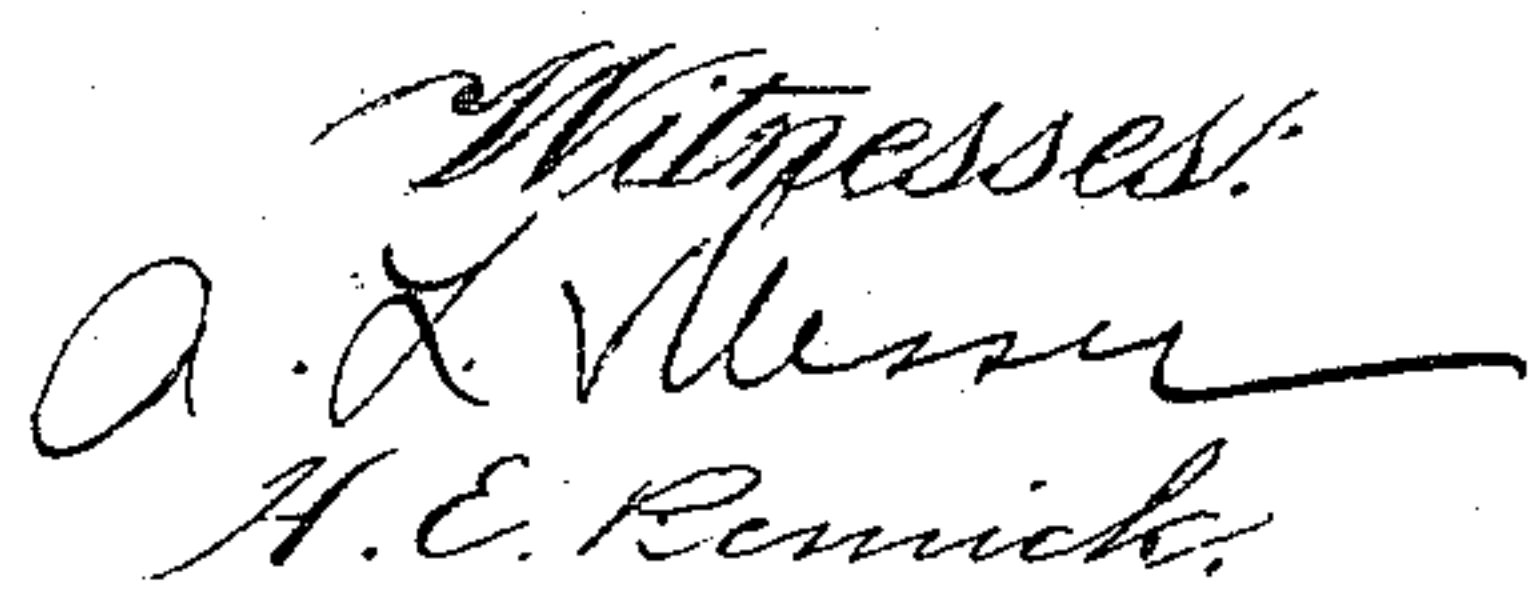


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2 SHEETS--SHEET 1.



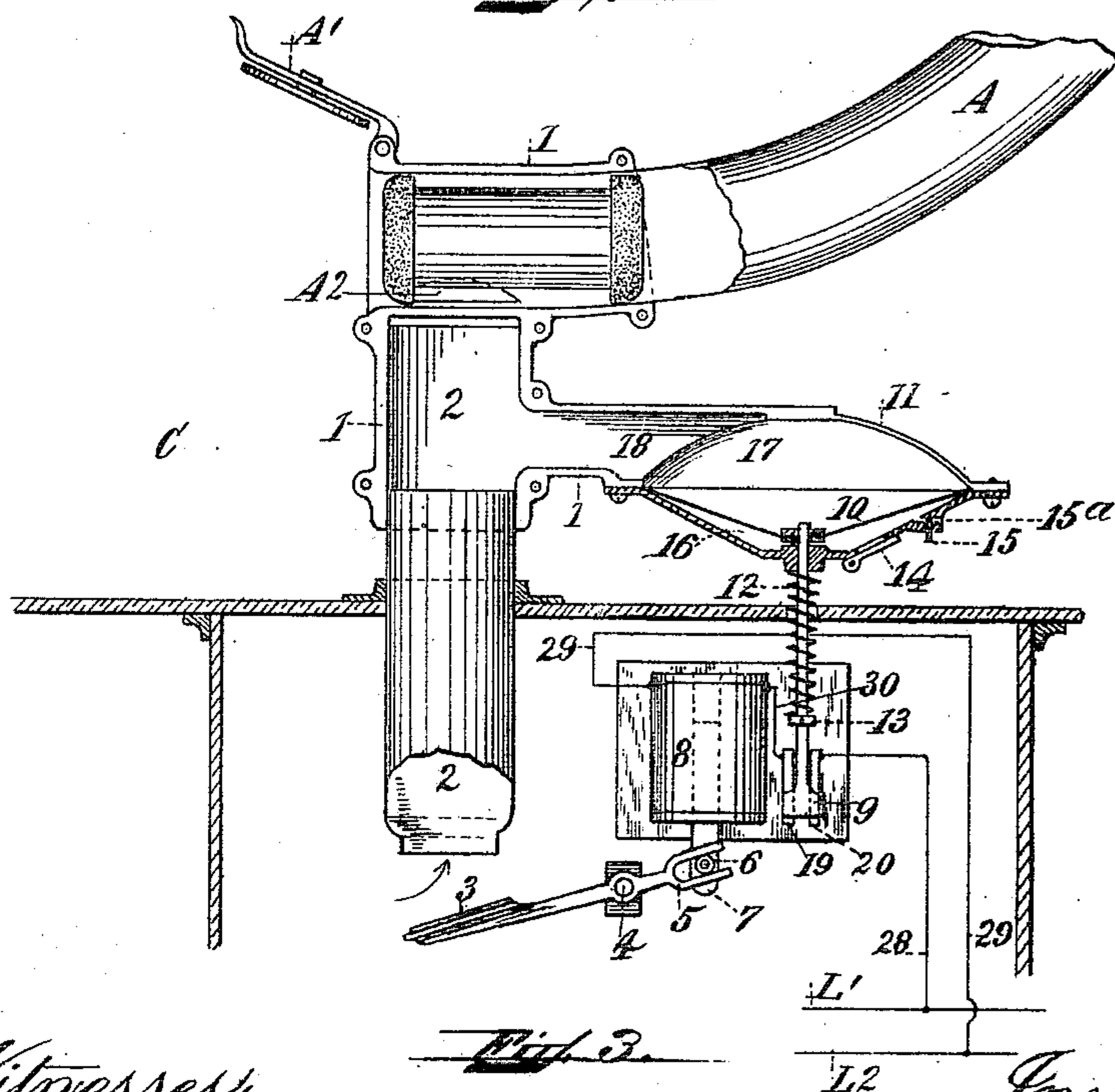
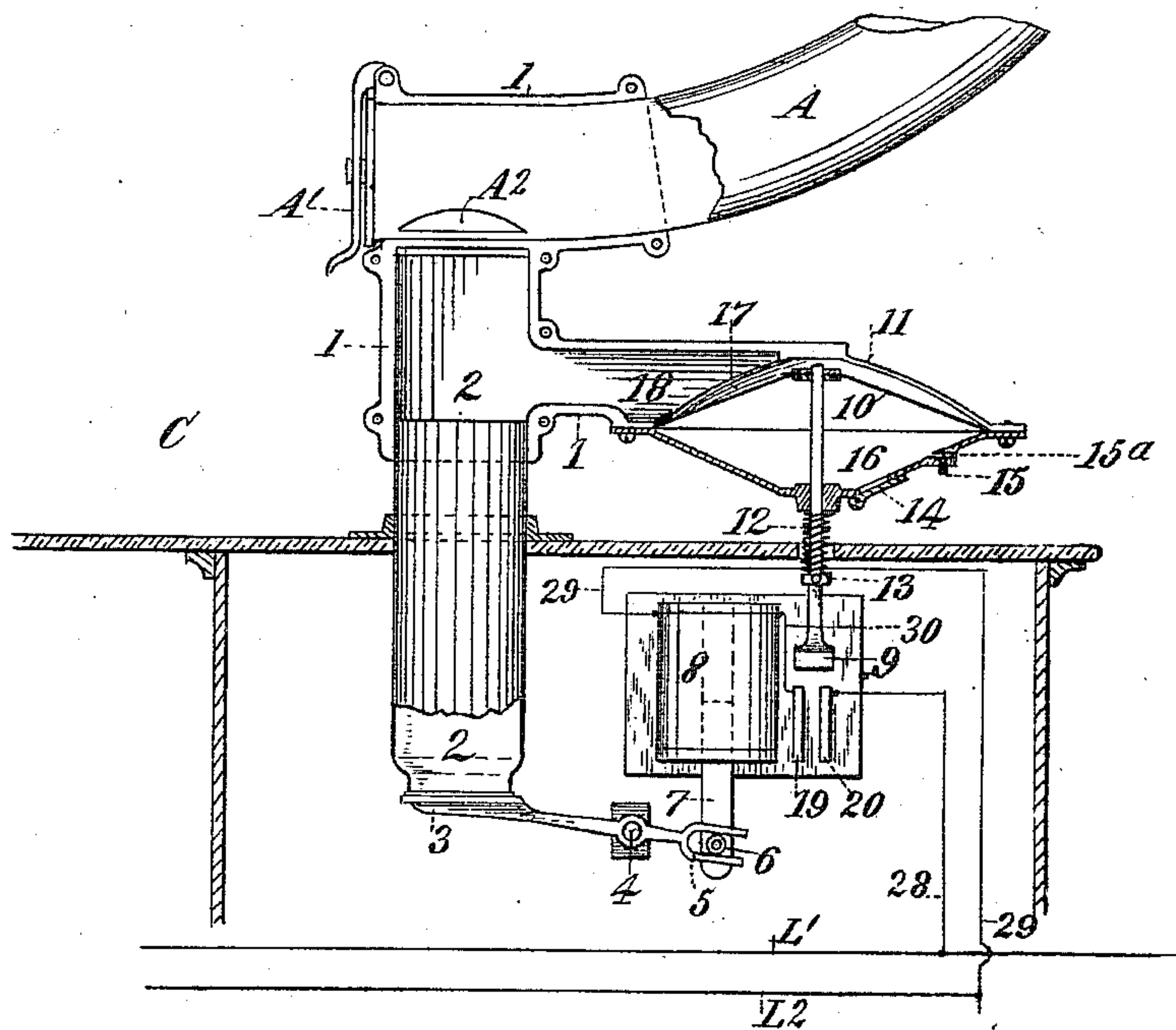
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att'y.

L. G. BARTLETT.
PNEUMATIC DESPATCH TUBE APPARATUS.
APPLICATION FILED APR. 6, 1908.

995,518.

Patented June 20, 1911.

2 SHEETS—SHEET 2.



Witnesses:
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Inventor:
Louis G. Bartlett
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UNITED STATES PATENT OFFICE.

LOUIS G. BARTLETT, OF SOMERVILLE, MASSACHUSETTS.

PNEUMATIC-DESPATCH-TUBE APPARATUS.

995,518.

Specification of Letters Patent. Patented June 20, 1911.

Application filed April 6, 1908. Serial No. 425,295.

To all whom it may concern:

Be it known that I, LOUIS G. BARTLETT, of Somerville, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pneumatic-Despatch-Tube Apparatus, of which the following is a specification.

My invention relates to improvements in pneumatic despatch tube apparatus and especially to the type known as the all-sealed system.

The object of my invention is to provide an air inlet which is adapted to be electrically operated to admit air to the terminal or bell mouth of the apparatus for driving carriers, and which valve is timed to cut off the admission of air when the carriers have been delivered.

Another feature of this device is that the necessity of extending electric conductors to the out or substation is dispensed with, the switches controlling the air-inlet valve being operated through a variation of the vacuum in the system caused by the opening of the despatching inlet at the substation.

In the accompanying drawings which illustrate a construction embodying my invention, Figure 1 is a diagrammatic view of a pneumatic despatch tube system showing the controlling mechanism in normal position; Fig. 2 is an enlarged sectional elevation of the controlling mechanism showing the normal position of the parts. Fig. 3 is a similar view to Fig. 2 showing the operating position of the mechanism when a carrier is being despatched; Fig. 4 is a detail view of an automatic-pressure controlled switch to be hereinafter described.

Like letters of reference refer to like parts throughout the several views.

A is a transmission tube connecting the cashier's or central station C with the terminal B at the sales or substation S.

D is a return transmission tube connecting the terminal B with the terminal E at the central station C.

G represents the usual vacuum drum and is connected with the terminal E by the tube F.

B' and E' are ordinary delivery valves controlling the terminals B and E respectively.

A' is an ordinary despatching inlet for inserting carriers into the tube A; D' is the usual substation despatching inlet for despatching carriers in the tube D.

1 is a casing (see Figs. 2 and 3) in which is mounted a branch tube 2 connected with the transmission tube A through apertures A².

3 is an air inlet valve pivoted at 4 closing the lower end of the branch or air inlet tube 2.

8 is a solenoid magnet having a core or armature 7 connected with the bifurcated end 5 of the pivoted valve 3 through a pin 6. The weight of the core 7 is adapted to normally hold the valve 3 closed; X represents a battery or source of electric current and connected with the solenoid 8 through conductors L², 29 and 30, contacts 19—20, through switch 9 when closed, and conductors 28 and L'.

10 is a diaphragm mounted in the casing 11, the chamber 17 above said diaphragm being in communication through the passage 18 and the tube 2 with the vacuum maintained in the transmission tube A. The chamber 16 below the diaphragm 10 is connected with the atmosphere through a port controlled by the outwardly opening valve 14 which permits the escape of the air in the chamber 16 allowing the diaphragm 10 to drop quickly when the vacuum in the tube A is destroyed. A port controlled by the timing valve 15 is adapted to regulate the admission of air to the chamber 16 to time the upward movement of the diaphragm 10 when the vacuum is restored in the tube A.

9 is a bridge piece or switch connected with the stem of the diaphragm 10 and adapted to close the circuits through contacts 19—20 and energize the solenoid 8 when the diaphragm 10 drops through action of the spring 12, the tension of which is regulated by an adjustable collar 13.

23 is a piston mounted in the cylinder 22, which cylinder is connected above said piston 23 by means of a tube 21 with the vacuum drum G.

24 is a piston rod attached at its upper end to the piston 23 and carrying on its lower end a weight or counterbalance 27.

25 and 26 are bridge pieces mounted on the rod 24 and suitably insulated therefrom and adapted to bridge the contacts 25^a and 26^a respectively when the vacuum in the cylinder 22 is sufficient to overcome the weight 27 and lifts said piston and bridge pieces up.

The operation of the device is as follows: To despatch a carrier from the central sta-

tion C to substation S, the inlet A' is opened and the carrier inserted into the tube A (see Fig. 3). The air entering the tube A destroys the vacuum in the tube 2 and chamber 17 causing the diaphragm 10 and switch 9 to drop rapidly through action of the spring 12, the air in the chamber 16 being expelled through valve 14. The switch 9 bridges contacts 19 and 20 closing the circuit through and energizing the solenoid 8 which attracts and raises the core 7 opening the valve 3, admitting air to the tube 2 which drives the carrier through the tube A toward the substation S. In the meantime, the valve A' having been closed the air entering through the restricted lower end of the tube 2 which offers resistance to the passage of air causes sufficient vacuum in the tube 2 and chamber 17 to gradually lift the diaphragm 10 against the action of the spring 12 until, by the time the carrier has delivered at the substation S, the bridge piece 9 has been moved away from the contacts 19 and 20 breaking the circuit through and deenergizing the solenoid 8, releasing the core 7 which by its own weight closes the valve 3 cutting off the admission of air to the tube A. The timing of this operation is regulated by the timing valve 15.

In despatching a carrier from substation S to central station C, the inlet D' is opened and the carrier inserted in the tube D. The opening of inlet D' causes a fluctuation in the vacuum in tube A which acts to release the diaphragm 10 as heretofore described energizing the solenoid 8 and through the core 7 opening the valve 3 admitting air to the system; the inlet D' in the meantime having been closed the air entering the tube 2 drives the carrier through the tube D toward the station C, and owing to the resistance of the restricted mouth of the tube 2, the vacuum is restored and gradually lifts the diaphragm 10 and switch 9 until by the time the carrier has delivered at the station C, the circuit has been broken, the solenoid deenergized and the valve 3 closed cutting off the admission of air. Any number of circuits of transmission tube may be connected with the vacuum drum G and operate in the manner described. The air may be exhausted from the drum G by a blower in the usual manner, and to prevent the closing of the circuits, when the power is closed down at night, and the vacuum in the system is destroyed, the automatic cut out switch 22 is provided, which, before the vacuum is destroyed sufficiently to release the diaphragm 10, is actuated by the weight to move the bridge pieces 25 and 26 away from contacts 25^a and 26^a, thereby breaking the main circuit and preventing the energizing of the solenoid 8 and opening of

the air valve 10. When the power is again started, the valve 3 being closed, the vacuum increases rapidly until the piston 23 and weight 27 is lifted moving bridge pieces 25 and 26 over contacts 25^a and 26^a, restoring the main circuit.

Having thus described my invention and set forth a construction embodying the same, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a pneumatic despatch tube apparatus, a normally closed tube for the transmission of carriers, means for exhausting the air from said tube, an air valve adapted to control the admission of atmospheric pressure to said tube for driving carriers, said valve being normally closed, and an automatic time controlled electro-magnet adapted to be automatically energized and connected to open said valve upon the despatching of a carrier and to be automatically deenergized to permit the closure of said valve when the carrier has arrived at its destination.

2. In a pneumatic despatch tube apparatus, a normally closed tube for the transmission of carriers, means for exhausting the air from said tube, an air-valve adapted to control the admission of atmospheric pressure to said tube for driving carriers and normally closed, an electro-magnet adapted to be energized and connected to open said valve upon the despatching of a carrier to admit air to said tube for driving said carrier, and a pneumatically operated time controlled switch for deenergizing said magnet to permit the closure of said air-valve when said carrier has arrived at its destination.

3. In a pneumatic despatch tube apparatus, a normally closed tube for the transmission of carriers, means for exhausting the air from said tube, a normally closed valve adapted to be opened to admit air to said tube for driving carriers, an electro-magnet connected to open said valve when energized, and means adapted to be operated by a fluctuation in the vacuum in said tube to energize said magnet to open said valve.

4. In a pneumatic despatch tube apparatus, a normally closed tube for the transmission of carriers, means for exhausting the air from said tube, a normally closed valve adapted to be opened to admit air to said tube for driving carriers, an electro-magnet connected to open said valve when energized, means adapted to be operated by a fluctuation in the vacuum in said tube to energize said magnet to open said valve, and means for timing the closure of said valve.

5. In a pneumatic despatch tube apparatus, a normally closed tube for the trans-

mission of carriers, means for maintaining a vacuum in said tube, a normally closed valve adapted to be opened upon a fluctuation of the vacuum in said tube to admit air 5 for driving carriers, and means for rendering inoperative said valve when the vacuum normally maintained in said tube has dropped beyond a predetermined point.

10 6. In a pneumatic despatch tube apparatus, a normally closed tube for the transmission of carriers, a vacuum drum connected with and adapted to maintain a vacuum in said tube, a normally closed valve adapted to be opened upon a fluctuation of 15 the vacuum in said tube to admit air to said tube for driving carriers, and means for rendering inoperative said valve when the vacuum in said drum has fluctuated beyond a predetermined point.

20 7. In a pneumatic despatch tube apparatus, a normally closed tube for the transmission of carriers, means for maintaining a vacuum in said tube, a normally closed valve adapted to control the admission of 25 air to said tube for driving carriers, an electro-magnet connected to open said valve

when energized, and a pressure operated switch controlling the circuit through said magnet and adapted to be operated by fluctuations in the vacuum in said tube to en- 30 ergize or deenergize said magnet to open or close said valve.

8. In a pneumatic despatch tube apparatus, a normally closed tube for the transmission of carriers, a vacuum drum connect- 35 ed with and adapted to normally maintain a vacuum in said tube, a normally closed valve adapted to be opened to admit air to said tube for driving carriers, mechanism for controlling and timing the closure 40 of said valve, and means for rendering inoperative said mechanism when the vacuum in said drum has fluctuated beyond a predetermined point.

In testimony whereof, I have signed my 45 name to this specification in the presence of two subscribing witnesses, this 31st day of March A. D. 1908.

LOUIS G. BARTLETT.

Witnesses:

ARTHUR F. RANDALL,
O. L. MESSER.