March 26, 1929. R. S. DALTON 1,706,843

PAPER DEFLECTOR

Filed Dec. 22, 1924 3 Sheets-Sheet 1

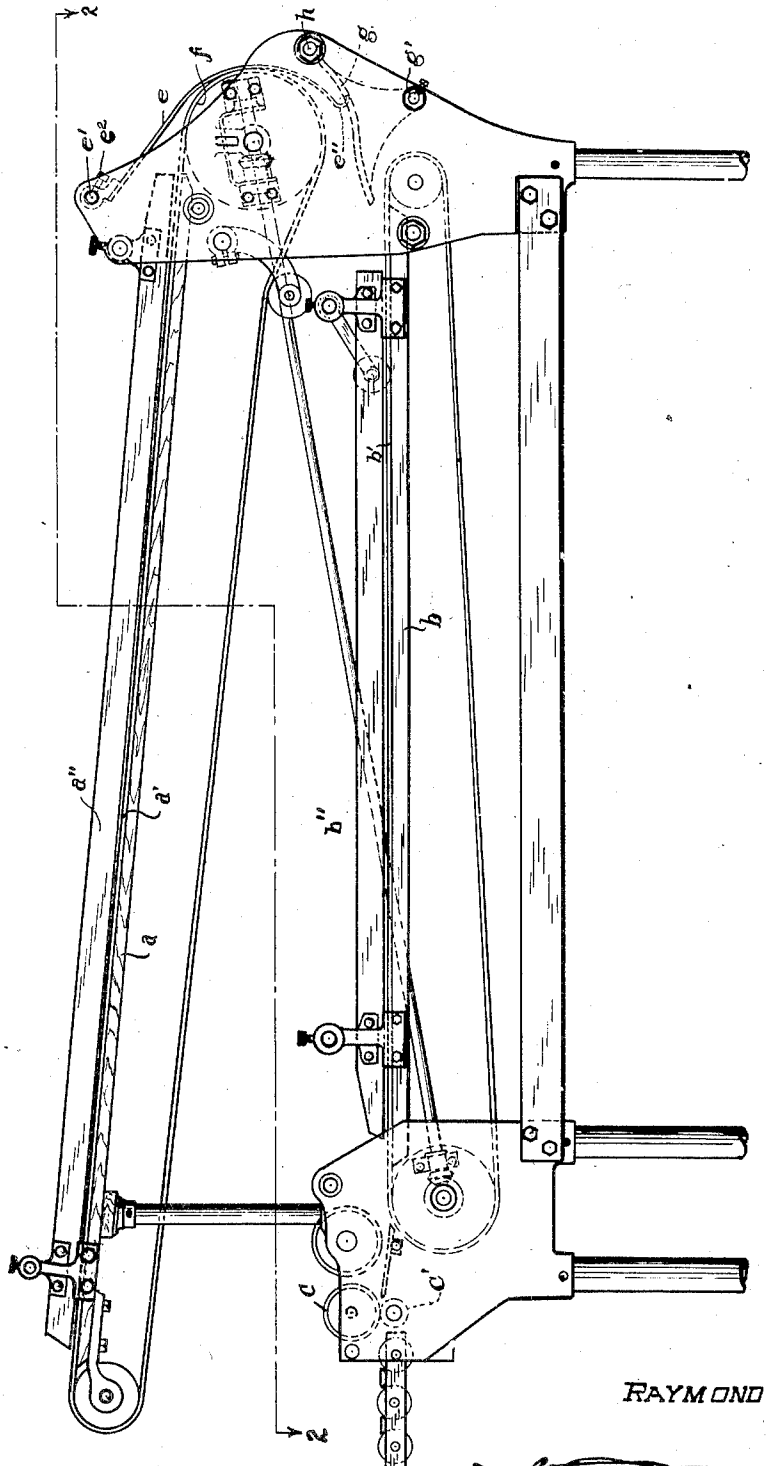


Fig. 1.

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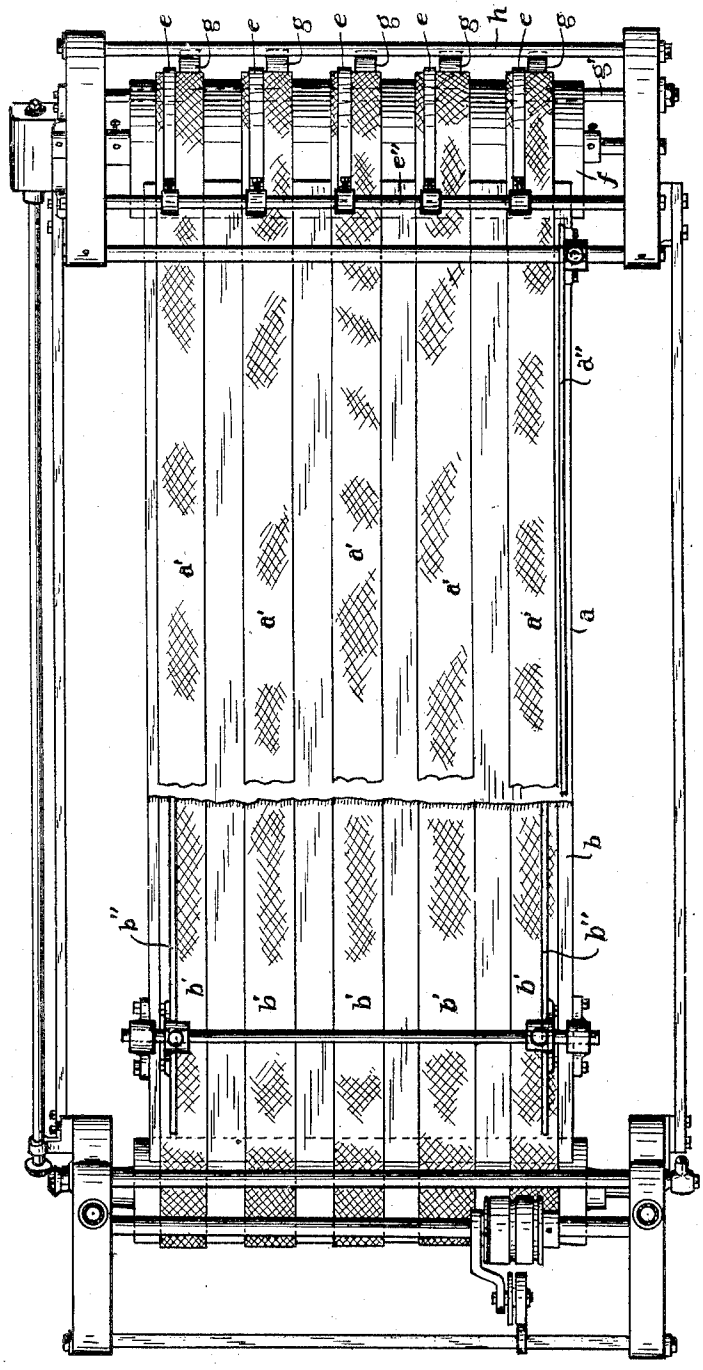


Fig. 2.

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Fig. 3.

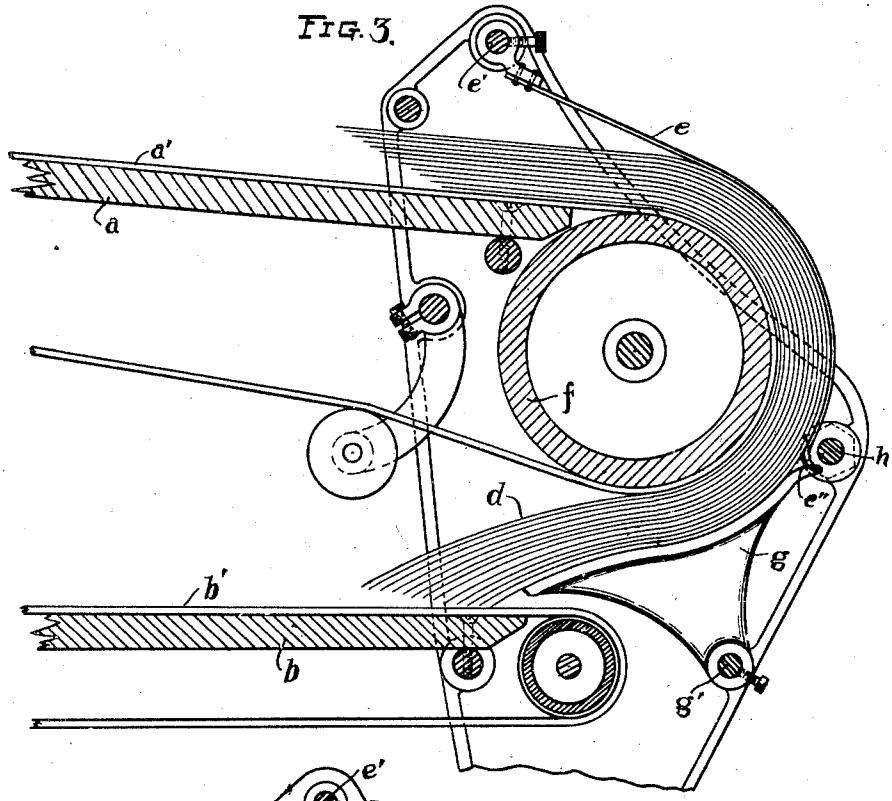
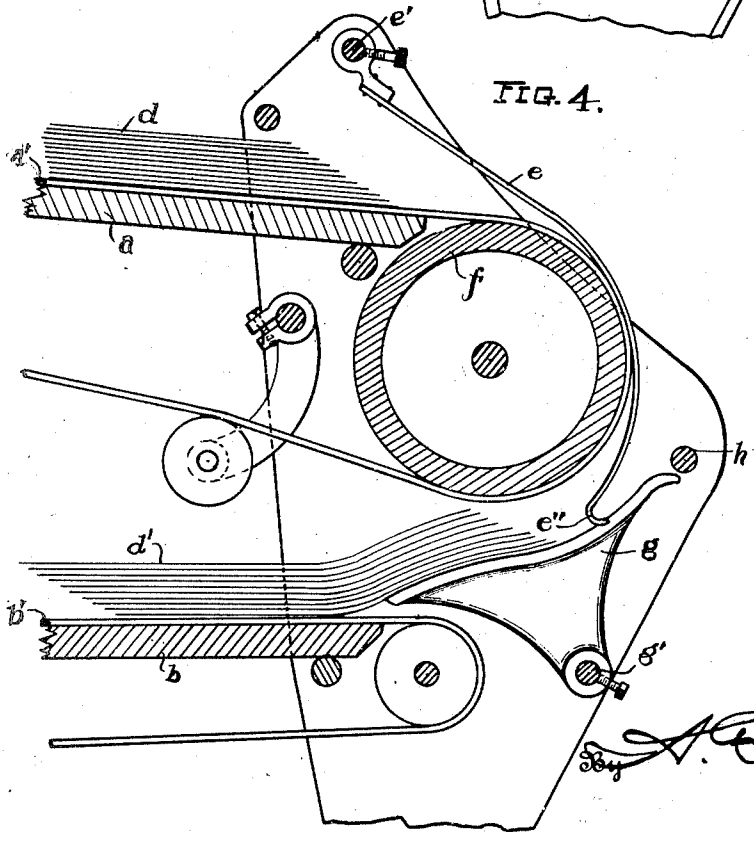


Fig. 4.



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UNITED STATES PATENT OFFICE.

RAYMOND S. DALTON, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND FOLDING MACHINE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PAPER DEFLECTOR.

Application filed December 22, 1924. Serial No. 757,357.

My invention relates to improvements in paper deflectors and has for its object the provision of means in association, preferably, with continuous sheet-feeding mechanism whereby the sheets of paper will be supplied to the conveyor or traveling belt in evenly displaced or fanned-out arrangement for presentation to the feeding rolls.

Continuous feeding mechanism of the type to which may improvements are herein applied affords two levels, usually comprising feeding belts traveling over feeding tables arranged one above the other, whereon said belts travel in reverse direction. The upper level or table is supplied by the attendant with the sheets of paper fanned-out from the bottom to the top and suitable deflector means are provided for turning the paper fanned out in reverse arrangement and for positioning the paper upon the lower table.

Hitherto the reversing means has comprised a third set of traveling belts, but considerable difficulty has been met with in the operation of sheet deflectors thus equipped, for the reason that the outermost sheets would be advanced at a different rate of speed than would the innermost sheets, thereby disarranging the fanned-out positioning or relation of the sheets when reversely disposed upon the lower feed table. Obviously this slows down and interferes with the operation of the associated paper-feeding and handling mechanism.

Accordingly, I have substituted, with distinct attendant advantages, for the reversing set of webs or belts employed in the prior art, a set of curved resilient members adapted to be adjusted into positions for deflecting the sheets and reversing them in their passage or transfer from one level of the machine to the other. Moreover, I may associate with said means a second adjustable deflector so that the sheets are not disarranged and are delivered in reversely fanned-out arrangement to the lower feeding table.

The features of my improved construction may be more readily explained in connection with the accompanying drawings illustrating a preferred embodiment thereof, wherein:

Figure 1 is a side view of a two-level continuous sheet-feeding mechanism to which my improvements have been adapted and applied,

Fig. 2 is an interrupted plan view thereof on the irregular line 2—2, Fig. 1,

Fig. 3 is an enlarged fragmentary view in vertical section illustrating the sheet deflector upon an enlarged scale with a pile of fanned-out sheets in transit therethrough, and

Fig. 4 is a similar view thereof showing the pile of fanned-out sheets about to be entered within said deflector.

Throughout the several figures of the drawings I have employed the same character of reference to indicate similar parts.

Making initial reference to Figures 1 and 2, it will be seen that the sheet-feeding mechanism comprises an upper feeding table a superposed at a slight angle above the lower feeding table b; said feeding tables respectively being equipped with sets of traveling belts a', b', whereon the sheets are conveyed in reverse directions. Lateral guides a'', b'' are adjustably mounted in position to direct the sheets in alinement toward the deflector mechanism upon the right of the machine, and again, toward the feeding rolls upon the left of the construction shown.

It may be observed at this point that preferably the sheets are supplied to the continuous feeding appliance in a substantially continuous or uninterrupted thickness of superposed fanned-out sheets of paper extending from a position rearwardly or to the left of the deflector mechanism and along the lower feeding table to the feeding rolls c, c' at the left. However, for the purpose of illustration and description I have shown merely two bundles or sections of sheets d, d', suitably fanned-out respectively upon the upper and lower feeding tables. The former is manually disposed upon the table a and properly fanned-out by the operative for passing through the deflector mechanism, as indicated in Fig. 3, while the latter section exhibits the reverse arrangement of the sheets after passing through the deflector, adapting them for the action of the feeding rolls. In this arrangement the forward edges of the sheets overlie and extend beyond the forward edges of those beneath them in the particular group or section, and, in practice, this mode of superposition is maintained as nearly continuous as possible in order to expedite operations and production.

The particular mechanism for effecting the

deflection and reversal of the sheet arrangement may now be explained by making reference to Figures 3 and 4; in the latter of which the edges of the fanned-out sheets *d* are shown forwardly advancing beneath the curved resilient members *e* that are adjustably mounted along the rod *e'* to conform with the particular width of paper in progress or transit through the deflector, and, generally, with the contour of the preferred thickness of the section of sheets as it passes around the cylinder *f* of the deflector, as shown in Fig. 3. Each of the resilient members is adjustably held in position upon and about the rod *e'* by its thumb-screw e^2. Beneath said cylinder there are also provided a series of guides or deflector shoes *g* adjustably mounted upon the rod *g'* for the purpose of directing the reversed sheets when released from the members *e*, upon the traveling belts *b'* of the lower feeding table, along and with which said sheets are conveyed toward and between the feeding rolls *c*, *c'*, for transfer to folding or other apparatus for perfecting the sheets, not shown herein. The details of the auxiliary mechanism do not require further description or illustration to make clear the construction and purpose of the present improvements.

It will be observed that the terminals of the members *e* are hooked at *e''*, so that with an excessive thickness of paper, or with paper of unusual stiffness, the forward edges will be directed invariably against the righthand portions of the adjustable shoes *g*. This is insured through the engagement, when necessary, of the hooked ends with the rod *h* acting as a limit member or stop for the purpose above indicated.

From the foregoing it will be seen that the apparatus of my present invention is of extremely simple character, yet it admirably meets the purpose in hand and overcomes certain disadvantages inherent in similar apparatus of the prior art.

Having now described the preferred embodiment of my invention and its manner of use, I claim as new and desire to secure by Letters Patent, the following:

1. In apparatus of the class described, the combination with means for conveying and reversing the arrangement of superposed sheets of paper, of a plurality of freely conformable resilient members associated with said means, adapted to bear upon and maintain the relative arrangement of the sheets during the reversal thereof, and adjustable mountings adapted for tensioning said resilient members, substantially as set forth.

2. In apparatus of the class described, the combination with a rotating reversing cylinder, of a plurality of freely conformable resilient members associated with said cylinder and adapted to bear peripherally upon the cylinder and superposed sheets, and means for adjustably positioning said members lengthwise of the rotating cylinder, substantially as set forth.

3. In apparatus of the class described, the combination with means for conveying and reversing the arrangement of sheets of paper, of a plurality of resilient members associated therewith, adapted to bear upon and maintain the relative arrangement of the sheets during the reversal thereof, and a limit member defining the flexure of said resilient members, substantially as set forth.

4. In apparatus of the class described, the combination with a rotating reversing cylinder, of a plurality of resilient members associated with said cylinder and adapted to bear peripherally upon sheets superposed thereon, means for adjustably positioning said members lengthwise of the rotating cylinder, and a limit member governing the extreme flexure of said resilient members, substantially as set forth.

5. In apparatus of the class described, the combination with substantially superposed feeding tables for groups of sheets, of a reversing cylinder interposed between said feeding tables, a plurality of adjustably tensioned resilient members associated with said cylinder and adapted to bear upon sheets in transit between said tables, a plurality of associated guides, and means for adjusting said members and guides with respect to the cylinder, substantially as set forth.

6. In apparatus of the class described, the combination with means for conveying and reversing the arrangement of superposed sheets, of a plurality of resilient members associated therewith, a plurality of co-acting guides, and a limit member for said resilient members, whereby the edges of the sheets will be directed against the guide, substantially as set forth.

In testimony whereof I do now affix my signature.

RAYMOND S. DALTON.