J. F. SKIRROW.

TRANSFER TUBE SYSTEM.

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1,045,336.

Patented Nov. 26, 1912.

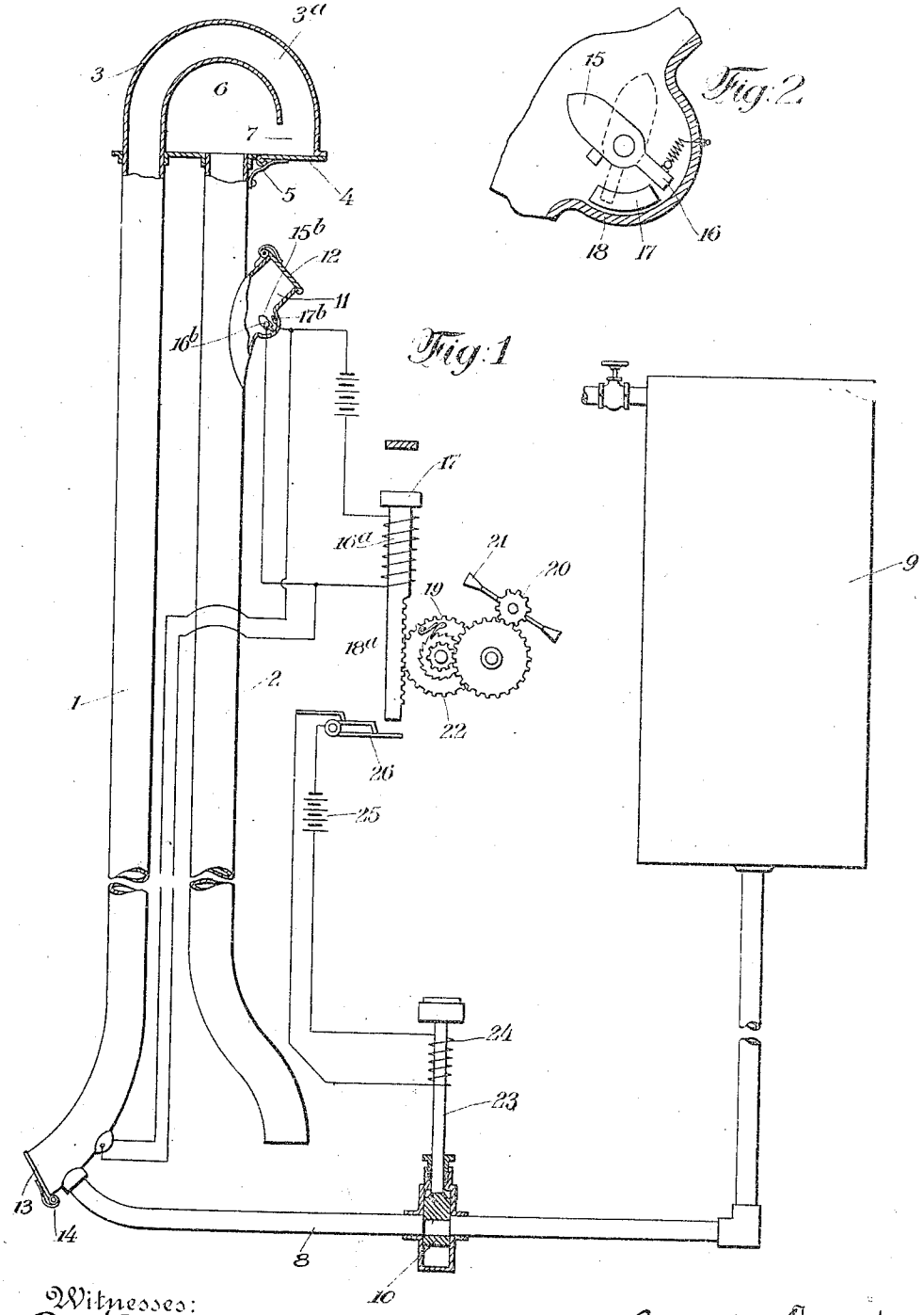

Fig. 1

Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN F. SKIRROW, OF EAST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO LAMSON CONSOLIDATED STORE SERVICE COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TRANSFER-TUBE SYSTEM.

1,045,336. Specification of Letters Patent. Patented Nov. 26, 1912.

Original application filed May 23, 1905, Serial No. 261,912. Divided and this application filed June 10, 1910, Serial No. 566,127. Renewed March 9, 1912. Serial No. 682,756.

To all whom it may concern:

Be it known that I, JOHN F. SKIRROW, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Transfer-Tube Systems, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a diagrammatic view of the apparatus complete; and Fig. 2 a detail view of one of the trigger keys.

The main object of this invention is to improve that class of transfer tube systems in which air is caused to pass through a carrier transmitting tube, by providing means whereby air may be moved through the tube for a predetermined period of time, and then stopped, said period being so determined that the carrier will have ample time to pass through the tube to its destination.

Other objects and advantages of the invention will fully appear hereinafter.

This application is a division of my pending application filed May 23, 1905, and Serial No. 261,912.

Referring to the various parts by numerals 1 and 2 designate the transmission tubes, 1 being the outgoing tube and 2 the incoming one, both of said tubes practically constituting one continuous tube. The outgoing tube is connected at its outer end to the delivery head 3, having a carrier passage 3^a which is upwardly arched, said passage being so arranged that carriers will be discharged from one of its ends. The discharge end of said passage is normally closed by a cover 4, said cover being held in position by means of a light spring 5. The outer end of the incoming tube opens into an air chamber 6 of the delivery head, and said chamber is connected to the discharge passage 3^a through an opening 7. To the inner end of the outgoing tube 1 is connected a pipe 8 which leads to an air chamber 9 of sufficient capacity. This chamber may be an exhaust chamber or a storage chamber. In one case air will be forced through pipe 8 into the tubes 1 and 2, and in the other case air will be drawn through said tubes and into the chamber. To control the movement of air through the tube 8 a valve 10 is located therein, said valve being arranged to be electrically operated as will more fully hereinafter appear. As arranged in the drawing the apparatus is designed to operate with air pressure in the chamber 9. To operate the system with a vacuum in the said chamber the pipe 8 must be connected to the delivery or inner end of the incoming tube 2, and the inner end of receiving tube 1 must be open to permit air to flow into the tube at that point.

The incoming tube 2 is provided with a receiving terminal 11 near its outer end, said terminal being normally closed by means of a cover 12. The inner end of the incoming tube is open. The receiving or inner end of the outgoing tube is normally closed by means of a door 13 which is normally held closed by means of a light spring 14 so that it will resist the pressure of the air tending to open said door.

At the entrance of the outgoing transmission tube 1 and extending into the tube so that it lies in the path of the entering carriers, is a small trigger or key 15. When this key is swung on its pivot by an entering carrier its contact arm 16 engages a contact 17 located in a small casing 18 secured to the side of the tube, and completes the timing circuit. In this circuit is a solenoid 16^a whose armature is prolonged to form a rack bar 18^a, said armature being provided at its upper end with a weight 17^a. This rack bar engages one of a train of gearing 19, the final shaft 20 of which carries a small governing fan 21. The rack bar 18^a, meshes with a gear 22 of the timing train, said gear being loose on its shaft, but connected thereto in such a manner, by means of a pawl and ratchet, that when the solenoid armature descends to its normal position it will rotate said gear and its shaft and actuate the timing train. The trigger or key 15 is provided with means, preferably a light spring, as shown in Fig. 2 to hold its contact arm out of engagement with the contact 17 so that the timing circuit normally will be open.

At the receiving terminal of the incoming tube 2 is mounted a trigger 15^b which is provided with a contact arm 16^b adapted to

engage the stationary contact 17^b, said contact being in the timing circuit and adapted to complete said circuit when they are in engagement. It will, therefore, be seen that when a carrier is inserted at either receiving terminal or station the timing circuit will be completed and the solenoid armature lifted to its uppermost position. The timing train and the fan 21 actuated thereby are so arranged and proportioned that it will require a given time for the descent of the solenoid armature after the timing circuit has been broken.

The valve 10 is provided with a stem 23 which forms the core for a solenoid coil 24. In circuit with this coil is a battery or other source of electrical supply 25 and a pair of contacts 26. The armature or core of the solenoid 16^c is adapted to normally separate the contacts 26 and to permit said contacts to engage each other when the core is raised by the completion of the timing circuit from either of the receiving terminals. When the circuit of the valve opening solenoid is closed said valve will be brought to its open position and held in that position until the solenoid circuit is broken, thereby permitting the solenoid core to move in the proper direction to close the valve.

The operation of the apparatus is obvious, but may be briefly described as follows: When a carrier is placed in either receiving terminal the timing circuit is completed through the adjoining trigger and the armature of the solenoid 16^a is lifted permitting the contacts 26 to close the circuit of the valve operating solenoid 24. The valve will remain open until the armature of the solenoid 16^c descends and separates the contacts 26, whereupon the solenoid 24 will be rendered inoperative and the valve 10 will return to its normal closed position. As soon as a carrier is passed beyond the trigger at either receiving terminal, the timing circuit will be broken and the armature of the solenoid 16^a will begin its downward movement. This movement may be retarded to any extent desired by means of the timing train and the fan so that the valve will be held open any desired length of time, usually only a few seconds, before the lower end of the armature of the said solenoid engages and separates the contacts 26. It will be observed that the last carrier inserted in either of the receiving terminals resets the timing mechanism so that the valve will remain open a predetermined time after the last carrier is inserted in the system.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A transfer tube system comprising a transmission tube, a receiving terminal, electrical means for permitting air to flow through said tube, a power-driven timing means to stop the flow of air through the tube, and electrical means at the receiving terminal for starting the timing means and operating the means for permitting air to flow through the tube.

2. A transfer tube system comprising a transmission tube, a receiving terminal, an air chamber, a pipe connecting said chamber with the transmission tube, a valve in said pipe, electrical means for opening said valve, a timing means controlling the operation of said valve, and arranged to be placed in operation, and acting after a predetermined period to cut out the electric valve opening means and means at the receiving terminal for starting said timing means.

3. A transfer tube system comprising a transmission tube, a receiving terminal, an air chamber, a pipe connecting said chamber with the transmission tube, a valve in said pipe, electrical means for opening said valve, a power-driven timing means controlling the operation of said valve, and means at the receiving terminal for starting said timing means.

4. A transfer tube system comprising a transmission tube, a plurality of receiving terminals in said tube, electrical means for permitting air to flow through said tube, a power-driven timing means to stop the flow of air through said tube, and electrical means at each of the receiving terminals for independently starting the timing means and operating the means for permitting air to flow through the tube.

5. A transfer tube system comprising a transmission tube, having a plurality of receiving terminals, an air chamber, a pipe connecting said chamber to said tube, a valve in said pipe, electrically operated means for opening said valve, a timing means controlling the closing of said valve, and arranged to be placed in operation, and acting after a predetermined period to cut out the electric valve opening means and means at each receiving terminal for independently starting the timing means and the valve opening means.

6. A transfer tube system comprising a transmission tube, a plurality of receiving terminals connected thereto, means for permitting air to flow through said tube, a power-driven timing means to stop the flow of air through the tube after a predetermined time, and electrical means at each of the receiving terminals for starting the timing means and operating the means for permitting air to flow through the tube.

7. A transfer tube system comprising a transmission tube, a plurality of receiving terminals in said tube, means for permitting air to flow through said tube, a timing means to stop the flow of air through said tube and operating independently of the moving air, and means at each of the re-

ceiving terminals for starting the timing means and operating the means for permitting air to flow through the tube.

8. A transfer tube system comprising a transmission tube, a plurality of receiving terminals in said tube, means for permitting air to flow through said tube, a timing means to stop the flow of air through said tube and operating independently of the moving air, and means at each of the receiving terminals for starting the timing means and the means for permitting air to flow through the tube, said means comprising a device at each transmitter station adapted to be actuated by each insertion of a carrier at that station, the timing device being set on each actuation of any of said devices and insuring the flow of air through the transmission tube for a predetermined interval of time after a carrier has been inserted in the transit tubing at any of said stations.

9. A transfer tube system comprising a transmission tube, a plurality of receiving terminals in said tube, means for permitting air to flow through said tube, a timing means operating independently of the moving air, means at each of the receiving terminals for starting the timing means and the means for permitting air to flow through the tube, and means for setting the timing means each time a carrier is inserted in said tubing.

10. A transfer tube system comprising a transmission tube, a receiving terminal in said tube, means for permitting air to flow through said tube for the transmission of carriers, a timing means to stop the flow of carrier transmitting air through said tube and operating independently of the moving air, and means at the receiving terminal for starting the timing means and operating the means for permitting carrier transmitting air to flow through the tube.

11. A transfer tube system comprising a transmission tube, a receiving terminal in said tube, means for permitting air to flow through said tube, a timing means to stop the flow of air through said tube and operating independently of the moving air and means at the receiving terminal for starting the timing means and operating the means for permitting air to flow through the tube.

12. A transfer tube system comprising a transmission tube, a plurality of receiving terminals in said tube, means for permitting air to flow through said tube for the transmission of carriers, a timing means controlling the means for permitting air to flow through the tube and operating independently of the moving air, means at each of the receiving terminals for starting the timing means and the means for permitting carrier transmitting air to flow through the tube, and means for setting the timing means each time a carrier is inserted in a receiving terminal.

13. A transfer tube system comprising a transmission tube, an air supply therefor, a carrier receiving terminal in said tube, a valve permitting air to flow from the air supply through said tube, means for opening said valve, a timing means to control the closing of said valve and operating independently of the moving air, means operable from the receiving terminal to start the timing means and the valve opening means.

14. A transfer tube system comprising a transmission tube, an air reservoir therefor, a carrier receiving terminal in said tube, a valve permitting air to flow from the air reservoir through said tube, means for opening said valve, a timing means to control the closing of said valve and operating independently of the moving air, means operable from the receiving terminal to start the timing means and the valve opening means.

15. A transfer tube system comprising a transmission tube, an air supply, a valve for controlling the flow of air from said supply through the transmission tube, means for opening said valve, a timing means controlling the closing of the valve and operating independently of the air moving through said transmission tube, and means responsive to each carrier insertion in said transmission tube to start the timing means and the valve opening means, said timing means insuring the flow of air through the transmission tube during a predetermined minimum time interval following each carrier insertion and independent of the actual travel of the inserted carrier.

16. A transfer tube system comprising a transmission tube, an air reservoir, a valve for controlling the flow of air from said reservoir through the transmission tube, means for opening said valve, a timing means controlling the closing of the valve and operating independently of the moving air, and means responsive to each carrier insertion in said transmission tube to start the timing means and the valve opening means, said timing means insuring the flow of air through the transmission tube during a predetermined minimum time interval following each carrier insertion and independent of the actual travel of the inserted carrier.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 24th day of May 1910.

JOHN F. SKIRROW.

Witnesses:
EMMA D. NOLLER,
ALICE C. HUDSON.