No. 804,307. PATENTED NOV. 14, 1905.

C. P. FONDA.

MAGAZINE AND DELIVERY MECHANISM FOR PAPER.

APPLICATION FILED DEC. 15, 1904.

2 SHEETS—SHEET 1.

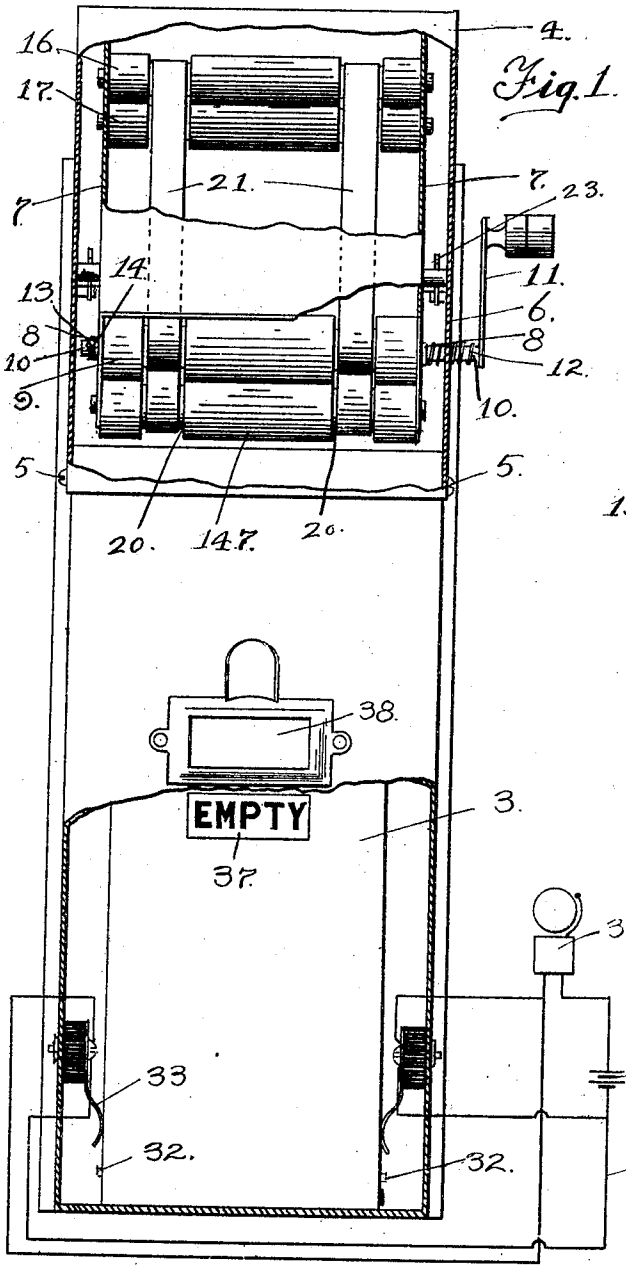

Fig. 1.

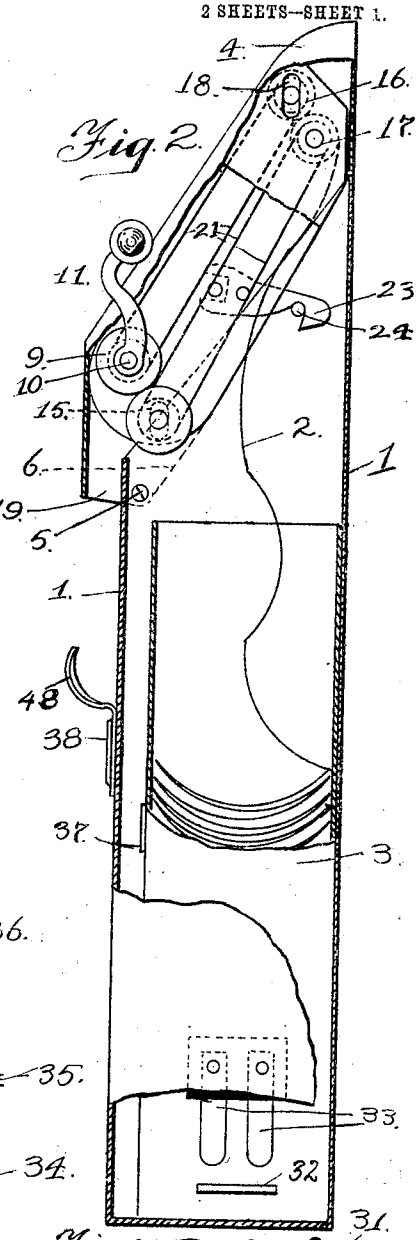

Fig. 2.

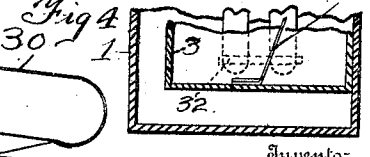

Fig. 4.

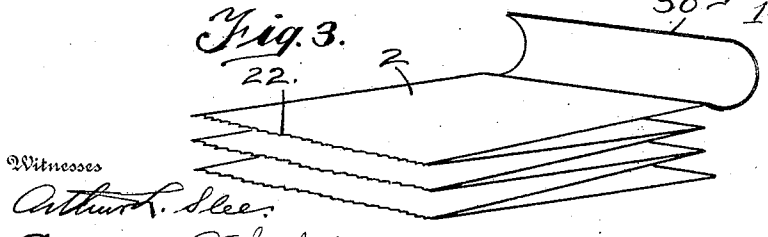

Fig. 3.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

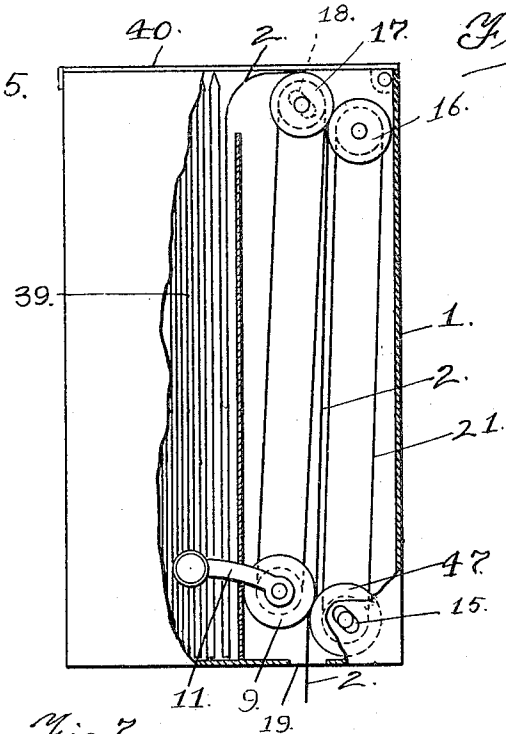


Fig. 6.

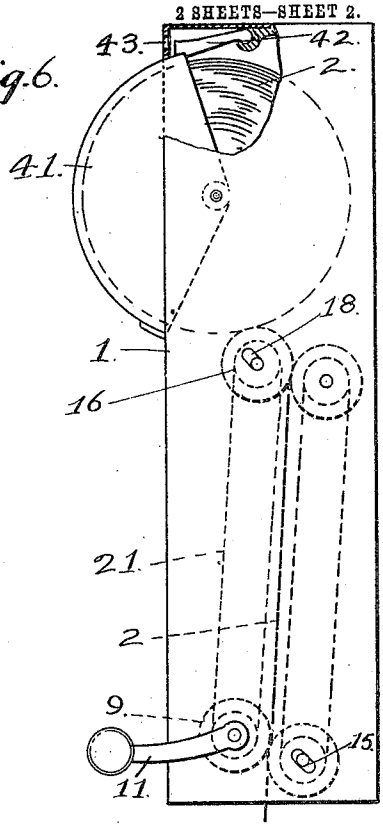


Fig. 7.

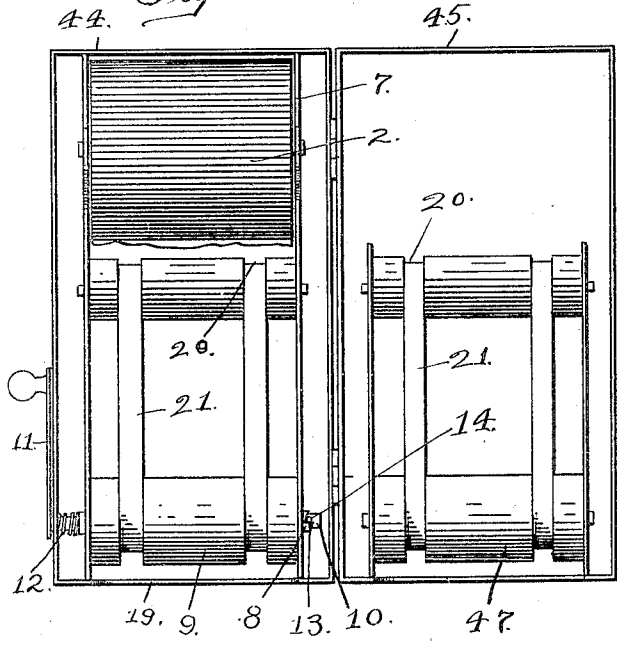
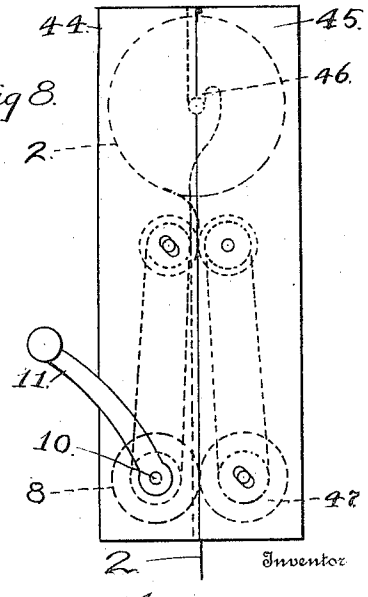


Fig 8.



Witnesses

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MAGAZINE AND DELIVERY MECHANISM FOR PAPER.

No. 804,307. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed December 15, 1904. Serial No. 237,046.

To all whom it may concern:

Be it known that I, CHARLES P. FONDA, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Magazine and Delivery Mechanism for Paper, of which the following is a specification.

My invention relates to an improved magazine and delivery mechanism for paper, the object of my invention being to provide an apparatus of this character in which a large quantity of paper can be stored at one time and from which the paper can be delivered and simultaneously separated into pieces and which shall contain means for operating a signal to indicate when the magazine is empty.

A further object of my invention is to provide a construction of magazine which can be used only with a certain form of paper, thereby insuring the sale of the paper to the holders of the magazine.

My invention also resides in the novel construction, combination, and arrangement of parts for the above ends hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of the apparatus, broken away in parts. Fig. 2 is a side elevation, also broken away in parts. Fig. 3 is a perspective view of the upper portion of the strip of paper. Fig. 4 is a section of the lower portion of the magazine and the carton raised therein. Fig. 5 is a side view, partly in section, of a modification. Fig. 6 is a similar view of a further modification. Fig. 7 is a front view of a further modification, showing the magazine open. Fig. 8 is a side view of the same.

Referring to the drawings, 1 represents a magazine, casing, or box which is of considerable depth in proportion to its horizontal dimensions, allowing a large supply of paper 2 to be placed therein. Said paper so supplied is in a continuous strip and is folded in zigzag form or in alternate folds or plaits, either unperforated or perforated, and in the latter case either at the creases of the folds or intermediate thereof, or is made of sections joined together. It is preferably supplied in cartons 3 of a size slightly less than the magazine, so as to be conveniently inclosed therein. The top of the carton is removed when it is placed in the magazine or box. By means of these cartons the paper is enabled to be inserted in the magazine in its zigzag form, as otherwise if it were attempted to insert the paper by hand the lower part of the paper would fall into the bottom of the magazine in a bunch or irregularly out of its zigzag arrangement.

4 represents the lid of the box, which is hinged to the box, preferably at the front, as shown at 5, and having depending sides 6, registering with the sides of the magazine or box when the lid is closed. Within said lid is secured the delivery mechanism for the paper. Within the sides 6 thereof are secured side plates 7, which serve as supports for the hollow shaft 8 of a roller 9, said shaft extending at both ends through the side plates 7, and through said shaft extends an inner rod or shaft 10, having attached thereto a crank-handle 11. Between the sleeve of the crank-handle and the end of the hollow shaft 8 is interposed a spring 12, which presses the crank-handle away from the hollow shaft. At its other end said rod 10 carries a pin 14, extending therethrough, which when the handle is turned in one direction engages a notch or shoulder 13, formed in the end of the hollow shaft, but when the crank is turned in the opposite direction slides along the inclined or oblique end of said shaft from the bottom of said shoulder and arriving at the top thereof after making a complete turn, the spring 12 always moving the rod inward, so that said pin drops from the top to the bottom of said shoulder at each revolution. Thus motion is communicated to said roller when the crank-handle is turned in one direction; but a reverse motion cannot be communicated thereto by turning the crank-handle in the opposite direction. A lower roller 47 adjacent to the upper roller 9 has its shaft extending through oblique slots 15 in said side plates. In addition to these rollers which are near the front of the magazine there are upper and lower rear rollers 17 16, the lower roller 17 having fixed bearings in the plates, while the shaft of the upper roller is movable in slots 18 in said plates. The paper is fed between the rear pair of rollers and thence through an opening 19 between the bottom of the lid and the front of the box.

Means are provided for severing the paper as it is fed. For this purpose the front portion of the paper so being fed is caused to travel faster than the rear portion thereof. This is done by causing the surfaces of the front pair of the rollers which are in contact with the paper to travel faster than those of the rear pair. The rear pair of rollers may

be driven from the front pair in many ways; but in the present instance I have shown the rollers as formed with grooves 20, and around said rollers in said grooves travel endless bands 21, preferably of rubber. By this means the rear upper roller 16 is driven from the front upper roller 9, while the lower rollers 14 17 are rotated by pressure of their surfaces against the upper rollers 9 16. The arrangement of the oblique slots 15 18 is such that the rubber bands 21 press the pairs of rollers together. The endless bands serve as guides to feed the advancing edge of the paper between the front rollers. It is preferable that the diameters of the grooved portions of the rollers be the same both for the front and rear rollers to avoid the front portion of the band traveling faster than the rear portion, which would cause stretching thereof or slipping of the bands over the grooves. While the grooved portions of the rollers, however, travel at the same rate, the front rollers, except such grooved portions, are of larger diameter than the rear rollers, so that the surface velocity thereof is greater, and consequently the front portion of the paper travels faster than the rear portion. This difference in velocities is such that the paper is severed at a point intermediate between the rollers. The paper is preferably perforated transversely, as shown at 22, so that the separation is rendered more easy and certain.

The lid is fastened to the box when closed by means of hooks 23, which automatically engage studs 24, extending inward from the sides of the box.

This apparatus is so constructed as to admit of no paper being used in connection therewith, except such as is especially prepared for delivery thereby. The object is to enable the magazine to be supplied by a manufacturer to persons using the same, so that paper can afterward be supplied by the same manufacturer, and by no other persons, which can be used with the magazine. For this purpose the strip of paper 2 is provided at its ends with terminals 30 31, the lower terminal 31 being connected to the carton and the upper terminal 30 being specially constructed to admit of insertion between the rollers, while ordinary paper cannot be so inserted. Thus the upper terminal is composed of two pieces of paper attached to the strip of paper 2 and pasted to each other around a curved surface or roller, so that thereafter they have a permanently curved form. When the magazine is opened, so that the lower rear roller 17 is uppermost, the curved terminal 30 is inserted with the concave side against the roller 17 and the handle is turned to advance the paper between said rollers. Said terminal will then follow the contour of the lower roller 17 and will enter between said roller and the roller 16 and will be passed along between the rubber bands. It will then be severed from the strip of paper 2 by the same instrumentality as the parts of the strip are severed from each other; but any other paper which is so inserted into the lid would pass upward (when the lid is open) instead of downward, the direction which it would have to take to pass between the two feed-rollers 16 and 17. It will also be observed that these two rollers 16 and 17 are placed close to the side of the lid of the magazine, so that it is impossible to force paper not specially prepared therefor between the roller 17 and the side of the magazine and between the two feed-rollers 16 and 17. It will be observed that this form of paper strip can be used with no other magazine for the delivery of paper except such as that here described, nor could this magazine be used with ordinary paper.

I also provide means for indicating when the paper has been exhausted. For this purpose the lower terminal 31 of the strip is made of thicker paper than the main body of the strip and is attached to the carton, so that as the terminal 31 rises the carton rises therewith. The carton has secured on its sides metal contact-plates 32, which when the carton rises closes an electrical circuit between spring-contacts 33, of which I provide a pair at each side of the magazine. These spring-contacts are in branches from a circuit 34, leading through a battery 35 and an annunciator 36, so that the circuit is closed by either contact-plate contacting with the electrical contacts. By this means a signal is sent to a distant point that the magazine is empty. A visible signal is also provided by means of the word "Empty," which is printed in front of the carton-box, as shown at 37, rising to the level of a glass plate 38 in the front side of the magazine.

In the modification shown in Fig. 5 the chamber 39 for receiving the paper is in front of the feeding mechanism, the magazine in this case being made substantially rectangular in form. The paper is deposited in the magazine at the top, and the magazine can be opened for that purpose by lifting a lid 40, which may be provided with a lock, if desired.

In the modification shown in Fig. 6 the paper is supplied in the form of a roll, which rests upon the upper roller 16. It is inserted by swinging a door 41, which is a sector of a cylinder in form. Said door is held closed by a catch 42, which may be raised by inserting a key through a hole 43.

In the modification shown in Fig. 7 the paper is also supplied in the form of a roll, and the magazine is in two halves 44 45, hinged together, each half containing an upper and a lower roller and bands between them. The shaft of the paper-roll rests in sockets 46, formed in the plates 7 in one of said halves.

I prefer to give the paper when folded in zigzag form, as shown in Fig. 2, an upward concave curvature. This is advantageous in

two respects. First, it enables the magazine to be made narrower than would otherwise be required, and thus to project less from the surface to which it is attached, and it also facilitates the lifting of the paper from the pile. As each fold in the paper leaves the pile it is perfectly free from pressure from the remainder of the sheet. The hook 48 arrests the descent of the paper, facilitating the taking of the same by the hand.

I claim—

1. In an apparatus of the character described, the combination with a magazine or box adapted to contain a continuous sheet of paper, of two pairs of rollers for feeding the paper, supported at the top of the box, and means for rotating said rollers, the leading pair with a greater surface velocity than the following pair to sever the paper, substantially as described.

2. In an apparatus of the character described, the combination with a magazine or box adapted to contain a continuous sheet of paper, of two pairs of rollers for feeding the paper, and means for rotating said rollers, the leading pair with a greater surface velocity than the following pair to sever the paper, substantially as described.

3. In an apparatus of the character described, the combination of a box adapted to contain a continuous sheet of paper and having a slot at the upper end thereof, a pair of feed-rollers adjacent to said slot, a second pair, the paper passing through both of said pairs, and means for rotating said rollers, the first pair with a surface velocity greater than that of the second pair to sever the paper, substantially as described.

4. In an apparatus of the character described, the combination of two pairs of upper and lower feed-rollers for paper, means for imparting rotation to a roller of the first pair, an operative connection between said roller and a roller of the second pair imparting to the latter a smaller surface velocity than that of the first pair, to sever the paper, and means whereby the rollers of each pair are pressed together, substantially as described.

5. In an apparatus of the character described, the combination of two pairs of grooved feed-rollers for paper, endless rubber bands connecting the rollers of the leading pair with those of the following pair, and means for rotating one of said rollers, the parts of the rollers not traversed by the rubber bands being of such diameters that the linear velocity of the outermost surfaces of the leading pair of rollers is greater than that of the following pair to sever the paper, substantially as described.

6. In an apparatus of the character described, the combination of leading and following pairs of grooved feed-rollers for paper, endless rubber bands in said grooves, the relation between the diameters of the rollers and of the grooved portion thereof being such that the linear velocity of the outermost surfaces of the leading pair of rollers is greater than that of the following pair, and means for rotating one pair of said rollers, substantially as described.

7. In an apparatus of the character described, the combination of two upper feed-rollers for paper, two lower feed-rollers, side plates having slots for the ends of shafts of certain of said rollers, rubber bands connecting the two upper rollers and also the two lower rollers, said slots being so arranged that the bands draw the upper and lower rollers together, and means for rotating one pair of rollers, substantially as described.

8. In an apparatus of the character described, the combination of two upper feed-rollers for paper, two lower feed-rollers, one pair of upper and lower rollers being higher than the other pair, side plates having slots for the bearings of the lower roller of the lower pair and the upper roller of the higher pair, bands connecting the upper rollers and also the lower rollers, and means for rotating one pair of rollers, substantially as described.

9. In an apparatus of the character described, the combination of a box having a slot at the upper end thereof, a pair of feed-rollers for paper adjacent to said slot, a second pair of such feed-rollers, means for rotating said rollers, the first pair with a surface velocity greater than that of the second pair, and means for preventing said rotating means actuating said rollers in the reverse direction, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHAS. P. FONDA.

Witnesses:
FRANCIS M. WRIGHT,
K. L. NEVINS.