(No Model.) 2 Sheets—Sheet 1.

W. WOMERSLEY & J. KEATING.

PAPER FEEDING MACHINE.

No. 589,107. Patented Aug. 31, 1897.

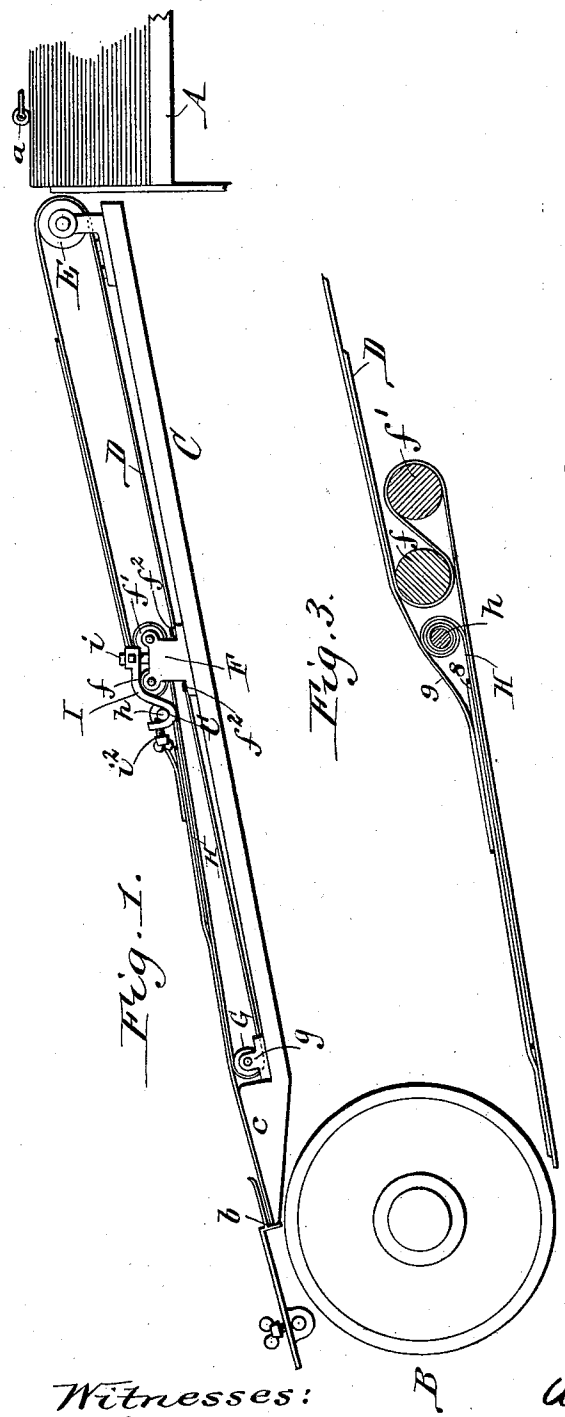


Fig. 1.

Fig. 3.

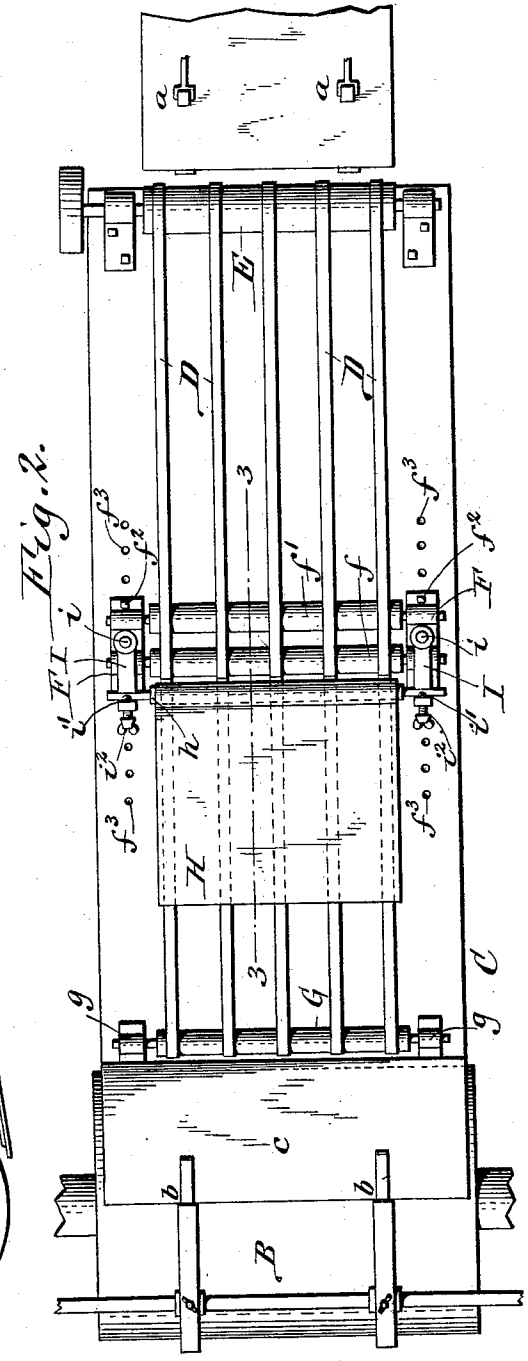


Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 6.

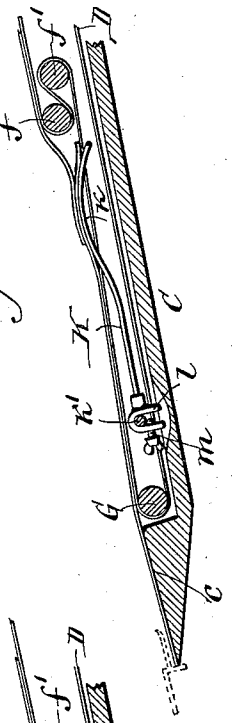


Fig. 7.

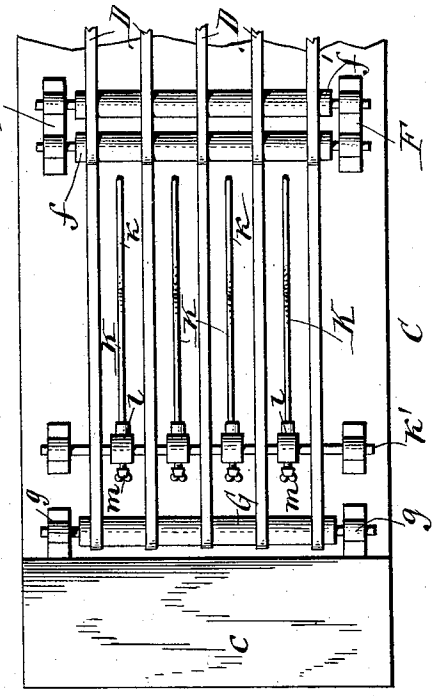


Fig. 4.

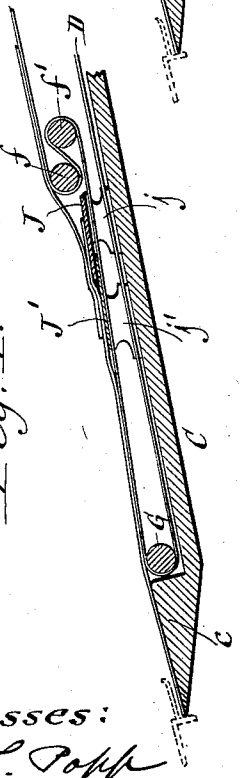
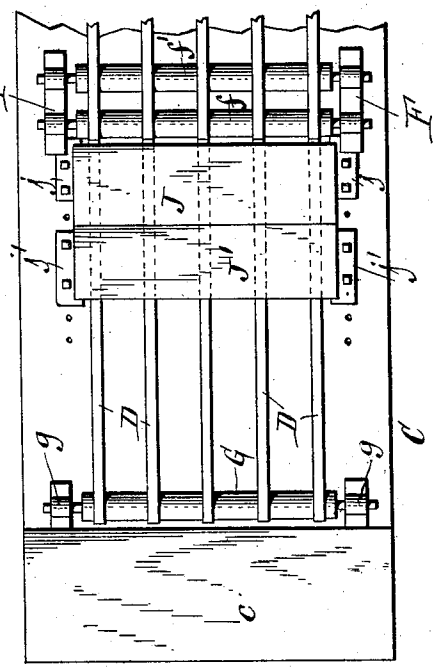


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM WOMERSLEY, OF BROOKLYN, NEW YORK, AND JEREMIAH KEATING, OF LAWRENCE, MASSACHUSETTS, ASSIGNORS TO THE ECONOMIC MACHINE COMPANY, OF NEW YORK, N. Y.

PAPER-FEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,107, dated August 31, 1897.

Application filed December 1, 1896. Serial No. 614,072. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM WOMERSLEY, residing at Brooklyn, in the county of Kings and State of New York, and JEREMIAH KEATING, residing at Lawrence, in the county of Essex and State of Massachusetts, citizens of the United States, have invented new and useful improvements in Paper-Feeding Machines, of which the following is a specification.

This invention relates to the sheet-carrying tapes or feed-tapes whereby the sheets of paper are carried successively from an automatic paper-feeder to a printing-press or other machine.

The object of our invention is to avoid injury to the front edge of the sheet and displacement of the sheets with reference to the registering-guides by an excessive propelling action of the feed-tapes, and this object is attained, broadly stated, by reducing the propelling action of the feed-tapes by means of a partial cover or shield which allows the sheets to come in contact only with part of the propelling portion of the tapes.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation showing our improvements applied to the tapes of a paper-feeder connected with a printing-press. Fig. 2 is a top plan view of the same. Fig. 3 is a fragmentary longitudinal section, on an enlarged scale, in line 3 3, Fig. 2. Fig. 4 is a fragmentary longitudinal section showing a modified construction of our invention. Fig. 5 is a top plan view of the same. Fig. 6 is a fragmentary section showing another modification of our invention. Fig. 7 is a top plan view of the same.

Like letters of reference refer to like parts in the several figures.

A represents the pile-supporting table and *a* the feeding-fingers of an automatic paper-feeder, which may be of any suitable construction.

B represents the impression-cylinder of a printing-press; *b*, the front guides, and C the feed-frame, extending from the paper-feeder to the impression-cylinder and provided at its delivery end with an elevated feed-board *c*.

D represents the carrying-tapes whereby the sheets are carried from the paper-feeder to the printing-press. These tapes pass with their receiving portions around a receiving-roller E, thence forwardly with their upper or carrying portions and downwardly around a rear intermediate roller *f*, thence upwardly and rearwardly around a front intermediate roller *f'*, thence forwardly and downwardly around a delivery-roller G, and thence rearwardly with their lower inoperative portions to the place of beginning, as shown and described in Letters Patent No. 434,649, granted to W. Womersley August 19, 1890. The intermediate rollers *f f'* are arranged one behind the other and journaled in brackets or standards F, arranged on the feed-table. The delivery-roller G is arranged in front of the feed-board *c*, with its upper portion substantially in line therewith, and is journaled in bearings *g g* arranged on the feed-table.

By arranging the intermediate tape-rollers as before described an offset or depression is formed in the carrying portions of the tapes. When a sheet has been carried forward by the tapes until its front edge strikes the front guides of the press, the rear edge of the sheet clears the rear intermediate roller and drops into the depressed space in rear of said roller, as shown at 8, Fig. 3, where it remains until it settles and is side-registered. The front guides are then raised and the sheet is carried away by the grippers of the impression-cylinder. Before the sheet has been carried away by the cylinder the next following sheet 9 is fed partly over the rear end of the preceding sheet 8, as shown in Fig. 3, this being permitted by the depression in the tapes, whereby time is gained for registering the front or lower sheet.

For the purpose of feeding sheets of different lengths the intermediate rollers are made adjustable toward and from the front guides, so that the depression in the tapes can be adjusted to the rear ends of the sheets in accord-

ance with the width of the sheets. This adjustment can be effected in any suitable way—for instance, as shown in said Letters Patent or as shown in the drawings, by shifting the fastening bolts or screws f^2 of each standard from one opening f^3 in the feed-table to another.

In delivering the sheets against the front guides or while the sheet bears with its front edge against the front guides it often happens that the sheets are driven or pressed by the tapes against the front guides with such force that the front edge of the sheet is injured or curled or that the sheet rebounds and has its register destroyed. In order to avoid this difficulty, the effective portion of the feed-tapes is partly covered, so that the sheets cannot come in contact with the feed-tapes throughout the extent of the propelling portion thereof, whereby the propelling force of the feed-tapes is correspondingly reduced.

The propelling portion of the feed-tapes can be partially covered in a variety of ways, of which the following are illustrated in the accompanying drawings:

II, Figs. 1, 2, and 3, represents a tape cover or shield which is arranged above the upper or carrying side of the depressed portion of the tapes and whereby the rear portion of the sheet is held out of contact with this portion of the tapes, thereby reducing the carrying effect of the tapes. This support consists of an apron of cloth or other flexible material which rests loosely on the depressed portion of the tapes, whereby the covered portion of the tapes is rendered ineffective. This apron is wound around a take-up roller h, arranged transversely over the depressed portion of the tapes near the rear intermediate roller. When the front edge of the sheet has been fed against the front guides, the rear portion thereof rests on the apron and is held out of contact with the tapes and only that portion of the latter which is exposed between the apron and the delivery-roller remains in engagement with the sheet. The carrying effect of the delivery portion of the tapes is correspondingly reduced and the sheet is carried slowly against the front guides, thereby preventing displacement of the sheet or injury to its front edge. The carrying effect of the delivery portion of the tapes can be regulated to suit the size of the sheet and the character of the paper or other material operated upon by unrolling more or less of the apron from the roller.

The apron-roller may be supported by any suitable means, but is preferably mounted in two supporting-arms I I, each of which is secured with its front end to a post i on one of the standards F and provided at its rear end with a bearing i', in which the adjacent end of the apron-roller is seated. The apron is prevented from unwinding after it has been adjusted by means of set-screws i^2, arranged in the supporting-arms and bearing against the apron-roller.

By supporting the apron-roller on the standards this roller is adjusted toward and from the front guides simultaneously with the intermediate tape-rollers.

The tape cover or shield represented in Figs. 4 and 5 is composed of two rigid boards or plates J J′ of sheet metal or other suitable material, the upper plate J overlapping the lower plate J′, and both arranged over the depressed portion of the tapes in rear of the intermediate rollers, so that only the delivery portion of the tapes is exposed to the sheets. The upper plate J is supported by stationary blocks j and the lower plate J′ by blocks j', which can be adjusted toward and from the front guides, so that the extent to which the tapes are covered can be increased or reduced by adjusting the lower plate. Any other suitable means of adjustment may be substituted, if preferred.

The tape cover or shield represented in Figs. 6 and 7 consists of curved rods K, which are arranged lengthwise between the carrying portions of the tapes and project with their curved portions k above the tapes, so as to prevent contact of the sheet with those parts of the tapes which are protected by the projecting portions of the rods. The rods are secured to a cross-bar k', which is arranged below the carrying portions of the tapes. The rods extend forwardly from this cross-bar and each rod is capable of a swinging adjustment about this cross-bar, preferably by clamps l and set-screws m, by which the rods can be secured in the desired position. By raising and lowering the free ends of the rods the curved portions of the rods are projected to a greater or less extent above the carrying portions of the tapes, and the shielding or covering action of the rods is accordingly increased or reduced.

We claim as our invention—

1. The combination with the sheet-carrying tapes having an offset or depression in their upper carrying portion, of a cover or shield which is arranged over the front part of the depressed carrying portion of the tapes and which leaves the rear part thereof exposed for propelling the sheets, substantially as set forth.

2. The combination with sheet-carrying tapes, of a cover or shield arranged over part of the carrying portion of the tapes and made extensible in the direction of their movement, substantially as set forth.

3. The combination with sheet-carrying tapes, of a flexible cover or apron resting upon part of the carrying portion of the tapes, substantially as set forth.

4. The combination with sheet-carrying tapes, of a flexible cover or apron attached to

a roller and arranged over part of the carrying portion of the tapes, substantially as set forth.

5. The combination with sheet-carrying tapes and their intermediate rollers supported in brackets which are adjustable lengthwise of the tapes, of a cover or shield mounted on said brackets and arranged over part of the carrying portion of the tapes, substantially as set forth.

6. The combination with the sheet-carrying tapes and their intermediate rollers supported in brackets which are adjustable lengthwise of the tapes, of a flexible cover or apron attached to a roller which is mounted on said brackets, substantially as set forth.

Witness our hands this 10th and 17th days of November, 1896.

WILLIAM WOMERSLEY.
JEREMIAH KEATING.

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