Oct. 3, 1933. J. W. CUTLER 1,929,109

MAIL SORTING CHUTE

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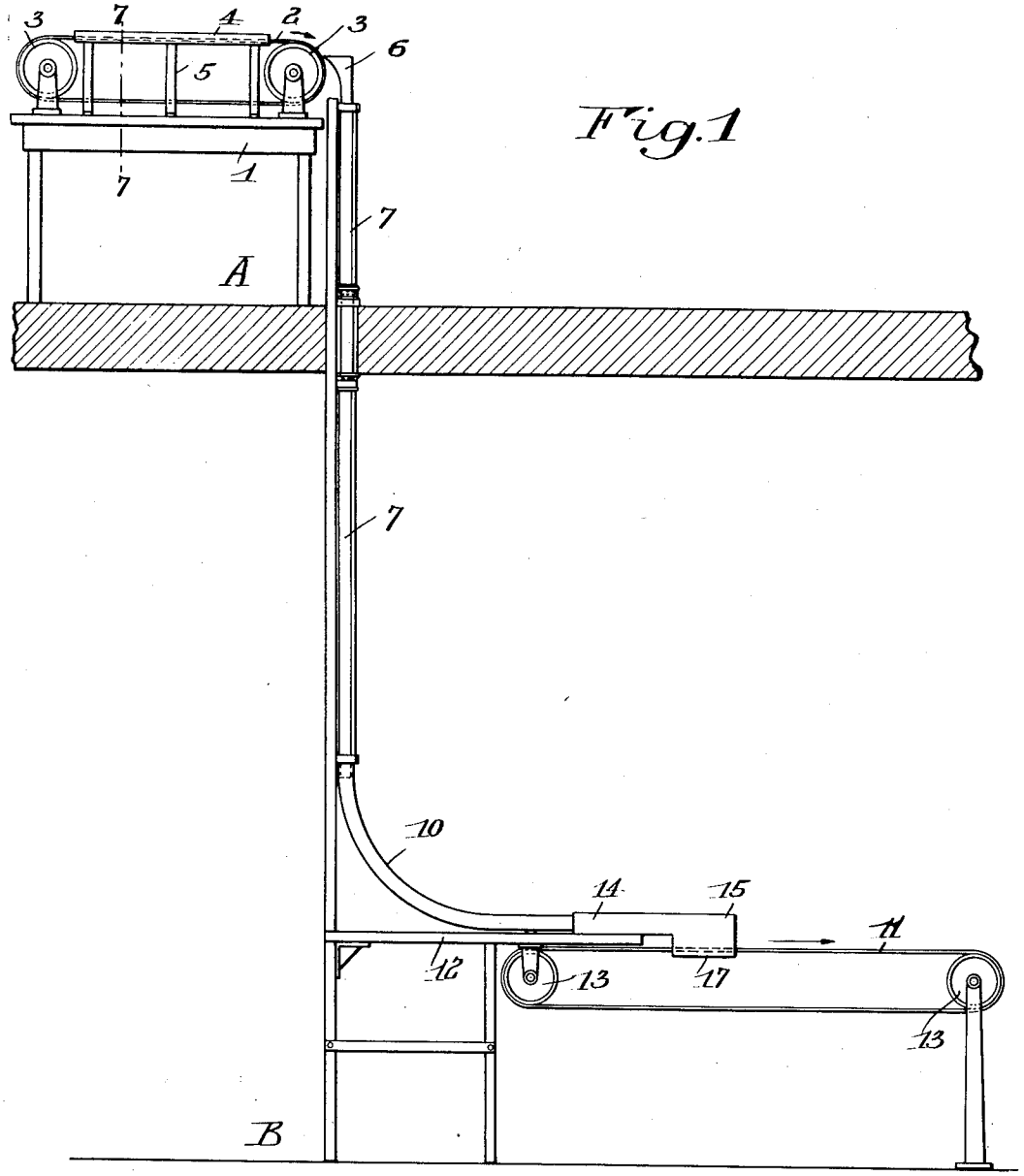


Fig. 1

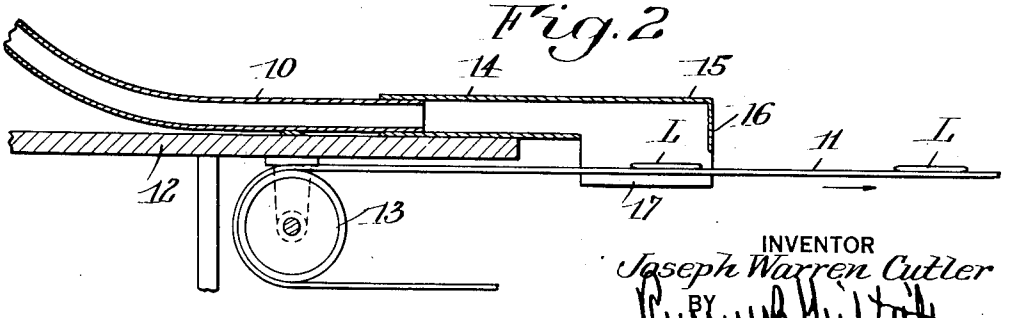


Fig. 2

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Fig. 3

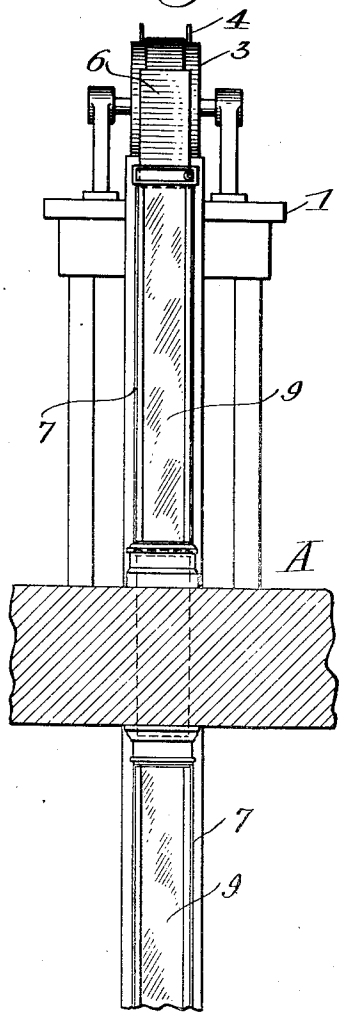


Fig. 4

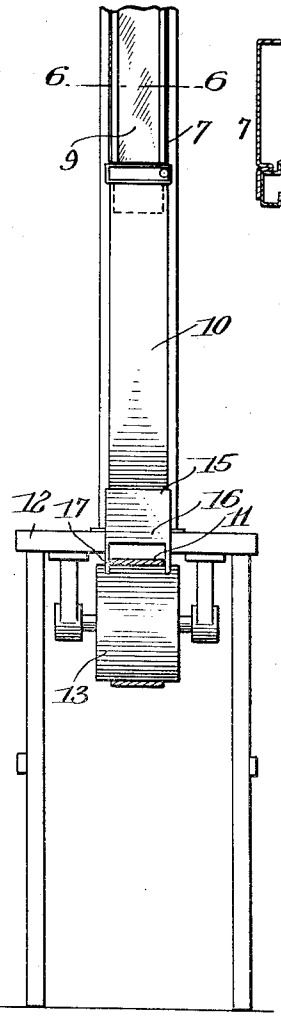


Fig. 6

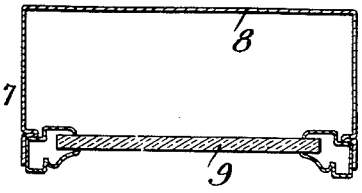


Fig. 7

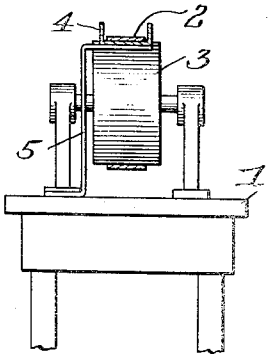
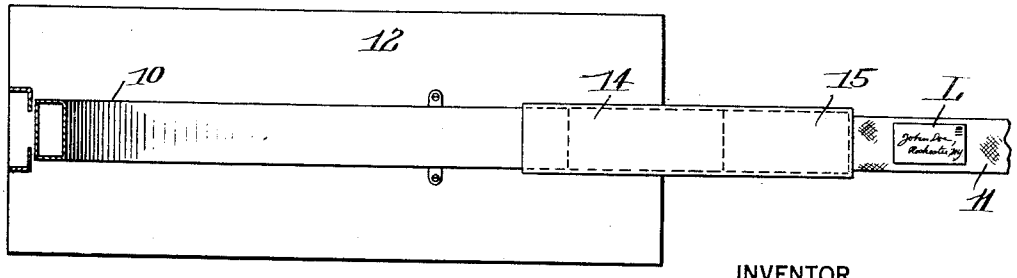


Fig. 5



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Patented Oct. 3, 1933 1,929,109

UNITED STATES PATENT OFFICE

1,929,109

MAIL SORTING CHUTE

Joseph Warren Cutler, Rochester, N. Y., assignor to Cutler Mail Chute Co., Rochester, N. Y., a corporation of New York

Application August 8, 1930. Serial No. 473,883

5 Claims. (Cl. 198—20)

My present invention relates in general to conveying apparatus and more particularly, though not exclusively, to the conveying of mail matter, and it has for its object to provide an improved apparatus wherein, as in the case of mail sorting machines, the letters or other articles are sorted on the upper floor of the building and automatically delivered to a lower floor. A further object of the invention is to, in such an instance, provide means whereby the letter or article, after manipulation on the upper floor, will issue at the delivery point on the lower floor in substantially the same directional position. A still further object of the invention is, in such last mentioned circumstance, to deposit the articles severally in the same relative positions in which they were arranged on the upper feeding floor or stage.

To these and other ends, the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a side elevation of a two-stage mail conveying machine constructed in accordance with and illustrating one embodiment of my invention;

Fig. 2 is an enlarged central longitudinal section of the delivery end of the apparatus;

Fig. 3 is a fragmentary front view of the upper portion of the machine broken away at the bottom;

Fig. 4 is a similar view of the lower portion of the machine in continuation thereof, shown broken away at the top;

Fig. 5 is a plan view of the lower or delivery end of the machine;

Fig. 6 is an enlarged sectional view of the intermediate chute taken substantially on the line 6—6 of Fig. 4, and

Fig. 7 is a detailed enlarged section taken on the line 7—7 of Fig. 1.

Similar reference numerals throughout the several views indicate the same parts.

In the embodiment of my invention illustrated, the upper and lower stages of operation are indicated by the floors A and B. On the upper floor A is shown supported on a table 1 an endless horizontally running conveyor belt 2 passing over pulleys 3. The upper reach of the belt is supported flatly in a trough-shaped guide 4 supported by brackets 5 and shown in cross section in Fig. 7. The belt may be the ordinary canvas belt of mail conveyors and, together with the guide 4, of a width suitable for the particular mail matter to be handled, such as letters. In other words, the guide 4 acts as a guard to hold the letters on the conveyor.

The latter delivers in the direction of the arrows to the mouth 6 of a vertical chute 7 extending, in sections, downwardly through the floor or stage A. The mouth 6 has a curved lip, as shown, running very close to the surface of the belt on the periphery of the wheel or pulley so as to surely catch or pick up the letters as they start their downward course.

This chute 7 is preferably of the general form usually employed in letter drops in office buildings, as shown by the cross section of Fig. 6, being composed of a body or back 8 and removable front panels 9. It is essential, as will hereinafter appear, to the successful working of the apparatus for the particular purpose of this design that the proportions of the chute in horizontal area be adapted to the size of the letter or other article that it is expected to receive to the extent that the letter be prevented from turning over in its downward drop, either edgewise or flatwise.

At the lower end of the lower chute section 7 is a similarly proportioned curved section 10 that delivers upon a lower horizontally running endless belt conveyor 11 similar to the upper stage conveyor 2 and preferably running in the same direction. Accurate delivery of the letters, indicated at L, in spaced relation upon conveyor 11 is effected in this manner: the curved section 10, as to its horizontal portion, extends over and rests upon a table 12 supporting one end of the conveyor at 13 and jointed thereto and also slidably adjustably supported on the said table is the neck 14 of a stop box 15 closed at the top end and sides but open at the bottom, that is, the end wall 16 is in alinement with the end of the section 10 and the neck 14 but clears the conveyor belt 11 sufficiently to allow the letters L to pass thereunder, while the side walls 17 of the box extend down below the plane of the belt to prevent the letters from dropping off or becoming misplaced laterally.

The operation of this device is as follows:

Assuming that for delivery or sorting purposes it is desired to have the letters emerge on the conveyor 11 of the lower stage all right side up in spaced relationship and with the stamps at the upper right in each instance, as shown in Fig. 5, they are so placed on the upper stage conveyor 2 and successively delivered into the mouth 6 and thence the chute 7. As before de-

scribed, they cannot turn about in the chute, so that they continue to preserve their relative and directional positions down to the mouth of the curved section 10 and into the stop box 15.

The forward end of the letter ultimately hits the stop wall 16, by which it is arrested, and drops idly upon the conveyor belt 11, as shown in Fig. 2, whence each letter follows after the other for such further manipulation as may be desired.

The stop box 15 may be adjusted relatively to the curved section 10 to regulate the impact against wall 16 and, of course, the speeds of the conveyors 2 and 11 (the driving mechanism of which it is deemed not necessary to show) are suitably synchronized.

I claim as my invention:

1. In a mail conveying device of the character described, the combination with an upper stage and a lower stage, of a closed vertically arranged gravity chute extending between the stages and having uniform cross sectional dimensions both less than the length and one of them less than the breadth of the mail matter to be conveyed so that it cannot turn directionally therein either endwise or sidewise, a conveyor on the upper stage arranged to feed into the chute, and a conveyor on the lower stage upon which the articles are received from the chute, said conveyors being synchronously driven.

2. In a mail conveying device of the character described, the combination with an upper stage and a lower stage and a closed gravity chute extending between the two embodying a vertical portion and an arcuate lower end adapted to discharge horizontally, and a moving surface associated with the said discharge end to receive articles therefrom, the cross sectional dimensions of the chute being uniform and both being less than the length and one of them less than the breadth of the mail matter to be conveyed so that it cannot turn directionally therein either endwise or sidewise.

3. In a mail conveying device of the character described, the combination with an upper stage and a lower stage and a gravity chute extending between the two embodying a vertical portion and an arcuate lower end adapted to discharge horizontally, of a stop element arranged in alinement with said lower discharge end, and a horizontally travelling conveyor arranged closely beneath the stop and adapted to receive articles arrested by and dropping from contact with the latter, the cross sectional dimensions of the chute being uniform and both being less than the length and one of them less than the breadth of the mail matter to be conveyed so that it cannot turn directionally therein either endwise or sidewise.

4. In a mail conveying device of the character described, the combination with an upper stage and a lower stage and a gravity chute extending between the two embodying a vertical portion and an arcuate lower end adapted to discharge horizontally, of a stop box forming a continuation of said lower discharge end of the chute and embodying an end wall adapted to arrest articles issuing from the chute and side walls, and a horizontally travelling conveyor arranged beneath the end wall and between the side walls and adapted to receive articles arrested by the stop box, the cross sectional dimensions of the chute being uniform and both being less than the length and one of them less than the breadth of the mail matter to be conveyed so that it cannot turn directionally therein either endwise or sidewise.

5. In a mail conveying device of the character described, the combination with an upper stage and a lower stage and a gravity chute extending between the two embodying a vertical portion and an arcuate lower end adapted to discharge horizontally, of a stop box forming a continuation of said lower discharge end of the chute and embodying an end wall adapted to arrest articles issuing from the chute, said stop box being telescopically adjustable longitudinally on the said end of the chute, the cross sectional dimensions of the chute being uniform and both being less than the length and one of them less than the breadth of the mail matter to be conveyed so that it cannot turn directionally therein either endwise or sidewise.

JOSEPH WARREN CUTLER.