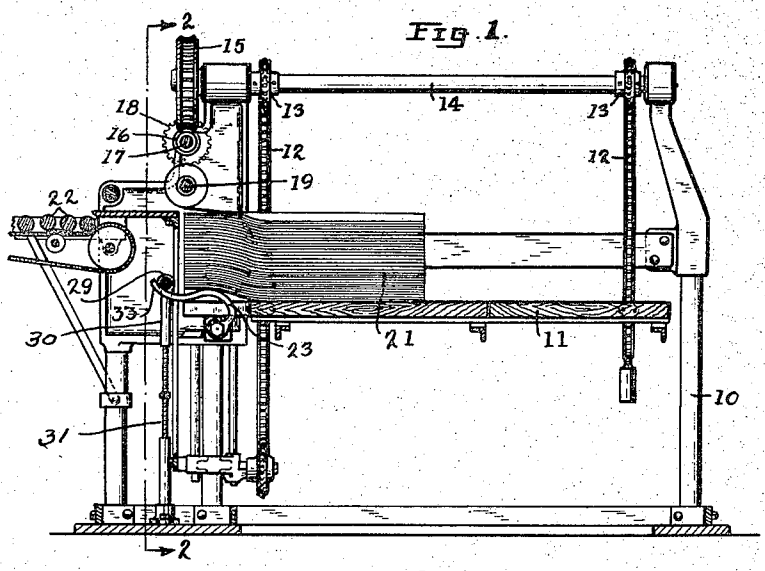


Fig. 2.

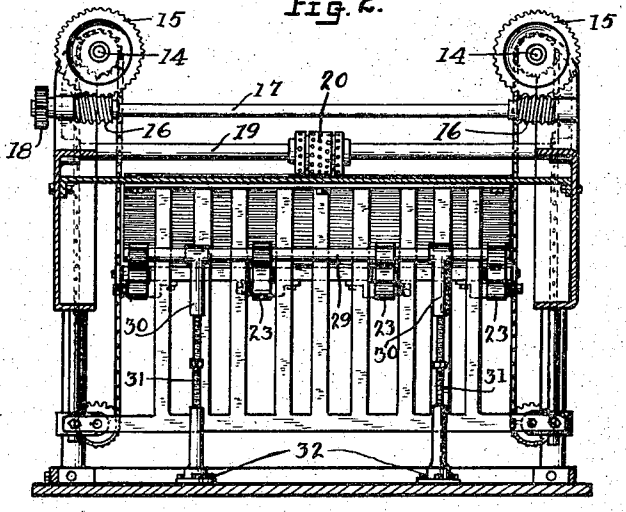


Fig. 3.

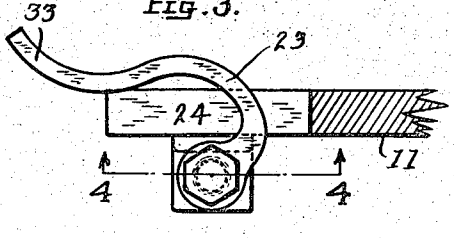
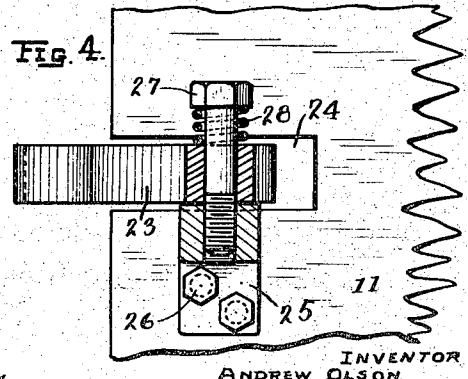


Fig. 4.



INVENTOR
ANDREW OLSON.
by Kerr, Hudson & Kent Attys

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UNITED STATES PATENT OFFICE.

ANDREW OLSON, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND FOLDING MACHINE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PAPER FEEDER.

Application filed October 21, 1925. Serial No. 63,883.

This invention relates to paper feeders and more particularly to the type of feeders known as pile feeders in which the sheets of paper are delivered successively from the top of the pile. In the printing art it is well known that, after the sheets have been printed, the various parts of a pile vary in height due to the embossing effect of the printing as well as the layer or ink that is applied to the sheets so that, when several thousands of sheets are arranged in a pile, after printing, the top of the pile has an irregular shape which introduces certain difficulties in feeding the sheets from the pile to a printing press, folding machine or other apparatus. To overcome this difficulty, it has heretofore been customary to insert wedges between the bottom of the pile and the feed table for the purpose of leveling up the front edge of the pile, at the top, in order that the top sheet may be properly presented, to the sheet-delivery mechanism. In practice, it has been necessary to stop the feeding mechanism, at intervals, for the purpose of adjusting these wedges, thereby reducing the output and, to some extent, increase the cost.

It is an object of the present invention to provide means on the feed table for conveniently and quickly adjusting the pile and to have such means automatically adjusted as the pile is depleted in order to avoid the delays incident to the use of the above-mentioned wedges and also to make the feeding mechanism more fully automatic.

Other objects of the invention and the features of novelty will be apparent from the following description taken in connection with the accompanying drawings, of which:

Fig. 1 is a longitudinal section through a pile feeder, embodying my invention;

Fig. 2 is a transverse section thereof on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged fragment of Fig. 1; and

Fig. 4 is a section on the line 4—4 of Fig. 3.

Referring to the drawings, 10 indicates the frame of the feeder and 11 the table on which the pile of sheets is arranged, this table being vertically movable by any suitable mechanism, such as the chains 12, which are suspended from sprockets 13 on shafts 14, these shafts being actuated by any suitable means such as the worm gears 15 and the worms 16, the latter being arranged on a cross-shaft 17 which is driven by any suitable source of power as by means of the gear 18. It will be understood that any of the usual forms of mechanism for moving the table 11 may be used. Below the shaft 17, there is a shaft 19 carrying a feed wheel or wheels 20, of any preferred type, for delivering the sheets, in succession, from the top of the pile 21 to the sheet-carrier which is indicated diagrammatically at 22, this sheet-carrier being for the purpose of feeding the sheets to a printing press, folding machine or any other apparatus.

As previously described, a pile of sheets which have been previously printed would be uneven at the top and it is, therefore, necessary to raise portions of the front edge of the pile, below the feed wheel or wheels 20, so as to properly present the top sheet of the pile to these feed wheels and, in order to level up the top of the pile, along its front edge, I provide cams 23, in sufficient number to suit the conditions, these cams being arranged in slots 24 in the front edge of the feed table 11, each being independently mounted on a bracket 25 that is secured to the underside of the table 11 by bolts or screws 26. The brackets 25 carry bolts 27 on which the cams 23 are pivotally mounted and, in order to hold the cams in their adjusted positions, I provide springs 28 between the heads of the bolts 27 and the cams to press the latter against the brackets 25, the cams being thus frictionally held.

It will be apparent that, as the pile is depleted by removal of sheets from the top thereof, the height of the parts of the pile, that are engaged by the cams, above the table 11, must be reduced in order to keep the top of the pile substantially level and to properly present the top sheets to the delivery wheels. I, therefore, provide means for automatically adjusting the cams, such means, in the form of the invention illustrated, consisting of a transversely extending bar or rod 29, which is supported in a stationary position by brackets 30, these brackets being adjustable by means of the turn-buckles 31 and being supported upon the floor as indicated at 32 or in any suitable manner. While I have shown the brackets 30 for supporting the bar 29, it will be understood that any other suitable means may be provided for this purpose but

such means should, preferably, be adjustable for the purpose of varying the elevation of the bar 29 to suit the different conditions that are met with in practice.

As the table 11 is raised, to maintain the top of the pile in proper relation to the feed wheels 20, the extensions or tails 33, on the cams 23, engage the bar 29, as shown in Fig. 1, and gradually rotate the cams in a counter-clockwise direction, as the table 11 continues to rise. This results in lowering the parts of the pile, which engage the cams, until they finally rest upon the table 11, the mechanism operating to automatically adjust the cams 23 in accordance with the depletion of the pile, so that by the time the bottom sheets of the pile reach the level of the delivery mechanism, the cams 23 will have been sufficiently rotated, or withdrawn from engagement with the sheets.

While I have illustrated what I now consider to be the preferred form of the invention, it is to be understood that the details of construction illustrated in the drawings and described herein, are merely for the purpose of illustrating the principles of the invention and that these various details are subject to change without departing from the spirit of the invention which is defined in the appended claims.

Having thus described my invention, what I claim is:

1. In feeders, the combination of a pile table, means for moving said table, means for delivering sheets from a pile on said table, one or more members carried by said table and independently adjustable under the pile of sheets for the purpose of properly presenting the top sheet of the pile to said delivering means, and means cooperating with said members to automatically adjust them as the pile is depleted.

2. In feeders, the combination of a pile table, means for moving said table, means for delivering sheets from a pile on said table, one or more members carried by said table and independently adjustable under the pile of sheets for the purpose of properly presenting the top sheet of the pile to said delivering means, and adjustable means adapted to cooperate with said members to automatically withdraw them from the pile as the pile is depleted.

3. In feeders, the combination of a pile table, means for moving said table, means for delivering sheets from a pile on said table, one or more cams carried by said table and adjustable under the pile for the purpose of properly presenting the top sheet of the pile to said delivering means, and stationary means adapted to be engaged by said cams and gradually adjust them as the pile is depleted.

4. In feeders, the combination of a pile table, means for moving said table, means for delivering sheets from a pile on said table, one or more frictionally held rotatable cams carried by said table and projecting therethrough to support a part of the pile above the table so as to properly present the top sheet to said delivery means, and adjustable means engaged by said cams to automatically rotate them to lower said part of the pile relative to the table as the pile is depleted.

In testimony whereof, I hereunto affix my signature.

ANDREW OLSON.