(No Model.) 2 Sheets—Sheet 1.

A. SEDGWICK.

PAPER FEEDER.

No. 387,112. Patented July 31, 1888.

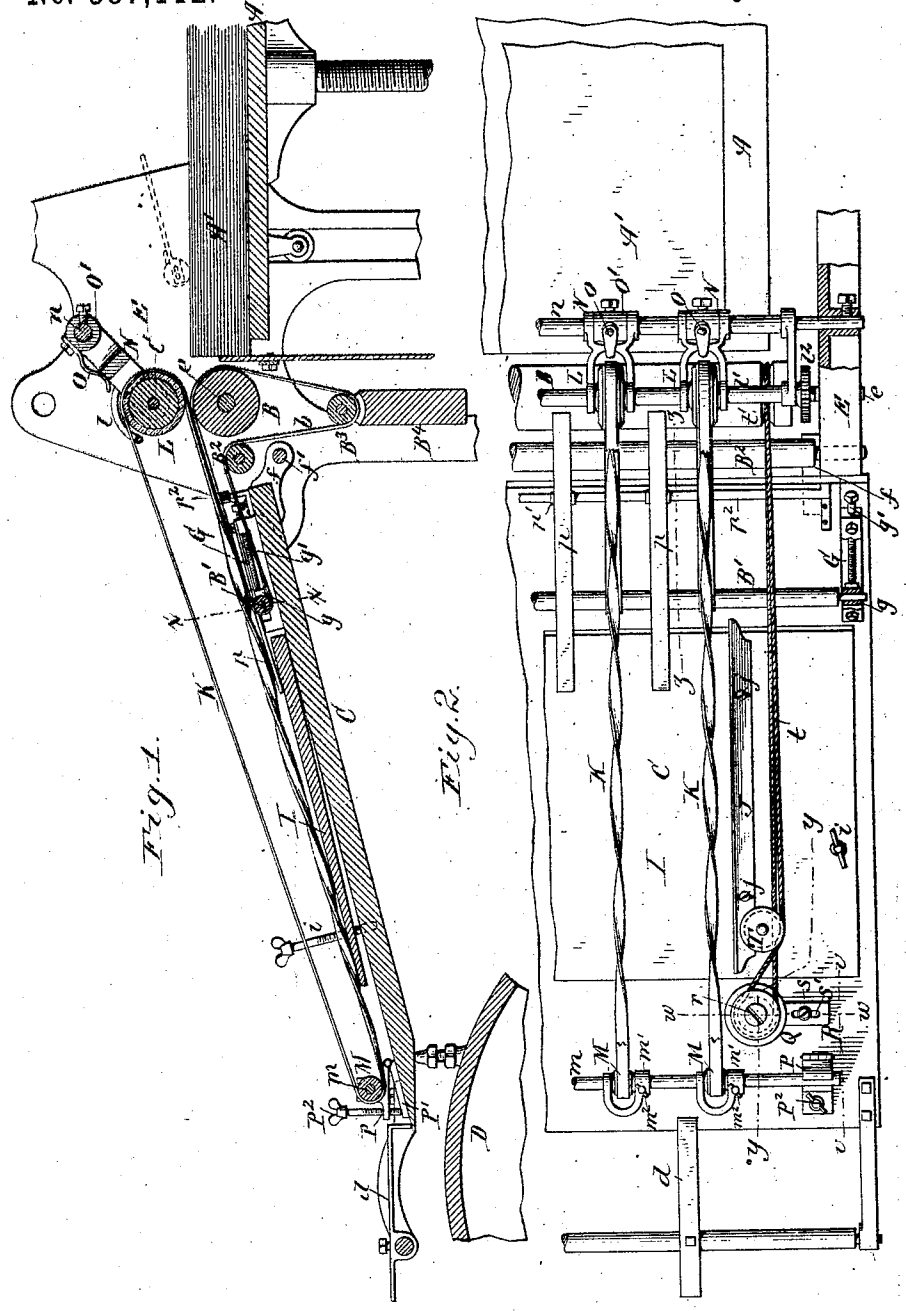


Fig. 1.

Fig. 2.

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NORRIS PETERS, INC., LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

A. SEDGWICK.

PAPER FEEDER.

No. 387,112. Patented July 31, 1888.

Fig. 3.

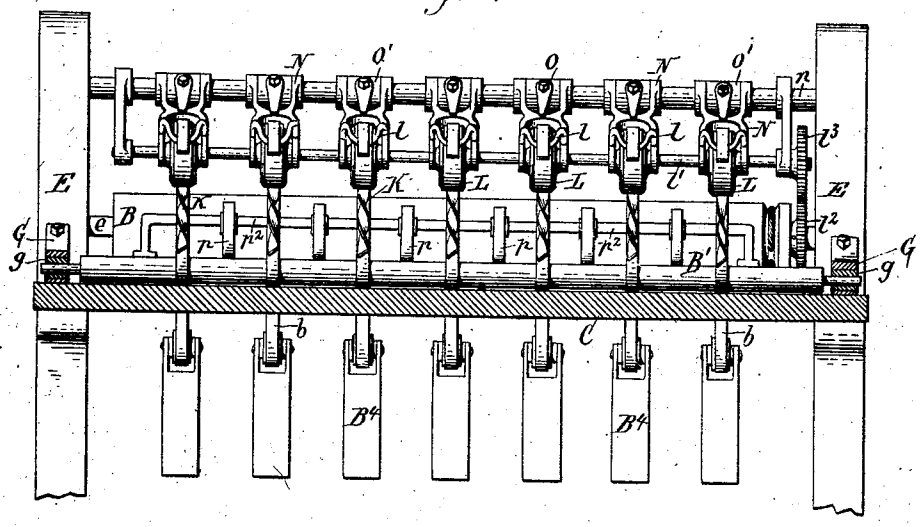


Fig. 4.

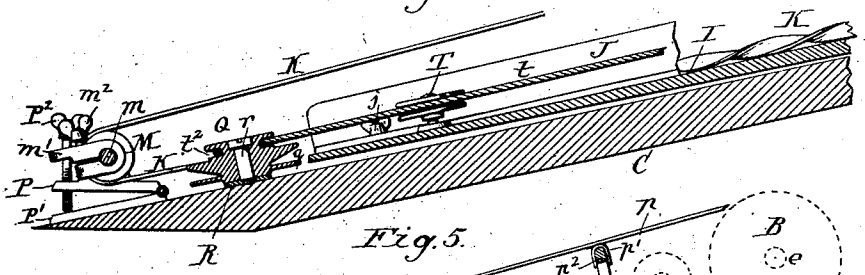


Fig. 5.

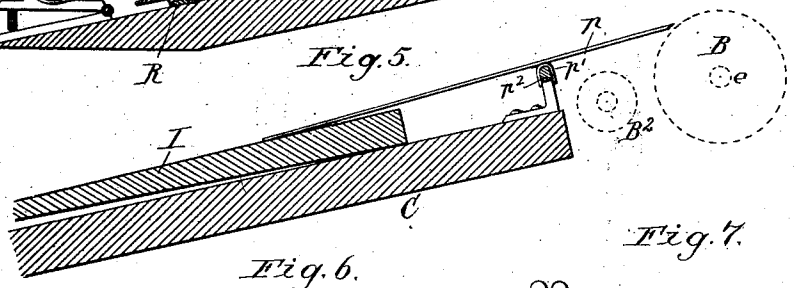


Fig. 6.

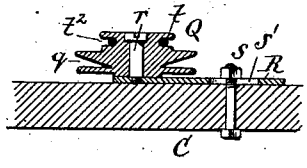
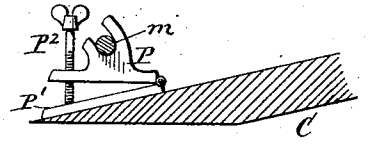


Fig. 7.



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UNITED STATES PATENT OFFICE.

ALONZO SEDGWICK, OF POUGHKEEPSIE, ASSIGNOR, BY MESNE ASSIGNMENTS, TO D. H. BURRELL & CO., OF LITTLE FALLS, NEW YORK.

PAPER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 387,112, dated July 31, 1888.

Application filed October 23, 1886. Serial No. 217,004. (No model.)

To all whom it may concern:

Be it known that I, ALONZO SEDGWICK, of the city of Poughkeepsie, in the county of Dutchess and State of New York, have invented new and useful Improvements in Paper-Feeders, of which the following is a specification.

This invention relates to that class of paper-feeders which feed sheets of paper successively from a pile to a ruling, folding, or calendering machine, printing-press, or other machine in which sheet-paper is used.

My invention has special reference to the devices whereby the sheets are carried or delivered after they have been removed from the pile. In feeding sheets to a ruling-machine or printing-press the sheets must be properly gaged or registered, so that the ruled lines or the printing on opposite sides of the sheet will be exactly back to back. This is accomplished in ruling-machines by bringing one edge of the sheet squarely against a suitable guide.

My invention has the object to improve the construction of the mechanism whereby the sheets are carried and registered; and my invention consists of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a longitudinal sectional elevation of my improved feed mechanism. Fig. 2 is a fragmentary top plan view of the same. Fig. 3 is a cross-section in line *x x*, Fig. 1. Fig. 4 is a longitudinal vertical section in line *y y*, Fig. 2, on an enlarged scale. Fig. 5 is a longitudinal section in line *z z*, Fig. 2, on an enlarged scale. Fig. 6 is a cross-section in line *w w*, Fig. 2, on an enlarged scale. Fig. 7 is a sectional elevation in line *v v*, Fig. 2, on an enlarged scale.

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

A represents the bed or table of a paper-feeder, by which the sheets of paper are successively fed from the top of a pile, A′. The construction of the mechanism by which the top sheet is fed off forms no part of my present invention, and these parts of the feeder may be of any well-known or suitable construction—for instance, as described and shown in Letters Patent of the United States No. 336,070, dated February 9, 1886.

B represents the lower delivery-roller, which receives the sheets successively from the pile.

b represents the lower carrying-tapes, each running around the roller B, thence forwardly and around a front roller, B′, thence rearwardly and around a roller, B^2, thence downwardly and around a tightening-roller, B^3, and thence upwardly to the roller B. Each tightening-roller B^3 is provided with a weight, B^4, whereby each tape is tightened independent of the other tapes.

C represents the main feed-board, having its rear portion arranged underneath the front portions of the tapes *b* and extending forwardly to the printing-press or other machine to which the sheets are delivered.

In the drawings the paper-feeder is represented as being used in connection with a printing-press.

D represents the cylinder of the press, and *d* one of the front guides thereof, against which the sheets are fed.

E represents the side frames of the paper-feeder, and *e* the shaft of the delivery-roller B, which is journaled in said side frames. The rear end of the feed-board C is pivoted to the side frames, E, by arms *f*, which are hung upon a transverse rod, *f*′, secured to the side frames. The front roller, B′, is made adjustable backward and forward on the feed-board C by means of bearings *g*, which are arranged in slotted supports G, in which they can be adjusted by screws *g*′. The supports G are secured to the feed-board C. The roller B^2 is arranged in rear of the feed-board C and is journaled in the side frames, E.

I represents an auxiliary feed-board arranged upon the lower or front portion of the main feed-board C and secured to the latter by screws *i*, which permit the front end of the auxiliary feed-board I to be adjusted vertically. The front tape-roller, B′, is arranged in rear of the auxiliary feed-board I, and the adjustable bearings of the roller B′ permit the latter to be adjusted toward and from the rear edge of the board I as may be necessary to re-

lease the sheets from the lower tapes, *b*, before striking the front guides, *d*, of the printing-press.

J represents the side guide, which is secured to the upper side of the auxiliary feed-board I by screws *j*, passing through elongated holes which permit of a slight lateral adjustment of the side guide.

K represents the upper carrying-tapes, which are arranged above the feed-boards and run with their lower portions over the feed-board I toward the front end thereof. The tapes K run around rollers L, which are arranged over the lower delivery-roller, B, thence forward to front rollers, M, which are arranged near the front end of the main feed-board, C, and thence backwardly to the rollers L. The upper tapes, K, are composed of flat bands having their lower portions twisted spirally, whereby the sheets are moved laterally on the feed-board. The tapes which are adjacent to the side guide, J, are twisted in such a direction that their screw-like action will move the sheets laterally against the side guide. The tapes which are arranged farther from the side guide may be left untwisted when the paper is straight, or they may even be twisted in an opposite direction, when this should become necessary in order to straighten out paper which is buckled or uneven. The force with which the sheets are moved laterally on the feed-board may be increased or reduced, as may be necessary, by increasing or decreasing the number of twists or turns in the lower portion of each tape. The tapes are made of strong linen or other suitable material which does not stretch and which retains the twist.

Each of the wheels L is journaled in the bifurcated front portion of an arm, N, which is hung loosely upon a transverse rod, *n*, secured to the side frames, E. Each of the arms N is pressed downwardly by a spring, O, which is secured with its rear end to a collar, O′, and which bears with its front end upon the arm N. The collar O′ is secured to the rod *n* between the upper or rear jaws of the arm N by a set-screw or otherwise. The wheels L are constructed with plain faces of rubber or similar material which takes a firm hold on the tapes. For the purpose of preventing the tapes from running off the wheels each wheel L is provided with a tape-guide, *l*, which is secured to the arm N and which confines the tape laterally in its depressed portion, as represented in Figs. 1 and 3. The wheels L are mounted upon a shaft, *l′*, which is journaled in the arms N and preferably made so thin that it will bend or spring and permit each wheel to adjust itself to any inequalities that may exist in the paper. The shaft *l′* is rotated from the lower feed-shaft, *e*, by gear-wheels l^2 l^3.

The front rollers, M, of the upper feed-tapes turn loosely on a horizontal shaft, *m*, which is supported in bearings P, secured to the front portion of the feed-board C. Each roller M is held laterally on the shaft *m* by a clamp, *m′*, which holds the roller between the jaws and which is tightened on the shaft by a screw, m^2. Upon loosening this screw the clamp can be slipped lengthwise on the shaft to adjust the roller, and upon lifting the shaft from the bearings P the clamps and rollers can be moved from the shaft. Each bearing P is hinged at its upper end on a base-plate, P′, which is secured to the feed-board C, while the lower end of the bearing is provided with a set-screw, P^2, by which the bearing can be swung on its hinge, so as to raise or lower the shaft *m*.

p represents thin guide-bars arranged between every two pairs of feed-tapes and extending from the lower delivery-roller, B, to the auxiliary feed-board I, upon which their front ends rest, as represented in Figs. 2 and 5. The guide bars are provided on their under sides with jaws *p′*, by which they rest upon a cross-bar, p^2, which is secured to the upper portion of the main feed-board C. The guide-bars *p* support the sheets between the tapes, and can be easily moved transversely on the bar p^2 when required to be adjusted.

Q represents a horizontal guide-wheel arranged upon the front portion of the main feed-board C in line with the side guide, J, and provided in its face with a V-shaped groove, *q*, in which the edges of the sheets are guided after they leave the side guide. The guide-wheel Q is journaled upon an arbor, *r*, which is secured to a base-plate, R. The latter is adjustably attached to the feed-board C by a screw-bolt, *s*, passing through an elongated opening, *s′*.

t represents an endless cord, by which the guide-wheel Q is rotated from the lower delivery-roller, B, which latter is provided with an annular groove, *t′*, in which the cord *t* runs. The guide-wheel Q is provided in its upper portion with a groove, t^2, for the reception of the cord *t*.

T represents a pulley attached to the upper feed-board, I, for changing the direction of the cord *t* between the roller B and the guide-wheel Q.

The twisted tapes run in a straight line lengthwise over the feed-board and act upon the whole length of the sheet, thereby moving the latter laterally upon the feed-board against the side guide as soon as the sheet is released by the lower tapes, *b*. The action of the twisted tapes is, however, so gentle as not to cause any buckling or doubling up of the sheets. The force of the tapes can be increased or reduced by increasing or reducing the number of twists in the tapes while the machine is running, thus enabling the operator to regulate the action of the tapes nicely in accordance with the requirements of the paper acted upon. When only those tapes are twisted which run near the side guide, there is but a little paper between the twisted tapes and the side guide, and the danger of buckling or doubling the paper is avoided. The feed-board causes the sheet to lay perfectly flat while it

is moved laterally and prevents the sagging of the paper, which is liable to occur when feed-tapes are relied on for supporting the paper. The feed-board also enables the sheets to be moved laterally with very little force. The revolving guide-wheel propels the sheet forward and prevents the edge of the sheet which rests against the side guide from being retarded by friction.

By adjusting the front roller, B′, of the lower tapes, *b*, so as to release the sheet from the lower tapes just before it reaches the front guides, *d*, of the printing-press the sheets are fed against the front guides merely by the action of the upper tapes, K, which is not of sufficient force to cause buckling of the sheets against the front guides.

By my improved mechanism the sheets are carried evenly and lightly against the guides, without causing the sheets to buckle or double up, thereby insuring a uniform and precise feed and a correct register of the sheets.

The feed-boards and connecting parts can be swung up a short distance at their delivery ends when making ready.

I claim as my invention—

1. The combination, with the feed-board and a side guide, of lower tapes, *b*, whereby the sheets are carried to the feed-board, and upper twisted tapes, K, whereby the sheets are moved over the feed-board, substantially as set forth.

2. The combination, with the feed-board I, of the lower tapes, *b*, and a front tape-roller, B′, made adjustable toward and from the rear end of said feed-board, substantially as set forth.

3. The combination, with the feed-board I, of the lower feed-tapes, *b*, the lower delivery-roller, B, the front tape-roller, B′, made adjustable toward and from the feed-board, the guide-roller B^2, and the tightening-rollers B^3, substantially as set forth.

4. The combination, with the feed-board, of a grooved revolving guide-wheel, whereby the edge of the sheet is propelled and guided, substantially as set forth.

5. The combination, with the feed-board and the stationary side guide, of a revolving guide-wheel, substantially as set forth.

6. The combination, with the feed-board, of a stationary side guide, a revolving guide-wheel, and tapes traveling over the feed-board, substantially as set forth.

7. The combination, with the lower delivery-roller, B, and traveling tapes K, of the wheels L, arms N, in which said wheels are journaled, a rod, *n*, upon which the arms N are loosely hung, and springs O, secured to the rod *n* by collars O′, substantially as set forth.

8. The combination, with the upper feed-tapes, of the wheels L, provided with plain faces, arms N, in which said wheels are journaled, and tape-guides *l*, attached to the arms N, substantially as set forth.

9. The combination, with the lower delivery-roller, B, and the tapes K, of the wheels L, supporting-arms N, flexible shaft *l′*, on which the wheels L are mounted, and gear-wheels l^2 l^3, connecting the shaft of the lower roller, B, with the flexible shaft *l′*, substantially as set forth.

10. The combination, with the upper feed-tapes, of the main feed-board C and the auxiliary feed-board I, arranged above the main feed-board and below the feed-tapes, and made adjustable at its delivery end toward and from the feed tapes, substantially as set forth.

11. The combination, with the feed-board and the upper feed-tapes, K, of the front tape-rollers, M, a shaft, *m*, upon which said rollers are loosely mounted, clamps *m′*, attached to said shaft and embracing the rollers M, and bearings P, in which the shaft is supported, substantially as set forth.

12. The combination, with the main feed-board and the adjustable auxiliary feed-board and the feed-tapes K, of the tape-rollers M, the supporting-shaft *m*, and the hinged bearings P, provided with adjusting-screws P^2, substantially as set forth.

13. The combination, with the lower delivery-roller B, and the feed-board I, of the feed-tapes K *b* and the intermediate guide-bars, *p*, extending from the roller B to the feed-board I, substantially as set forth.

Witness my hand this 15th day of October, 1886.

ALONZO SEDGWICK.

Witnesses:
J. S. VAN CLEEF,
C. W. H. ARNOLD.