

(No Model.)

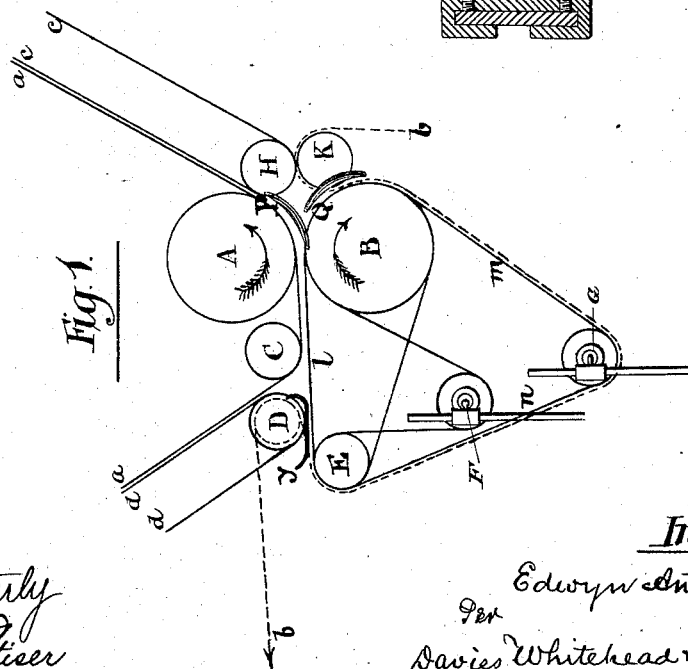
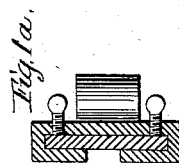
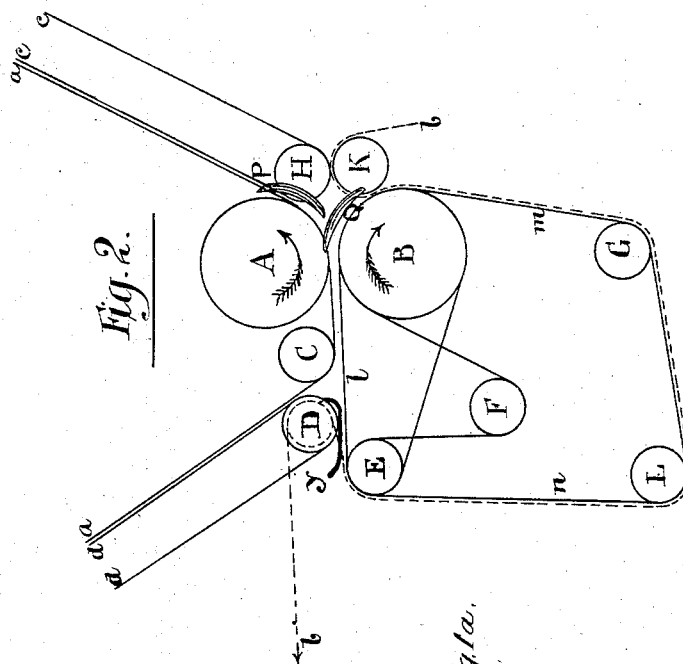
2 Sheets—Sheet 1.

E. ANTHONY.

# DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 263,746.

Patented Sept. 5, 1882.



*Witnesses:*

J. L. Buttery  
William J. Hester

*Inventor:*

Per Edwyn Anthony  
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(No Model.)

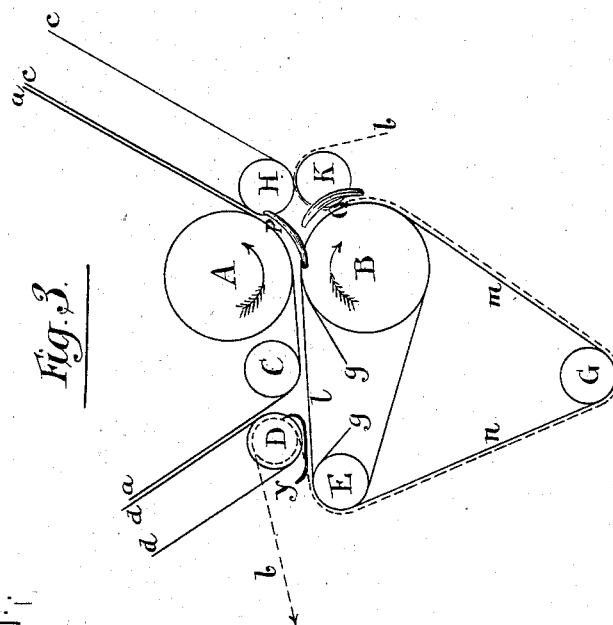
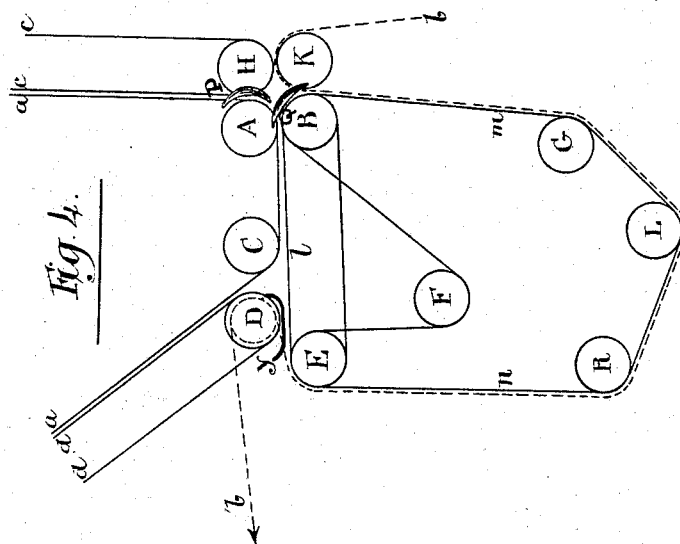
2 Sheets—Sheet 2.

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DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 263,746.

Patented Sept. 5, 1882.



Witnesses:-

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# UNITED STATES PATENT OFFICE.

EDWYN ANTHONY, OF NEW YORK, N. Y.

## DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 263,746, dated September 5, 1882.

Application filed May 12, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, EDWYN ANTHONY, a subject of the Queen of Great Britain, residing in the city of New York, in the State of New York, have invented a new and useful Improvement in Delivering Apparatus for Printing-Machines; and I do hereby declare that the following is a specification thereof.

The object of my invention is to bring together two or more sheets of a stream of papers of the same size, and by a slight adjustment to be able to bring together sheets of another size. The course of the sheets before entering and after leaving the apparatus herein described will depend upon the printing mechanism, &c., and it is not material to this invention.

Figure 1 shows a circuit for collecting sheets composed of three rollers; Fig. 2, a similar one of four, and Fig. 4 of five, rollers, while Fig. 3 illustrates a different modification of the adjusting apparatus from that shown in Fig. 1; and Fig. 1<sup>a</sup> shows in detail the arrangement for adjusting the rollers F and G, Fig. 1.

The sheets, which may be traveling with any desired interval between successive sheets, enter the mechanism between the rollers D C, Figs. 1, 2, 3, and 4. The course and length of the tapes on the roller D depend upon the path of the sheet before they enter the said rollers, such path being immaterial to the mechanism herein described, and being fixed by other considerations. The ends *d d* of each tape must of course ultimately run together and be united to one another, thus making them endless. The sheets, the required number, together pass out of the mechanism between the rollers A H. The ends *c c* of each tape which passes round the roller H must of course be ultimately brought together and joined. Their path is immaterial to and depends upon considerations outside of the mechanism herein described. Similarly the ends *a a* of the tapes which pass round the rollers C and A must be ultimately joined, their course being independent of the devices herein shown. Tapes pass round the rollers B and E only. Tapes also pass round the four rollers E F B G, Fig. 1, or round the five rollers E F B G L, Fig. 2, or the six rollers E F B G L R, Fig. 4. Obviously these tapes must run on different parts of the rollers B E to the parts on which

run the tapes which pass round B and E only. Starting one of these last-mentioned tapes at the roller F, it goes around the roller B, then round G, (and L in Fig. 2 and L R, Fig. 4,) thence round E, from which it returns to F, and its circuit is complete. I hereinafter refer to this set of tapes as "set L." The roller D must have its surface cut away at intervals, so that loose pulleys may be placed on it of smaller diameter than D, and which must rotate in the contrary direction to that of D's motion. Round each of them tapes pass, their course being as follows: Starting one at *b*, it passes round K, thence round G, (and L in Fig. 2 and L and R in Fig. 4,) thence round E, and finally round a loose pulley such as has been described. Its ends *b b* must of course afterward be joined and their length made adjustable, which may be done in any usual and suitable way; but their course before they are joined may be almost anything whatever, and it may be fixed by considerations independent of the mechanism herein described.

Y is any suitable fixed guide, which passes between grooves in the roller D. Its function is to prevent any tendency of the motion of the oncoming sheets as they issue from E being checked by the roller D, whose motion is in the contrary direction.

The number of the tapes last mentioned should be the same as the number in set L, and one of each set should be in the same plane with one another, the sheets passing between them.

P and Q are guides centered respectively at A and B, and they are moved by suitable mechanism, so that at one time they are in the positions shown in Figs. 1 and 3 and at another in those illustrated in Figs. 2 and 4.

The rollers G and F must be capable of being fixed in various positions, so that the length of the circuit *l m n* may be varied at pleasure, while the length of the tapes which go around B, G, (and L, Fig. 2, and L R, Fig. 4,) E, and F remains the same. If it is desired to lengthen the circuit *l m n*, F is moved nearer to B and E and G farther away. If to shorten it, the converse operation must be performed. It is better that F, instead of being a roller, should be a system of independent pulleys, in order that they be capable of taking a position between B and E; or the tapes may be returned

by means of skew-pulleys fixed at *g g*, Fig. 3, which would cause the motion of the tapes to be at an angle to the plane of the paper. They would then pass over other pulleys and be joined together. The last pulleys might be capable of adjustment at different distances, so that their movement might compensate the movement of *G*.

The shape of the circuit *l m n* is immaterial. There may be only one roller, such as *G*, as shown in Figs. 1 and 3, or two, as shown in Fig. 2, or three, as shown in Fig. 4, or any other number. When more than one roller such as *G* is used only one or more of them, as preferred, may be made adjustable. The rollers *G* and *F* (or their equivalent) must be adjusted so that the length of the circuit *l m n* equals the length of the particular sheet in question (measured in the direction of its motion) plus the interval between successive sheets; or it may be any multiple of the aforesaid length. This adjustment of the distance will bring the sheets exactly one on the other. By varying the said distance the sheets may be made to partially overlap one another to any extent desired. In Fig. 1 a method of adjusting the said rollers *F* and *G* is shown. The bearings of the said rollers are capable of sliding up and down the vertical rods, and are fastened at any desired part of the rods by set-screws, as shown in Fig. 1<sup>a</sup>. The sheets enter between the rollers *D* and *C*, and continue to go round and round the circuit *l m n* (thus bringing any desired number of sheets together) so long as the guides *P Q* are in the positions shown in Fig. 2. When the required number have been thus brought together the guides must take up the positions shown,

Figs. 1 and 3, and the sheet will pass out between the rollers *A* and *H*. By properly adjusting the length of the path *l m n l* in the way hereinbefore described it is clear that sheets of any size may be brought together, or each sheet may be brought not on the one immediately behind it, but on the next but one, or the next after that, &c.

It is obvious that, in general, when the number of the sheets to be brought together, or their breadth, (in the direction of the motion,) or the interval between them is changed the periods of the movements of *P* and *Q* must also be changed. Different-shaped cams will be needed for effecting the movements.

Devices for sending one portion of a set of traveling sheets in one direction and another in another are well known, and any other suitable device—for example, a pair of oscillating rollers—may be used instead of the one here specified.

The rollers shown in the drawings need not be equal to one another, and they may be of any convenient diameters.

I claim—

The collecting apparatus consisting of three sets of tapes and their supporting-rollers, several of the rollers of two of the sets of tapes being adjustable, as described, to vary the length of the circuits for sheets of different sizes, in combination with feeding devices arranged so that the sheets fed to the collecting apparatus meet those therein at the point of entrance thereto, all substantially as described.

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Witnesses:

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