

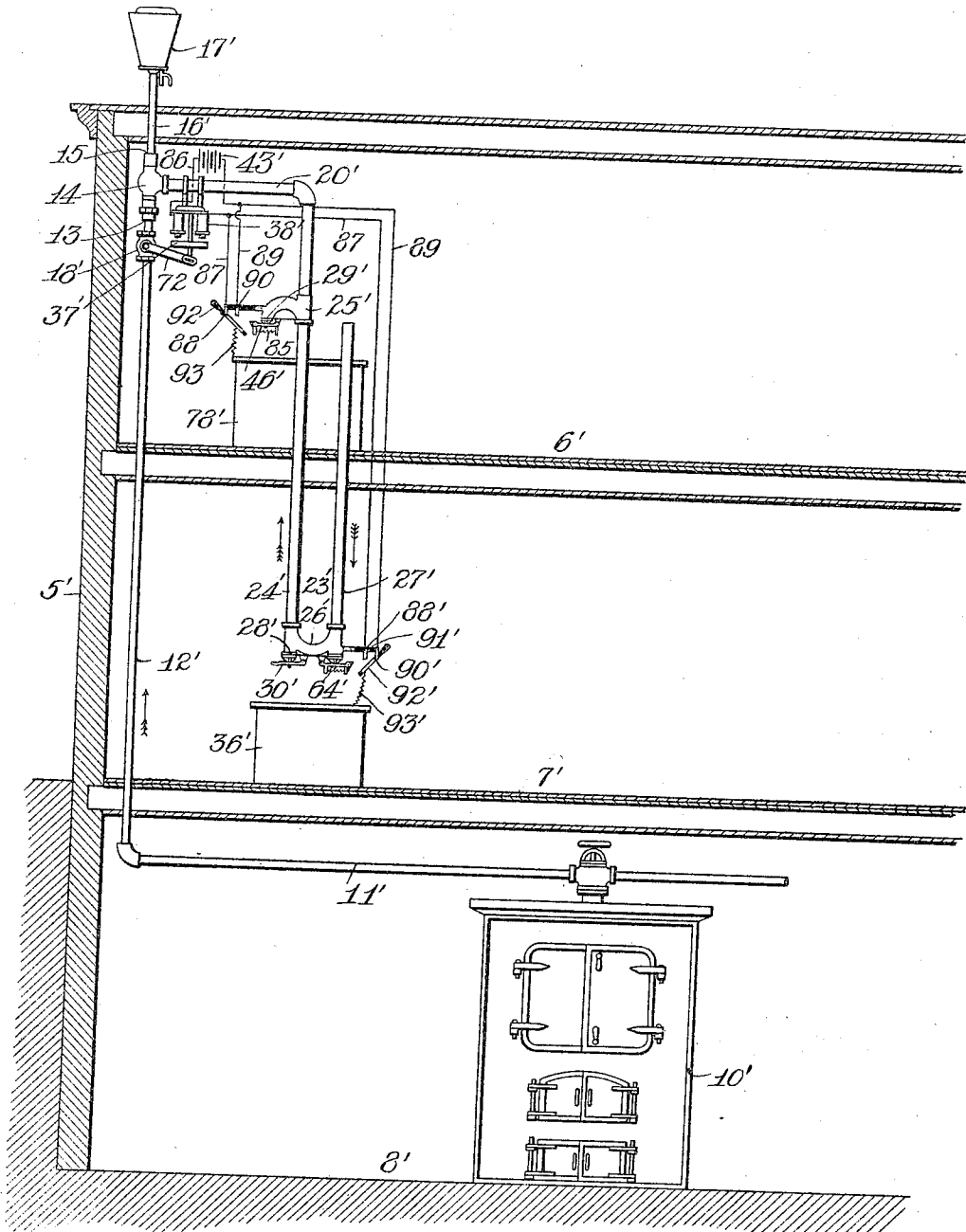
No. 812,792.

PATENTED FEB. 13, 1906.

J. S. JACQUES.  
PNEUMATIC DESPATCH TUBE SYSTEM.

APPLICATION FILED DEC. 23, 1905.

2 SHEETS—SHEET 1.



Witnesses:  
Louis A. Jones.  
Ernest A. Telfer.

Fig. 1.

Inventor:  
John S. Jacques  
by his attorney, Charles V. Gordon.

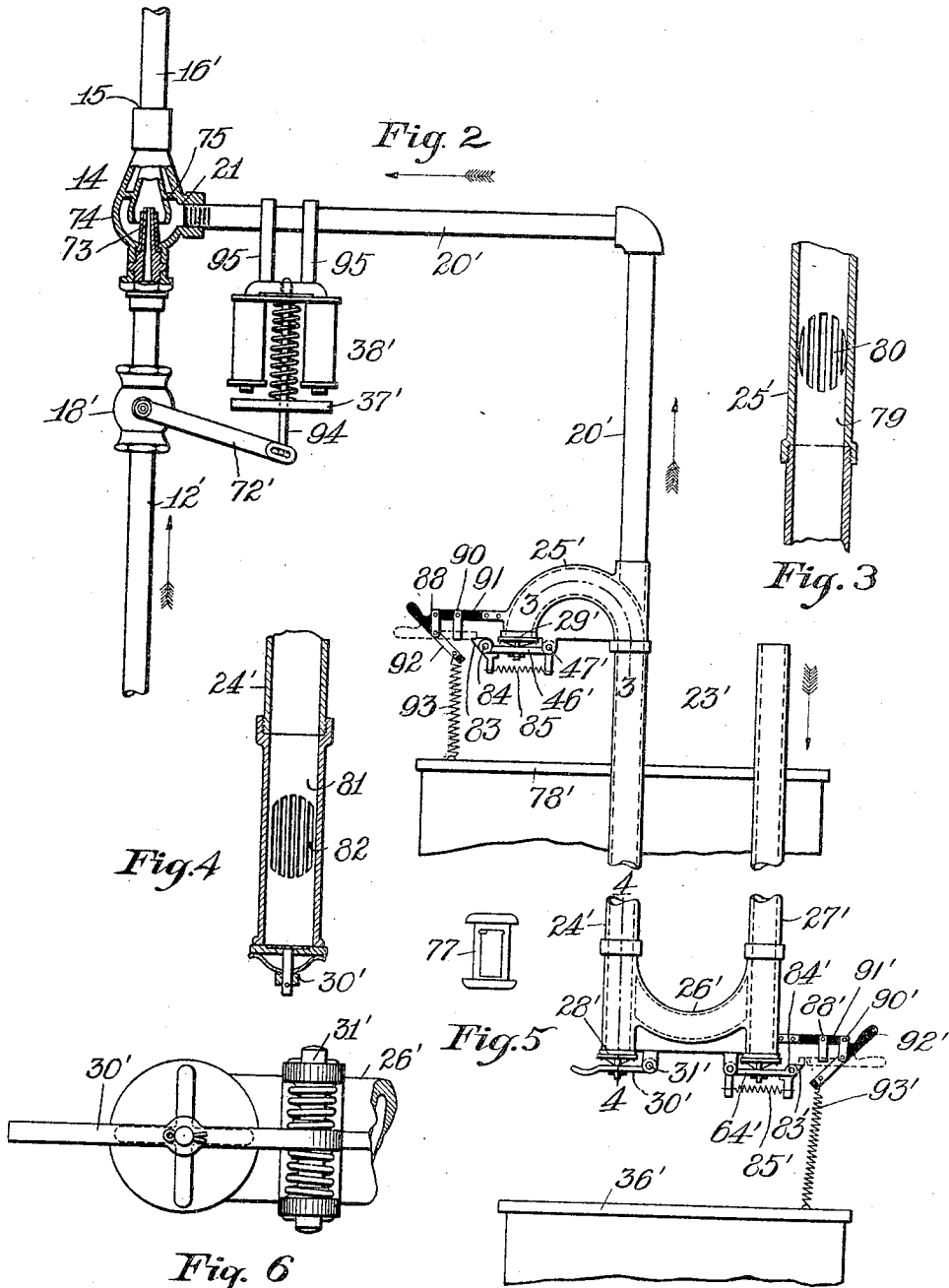
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# UNITED STATES PATENT OFFICE.

JOHN S. JACQUES, OF DORCHESTER, MASSACHUSETTS.

## PNEUMATIC-DESPATCH-TUBE SYSTEM.

No. 812,792.

Specification of Letters Patent.

Patented Feb. 13, 1906.

Original application filed May 24, 1905, Serial No. 261,963. Divided and this application filed December 23, 1905. Serial No. 293,092.

*To all whom it may concern:*

Be it known that I, JOHN S. JACQUES, a citizen of the United States, residing at Dorchester, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Pneumatic-Despatch-Tube Systems, of which the following is a specification.

This invention relates to an improved pneumatic-despatch-tube system, the object of the invention being to provide a simple, cheap, and efficient system whereby carriers containing money or other articles may be moved from one place to another by means of a vacuum, which is produced in the tubes of the system with the least possible expenditure of power to produce said vacuum, as hereinafter fully described.

The device of my invention is particularly adapted for use in store-service cash-carrier systems.

The invention consists in the combination of an ejector with a system of tubes, as hereinafter described, whereby a vacuum may be produced in said tube system which, properly controlled by devices and mechanism hereinafter described, causes a carrier inserted at the inlet-orifice of one of said tubes to pass through said tube and be delivered at the outlet-orifice of said tube; and, further, the invention consists in the automatic opening and closing of a valve located between the inlet-orifice of said ejector and a suitable source of power, such as a boiler containing steam or a receptacle containing compressed air, the opening and closing of said valve being effected by means controlled by the terminal valve of one of said tubes.

The invention further consists in the combination and arrangement of parts set forth in the following specification, and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a front elevation of my improved despatch-tube system, showing the same in position in relation to the different floors of a building, said building being shown in section and partly broken away to save space in the drawings. Fig. 2 is an enlarged front elevation, partly in section, broken away to save space, of the tube system and ejector illustrated in Fig. 1. Fig. 3 is a sectional elevation taken on line 3 3 of Fig. 2. Fig. 4 is a sectional elevation taken on line 4 4 of Fig. 2. Fig. 5 is a side elevation of one of the carriers. Fig. 6

is an underneath plan of the transmission-terminal valve for the inlet-orifice thereof.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5' is the wall of a building; 6', 7', and 8', the floors; 10', a boiler; 11', a steam-pipe connecting said boiler to a stand-pipe 12', said stand-pipe 12' being connected to an ejector 14 at the inlet-orifice 13 thereof. The outlet-orifice 15 of said ejector is connected by a pipe 16' to an exhaust-head 17'. The ejector 14 is illustrated in Fig. 2 in section, it being understood that any of the well-known forms of siphon-ejectors may be used in order to produce vacuum in a carrier system acting upon the general well-known principle of a nozzle 73, arranged to discharge steam or compressed air, as the case may be, inside a casing 74 and at the entrance to a funnel-shaped pipe 75, leading to the outlet-orifice 15. The intermediate orifice 21 is located in such a position as to communicate with the interior of the casing 74, so that when steam or compressed air discharges from the nozzle 73 into the funnel-shaped pipe 75 it will suck or draw the air into the interior of the casing 74 through the intermediate orifice 21. A throttle-valve 18' is interposed in the stand-pipe 12' between the ejector 14 and the boiler 10'. A pipe 20' is connected to the ejector 14 at the intermediate orifice 21, said pipe leading from said ejector to the despatch-tube system 23', said system consisting of a transmission-tube 24', fastened at its upper end to a transmission-terminal 25' and at its lower end to a U-shaped connection 26'. A return-tube 27' is fastened to one end of the U-shaped connection 26'.

The transmission-tube 24' is provided with an inlet-orifice 28' and with an outlet-orifice 29'. The inlet-orifice 28' is closed by means of a terminal valve 30', pivoted at 31' to ears formed upon the lower side of the U-shaped connection 26'. The outlet-orifice 29' is closed by means of the terminal valve 46', pivoted at 47' to ears formed upon the under side of the transmission-terminal 25'. A latch 83 is pivoted at 84 to the terminal valve 46' and is held normally in the position illustrated in Fig. 2 by a spiral spring 85.

An electromagnet 38' is connected by a wire 86 to a battery 43' and by a wire 87 to a terminal plate 88, said battery being connected by a wire 89 to another terminal plate 90. The terminal plates 88 and 90 are sup-

ported upon an insulating-block 91, fast to the transmission-terminal 25', and the electric circuit is completed by means of a jack-knife switch-lever 92. The wire 87 is also  
 5 connected to a terminal plate 88', and the wire 89 is connected to a terminal plate 90', said plates being adapted to be connected to complete the circuit by a switch 92'. The terminal plates 88' and 90' are supported  
 10 upon an insulating-block 91', fast to the U-shaped connection 26'.

In this form of my invention the upper end of the return-tube 27' is open, the lower end being closed by a terminal valve 64', pivoted  
 15 to ears depending from the U-shaped connection 26'. A latch 83' is pivoted at 84' to the terminal valve 64' and is held in the position illustrated in Fig. 2 by a spiral spring 85'. The switches 92 and 92' are normally held in  
 20 the position illustrated in Fig. 2 by spiral springs 93 and 93', respectively, one end of each of said springs being fastened to its respective switch and the lower end of the spring 93 being fastened to the cashier's desk  
 25 78', while the lower end of the spring 93' is fastened to the sales-counter 36'.

The armature 37' of the magnet 38' is fastened to a rod 94, arranged to slide in the magnet 38' and connected to an arm 72' by  
 30 means of which the throttle-valve 18' is opened or closed. The magnet 38' is supported by hangers 95 95, fast to the pipe 20'.

The carrier 77, in which the money or articles to be carried through the despatch-tubes  
 35 are placed, is illustrated in Fig. 5. The terminal valves 30', 46', and 64' are each substantially the same in construction as the form of valve illustrated in Fig. 6, said valves being held closed by means of a torsional spring  
 40 encircling the pivot thereof, one end of said spring fast to the valve itself, the other end of said spring fastened to the ear upon which the valve is supported.

The operation of the form of my invention  
 45 illustrated in Figs. 1 and 2 is as follows: Assuming the parts to be in the position illustrated in said Figs. 1 and 2, the salesman places the carrier 77 in the lower end of the transmission-tube 24', opening said tube at  
 50 its lower end by depressing the valve 30', then releasing said valve, which closes the lower end of the transmission-tube, the carrier closing the slots 82 in the partition 81 between said transmission-tube and the U-shaped connection 26. The salesman then depresses the outer end of the switch 92', rocking the same upon its pivot until it passes  
 55 upwardly beyond the latch 83', in the position illustrated in dotted lines, Fig. 2. The latch 83' locks the switch 92' in the position illustrated in dotted lines and holds it in contact with the terminal 88'. The switch thus closes the electric circuit and energizes the  
 60 electromagnet 38', which draws the armature 37' upwardly, moving the rod 94 up-

wardly and also the arm 72', thus opening the throttle-valve 18' and allowing steam or compressed air to pass through the ejector. A vacuum is thus formed in the pipes 20' and  
 70 transmission-tube 24', which draws the carrier 77 upwardly, said carrier passing around the curved transmission-terminal 25' and out through the orifice 29', opening the terminal valve 46' and dropping into a suitable receptacle placed upon the cashier's desk 78'.  
 75 After having made the proper change the cashier returns the carrier by placing the same in the upper end of the return-tube 27', which closes the open end of said tube, and a vacuum in the pipe causes the carrier to  
 80 travel downwardly through the return-tube 27' and out at the orifice 29', opening the valve 64' and allowing the carrier to drop into a suitable receptacle upon the counter 36', at the same time releasing the switch 92',  
 85 which is then moved into the position illustrated in Fig. 2 by the spiral spring 93'. Assuming the parts to be in the position illustrated in Fig. 2 and the cashier desires to  
 90 send a carrier to the sales-counter, the carrier is placed by the cashier in the upper end of the tube 27', as hereinbefore described, and the switch 92 rocked upon its pivot into the position illustrated in dotted lines in said figure,  
 95 completing the circuit through the terminal plates 88 and 90 and obtaining a vacuum in the transmission and return tubes, as hereinbefore described, with the same result as to the movement of the carrier through the return-tube 27' to the sales-counter 36'.

While an electromagnet has been illustrated and described in connection with my invention, it is evident that a solenoid may be employed in lieu thereof, if desired, the core of the solenoid being connected to the  
 100 lever 72' instead of the armature 37' and rod 94.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a pneumatic-despatch-tube system, an ejector provided with an inlet and an outlet orifice, a despatch-tube provided with an inlet and an outlet orifice connected to said  
 110 ejector intermediate said ejector inlet and outlet orifices, a terminal valve adapted to close said despatch-tube outlet-orifice, a receptacle adapted to contain steam, air or the like under pressure connected to the inlet-orifice of said ejector, a throttle-valve in-  
 115 terposed between said ejector and receptacle and adapted to open or close communication therebetween, an electromagnet having an armature operatively connected to open or close said throttle-valve, and a switch in electric  
 120 circuit with said electromagnet, said switch adapted to be held in position to close said circuit by said terminal valve, whereby said throttle-valve is held open by said electro-  
 125 magnet.

2. In a pneumatic-despatch-tube system, an ejector provided with an inlet and an outlet orifice, a despatch-tube provided with an inlet and an outlet orifice connected to said ejector intermediate said ejector inlet and outlet orifices, a terminal valve adapted to close said despatch-tube outlet-orifice, a receptacle adapted to contain steam, air or the like under pressure connected to the inlet-orifice of said ejector, a throttle-valve interposed between said ejector and receptacle and adapted to open or close communication therebetween, an electromagnet having an armature operatively connected to open or close said throttle-valve, a switch in electric circuit with said electromagnet, said switch adapted to be held in position to close said circuit by said terminal valve, whereby said throttle-valve is held open by said electromagnet, and means to operate said switch to break said circuit when said switch is released by said terminal valve, whereby said throttle-valve is released and allowed to close.

3. In a pneumatic-despatch-tube system, an ejector provided with an inlet and an outlet orifice, a despatch-tube provided with an inlet and an outlet orifice connected to said ejector intermediate said ejector inlet and outlet orifices, a terminal valve adapted to close said despatch-tube outlet-orifice, a receptacle adapted to contain steam, air or the like under pressure connected to the inlet-orifice of said ejector, a throttle-valve interposed between said ejector and receptacle and adapted to open or close communication therebetween, an electromagnet having an armature operatively connected to open or close said throttle-valve, and a switch in electric circuit with said electromagnet, said switch operatively connected to said terminal valve, whereby when said terminal valve is opened, said switch is operated to break said circuit and said throttle-valve closed.

4. In a pneumatic-despatch-tube system, a despatch-tube provided with an inlet and an outlet orifice, a terminal valve adapted to close said despatch-tube outlet-orifice, an ejector provided with an inlet-orifice, an outlet-orifice and an intermediate orifice, said despatch-tube connected to said intermediate orifice, a receptacle for fluid under pressure connected to said ejector inlet-orifice, a shut-off valve interposed between said ejector and receptacle, and means to open and close said shut-off valve, said means controlled by said terminal valve.

5. In a pneumatic-despatch-tube system, a despatch-tube provided with an inlet and an outlet orifice, a terminal valve adapted to close said despatch-tube outlet-orifice, an ejector provided with an inlet-orifice, an out-

let-orifice and an intermediate orifice, said despatch-tube connected to said intermediate orifice, a receptacle for fluid under pressure connected to said ejector inlet-orifice, a shut-off valve interposed between said ejector and receptacle, and electrically-operated means to open said shut-off valve, said means controlled by said terminal valve.

6. In a pneumatic-despatch-tube system, a despatch-tube provided with an inlet and an outlet orifice, a terminal valve adapted to close said despatch-tube outlet-orifice, an ejector provided with an inlet-orifice, an outlet-orifice and an intermediate orifice, said despatch-tube connected to said intermediate orifice, a receptacle for fluid under pressure connected to said ejector inlet-orifice, a shut-off valve interposed between said ejector and receptacle, electrically-operated means to open said shut-off valve, said means controlled by said terminal valve, and a spring adapted to close said shut-off valve.

7. In a pneumatic-despatch-tube system, an ejector provided with an inlet and an outlet orifice, a transmission and a return tube, each of said tubes provided with an inlet and an outlet orifice, respectively, said tubes connected to said ejector intermediate said ejector inlet and outlet orifices, a terminal valve adapted to close each of said despatch-tube outlet-orifices, respectively, a connecting-tube joining said transmission and return tubes together, and means controlled by said terminal valves for causing a vacuum in said tubes.

8. In a pneumatic-despatch-tube system, an ejector provided with an inlet and an outlet orifice, a transmission and a return tube, each of said tubes provided with an inlet and an outlet orifice, respectively, one of said tubes connected to said ejector intermediate said ejector inlet and outlet orifices, a terminal valve adapted to close each of said despatch-tube outlet-orifices, respectively, a connecting-tube joining said transmission and return tubes together, a receptacle for fluid under pressure connected to said ejector inlet-orifice, an electromagnet, a shut-off valve interposed between said ejector and receptacle, and adapted to be operated by said electromagnet, and means controlled by each of said outlet terminal valves, respectively, to break the electric circuit of said magnet.

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

JOHN S. JACQUES.

Witnesses:

CHARLES S. GOODING,  
ANNIE J. DAILEY.