April 1, 1930. W. HÖHNE 1,753,169

TUBULAR POSTAL SECTION

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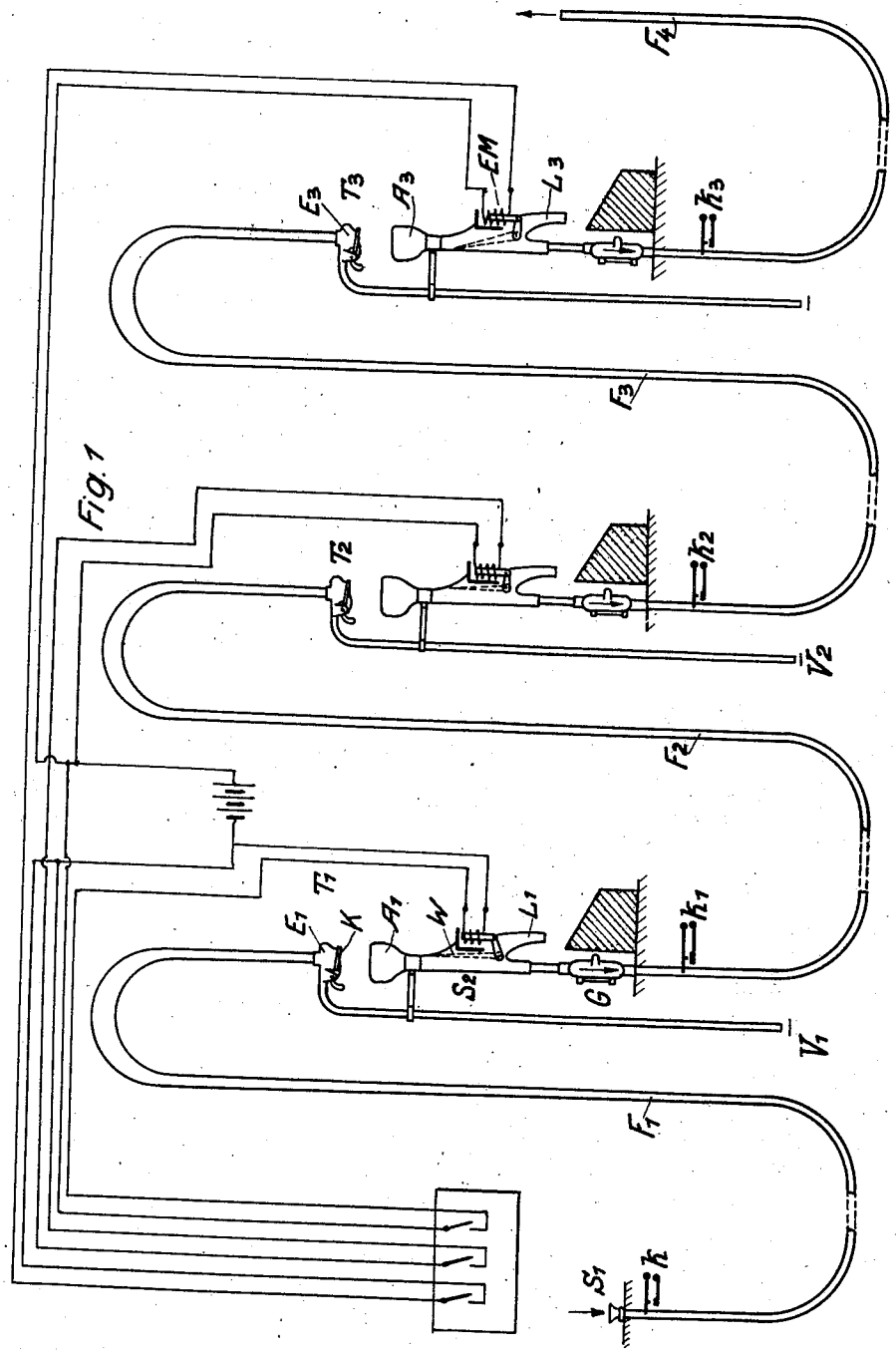


Fig. 1

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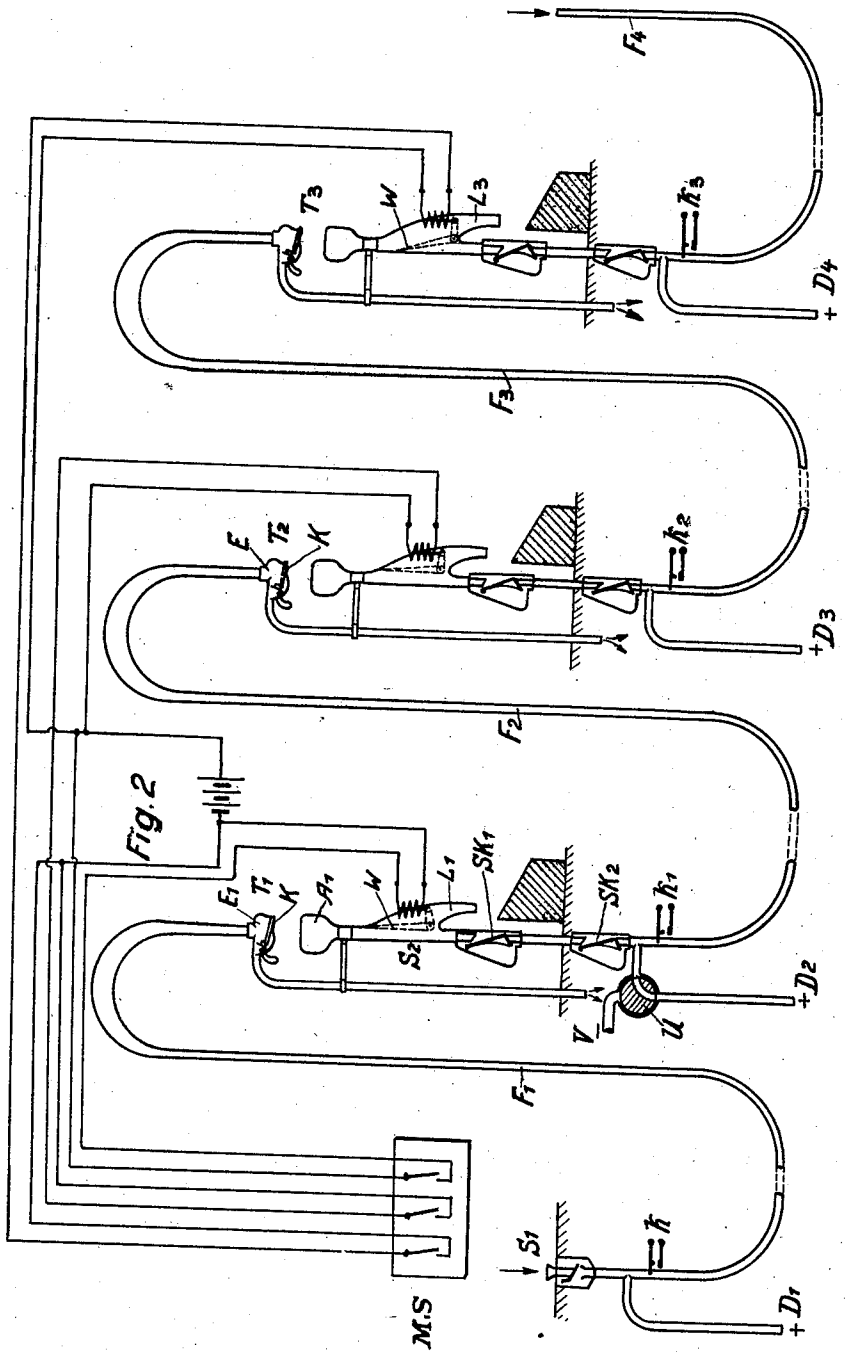


Fig. 2

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UNITED STATES PATENT OFFICE

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TUBULAR POSTAL SECTION

Application filed January 31, 1929, Serial No. 336,538, and in Germany December 11, 1925.

For the purpose of overcoming the difficulties due to long sections of tubular postal systems a comparatively strong blower is necessary and in order to avoid the use of this a long section has been divided into partial sections each provided with its own blower whilst the container passing from one partial section to the other disengages one blower and brings the other blower into operation. The entire section in such an arrangement consists of a conveying pipe extending through the whole system in which there may be included a switch point of known construction for the purpose of delivering at a partial section.

An application for patent for this invention was filed in Germany on December 11, 1925.

The subject of the present invention is a long section of which the separate partial sections constitute an ordinary tubular postal system, as are usual for short distances, and which in this manner are also capable of being used separately.

The partial sections for this purpose are not connected together at the points of interconnection, but at the division points, which at the same time are the delivery points, are provided solely with the connections for the blower appertaining to the partial section in question.

In order that a container may pass automatically from one partial section into the next the receiver of the incoming partial section is so arranged relatively to the transmitter of the outgoing section that the container passes from the receiver into the transmitter, which automatically conveys it further, by falling freely or passing over.

By this arrangement of the known flying or passing over of the container the distant tubular postal section is rendered free of any complications which are caused in the case of a continuous conveying tube by reason of the necessary closing slides, their driving means and the necessary conveying tube contacts.

For the purpose of delivering a container at a division point a switch point is provided either at the receiver or better still, by reason of the shorter length of construction, at the transmitter which is preferably controlled by electromagnetic distant control.

In view of the foregoing the partial sections by reason of the condition of their operation and their construction are independent of one another and may, therefore, as hereinbefore described, be operated separately in the well known usual manner. They are also capable of being constructed substantially from the well known usual parts.

Two forms of construction are illustrated diagrammatically in the accompanying drawings.

Fig. 1 is a diagrammatic view of one form of the device.

Fig. 2 is a diagrammatic view of a modified form of the invention.

Figure 1 shows three division points of a long section which is operated throughout by suction air.

A container introduced at S^1 is conveyed by suction air (blower connection at V^1) through the conveying pipe F^1 to the first division point T^1, there opens flap K of the receiver E^1 and falls into the collecting funnel A^1 of the transmitter S^2 of which the switch point W has been set in the position for passing through. The container falling vertically down the conveyor tube actuates contact K^1, and in this manner sets in operation the blower of the next partial section T^2 (blower connection at V^2). The container continues its passage through the tube F^2 and passes in the manner described also through the succeeding division points T^2, T^3 and so on.

The delivery position of the switch tongue is indicated in dotted lines at the division point T^3. The switch point is actuated by the electro-magnet E M and is brought into the position shown when the containers do not pass into the conveying tube F^4 but are to be delivered at the division point T^3. The electro-magnets may be controlled by a number of switches M S mounted on a switch board at the beginning of the first section or at some other convenient point. In this way all the switch points may be controlled from a single point. The incoming container which passes from the receiver E^3 into the collecting funnel A^3 is conducted by the set switch tongue into

the delivery tube L^3 from which it passes into the collecting basket.

In Figure 2 are illustrated three division points of a long section which are operated throughout by compressed air. The container introduced at S^1 is forced by compressed air (blower connection at D^1) through the conveying tube F^1 to the division point T^1 and passes, by opening the flap K, from the receiver E^1 of this division into the collecting funnel A^1 of the transmitter S^2. The switch point W of this transmitter is set in the position for through passage so that the container falling into the conveying tube passes through the sluice flaps S k^1, S k^2, strikes against the contact k^1 and thus sets in operation the blower D^2 of the next partial section F^2. The container passes through the conveying tube F^2 and in the manner described the division points T^2, T^3 and so on. At the division point T^3 the switch point is again shown in the delivery position so as to effect the discharge of the container.

The partial sections both in Figure 1 and in Figure 2, can be actuated separately and with a suitable device in both directions.

At the division point T^1 of Figure 2 there is illustrated by way of example an air reversing device U which enables the conveying tube F^2 to be connected to a vacuum blower V so as to receive a container from the division point T^2. The container at the point T^2, after opening the flap K, is inserted from the bottom into the receiver E and sucked by the vacuum to T^1 where, by reason of its kinetic energy, after the vacuum has been cut off and the sluice flaps S k^1, S k^2 have been opened by a contact switch k^1, it rises in the vertical end of the conveying tube to beyond the switch point W and falling back, after setting the switch point also automatically, through the discharge tube L^1 into the collecting basket. It would also be possible, for conveying the container from T^2 to T^1, to supply compressed air at E to the conveying tube F^2, which in the case of Figure 1 would be the medium under consideration.

The separate operation of the section in the direction from left to right solely requires the introduction of the container by hand into the collecting funnel A^1 of the transmitter, but instead of this it is also possible, as indicated in Figure 1 to provide a separate dispatching chamber G.

For delivering a container at a division point it is also possible in a general manner to provide a switch, similar to that illustrated, at the receiver E instead of at the transmitter, but the provision at the transmitter permits of a more convenient and shorter construction.

I claim:

1. A tubular despatch system comprising a plurality of separate sections, separate means at the points of division of the sections for supplying actuating fluid to each of said sections, the adjacent ends of said sections being so arranged that a carrier moves from one section into the succeeding section in one direction under the force of inertia alone, and switches at the division points of said sections for deflecting a carrier from said sections, said switches being located in said sections adjacent the admission ends thereof.

2. A device according to claim 1 having means for transmitting a carrier through each of said sections separately in a reverse direction, said switches being adapted to deflect from said sections said carriers when moving in a reverse direction.

3. A tubular despatch system comprising a plurality of sections of conveying tubes, and a plurality of means for supplying an actuating fluid above atmospheric pressure, one for each section, the adjacent ends of the separate sections being spaced and in alignment so as to permit a container placed into one section to be passed through the succeeding sections, and means for applying suction to each of said sections.

4. A tubular despatch system comprising a plurality of sections of conveying tubes, and a plurality of means for supplying an actuating fluid, one for each section, the adjacent ends of the separate sections being in alignment so as to permit a container placed into one section to be passed through the succeeding sections, and means for applying suction to each of said sections, and valves for controlling the supply of actuating fluid and the application of suction to the various sections so that the separate sections may be used in one direction for conveying by fluid under pressure and in the other direction for conveying by suction.

5. A tubular despatch system comprising a plurality of sections of conveying tubes, and a plurality of means for supplying an actuating fluid, one for each section, the adjacent ends of the separate sections being in alignment so as to permit a container placed into one section to be passed through the succeeding sections, each of said sections being provided at one end with a despatching member and at the other end with a receiving member, each of the despatching members, with the exception of that of the first section, being provided with a switch device whereby the containers may be discharged from said despatching member, each of said sections being provided with a charging device.

6. In a tubular despatch system, a plurality of sections of conveying tubes, means for supplying an actuating fluid to each of said sections, the adjacent ends of successive sections being in alignment, means for applying suction to each of said sections to move a carrier in one direction, means for applying pressure for moving a carrier in the opposite direction

through a plurality of said sections, and means adjacent one end of some of said sections for deflecting a carrier from said sections.

7. In a tubular despatch system, a plurality of sections of conveying tubes, means for supplying fluid under pressure to each of said sections, the adjacent ends of successive sections being in alignment, whereby a carrier placed in one section will pass through succeeding sections under air pressure, means for applying a vacuum to each of said sections so as to move a carrier in the opposite direction through one of said sections, and means in some of said sections for deflecting a carrier from said section.

8. In a tubular despatch system, a plurality of sections of conveying tubes, the adjacent ends of successive sections being in alignment, means for transmitting a carrier from one section through succeeding sections in one direction, means for transmitting a carrier through some of said sections in the opposite direction, and means in some of said sections for deflecting a carrier from said section.

9. In a tubular depatch system, a plurality of sections of conveying tubes, means for transmitting a carrier in either direction through each of said sections, the adjacent ends of successive sections being in alignment, whereby a carrier may pass from one section to succeeding sections in one direction, means adjacent one end of some of said sections for deflecting a carrier from said sections, and means operable from a single point for controlling said deflecting means.

10. In a tubular despatch system, a plurality of sections of conveying tubes, the adjacent ends of successive tubes being in alignment, means for transmitting a carrier from one section through successive sections in one direction, means for transmitting a carrier through each of said sections in the opposite direction, and means adjacent one end of some of said sections for deflecting a carrier from said sections, means whereby a carrier moving in said second named direction automatically operates said deflecting means to deflect the carrier from the sections, and means operable from a single point for arbitrarily controlling said deflecting means to deflect from said sections a carrier moving in said first-named direction.

11. In a tubular despatch system, a plurality of sections of conveying tubes, means for transmitting a carrier through said sections successively in one direction and means for transmitting a carrier through some of said sections singly in the opposite direction.

12. In a tubular despatch system, a conveying tube, the receiving end of said conveying tube extending substantially vertically upward, means in the upwardly extending portion of said tube but spaced from the top thereof for exhausting air from said tube, a discharge tube associated with said receiving end and extending substantially downward from said receiving end, a switch adapted to deflect a carrier moving downwardly in said end into said discharge tube, and means for moving said switch to operative position when a carrier reaches a point in said end above said switch, whereby a carrier moves through the last portion of said conveying tube by momentum alone and falls from said discharge tube under the influence of gravity alone.

13. In a tubular despatch system, a plurality of sections of conveying tubes, the adjacent ends of successive tubes being in alignment, means for transmitting a carrier from one section through successive sections in one direction, means for transmitting a carrier through each of said sections in the opposite direction, and means adjacent one end of some of said sections for deflecting a carrier from said sections, means whereby a carrier moving in said second named direction automatically operates said deflecting means to deflect the carrier from the sections.

14. In a pneumatic tube conveying system for long distances, a plurality of sections of conveying tube, means for supplying driving air to each of said sections, the adjacent ends of successive sections being spaced from one another by an air-gap and being in alignment so that a carrier may pass from the discharging end of one section to the receiving end of the next section, and switches arranged in the receiving end of each tube-section for deflecting the carrier from this tube-section.

15. In a pneumatic tube conveying system for long distances, a plurality of sections of conveying tube, means for supplying driving air to each of said sections, the adjacent ends of successive sections being spaced from one another by an air-gap and being in alignment so that a carrier may pass from the discharging end of one section to the receiving end of the next section, these adjacent ends being arranged vertically, and switches arranged underneath the receiving end of each tube-section for deflecting the carrier from this tube-section.

16. In a pneumatic tube conveying system for long distances, a plurality of sections of conveying tube, means for supplying driving air to each of said sections, the adjacent ends of successive sections being spaced from one another by an air-gap and being in alignment so that a carrier may pass from the discharging end of one section to the receiving end of the next section, switches arranged in the receiving end of each tube-section for deflecting the carrier from this tube-section, and a despatching member at the receiving end of each section, this member being arranged above the said deflecting switch.

17. A tubular despatch system, comprising a plurality of sections of conveying tubes,

means for supplying fluid at above atmospheric pressure to each of said sections to move a carrier therethrough in one direction, the ends of successive sections being in alignment whereby a carrier placed in one section will pass through succeeding sections, and means for applying suction to each of said sections to move a carrier therethrough in the opposite direction.

In testimony whereof I have signed my name to this specification.

WILHELM HÖHNE.