

E. S. LEAYCRAFT.

PNEUMATIC PARCEL DISPATCH-TUBE.

No. 178,784.

Patented June 13, 1876.

Fig. 1.

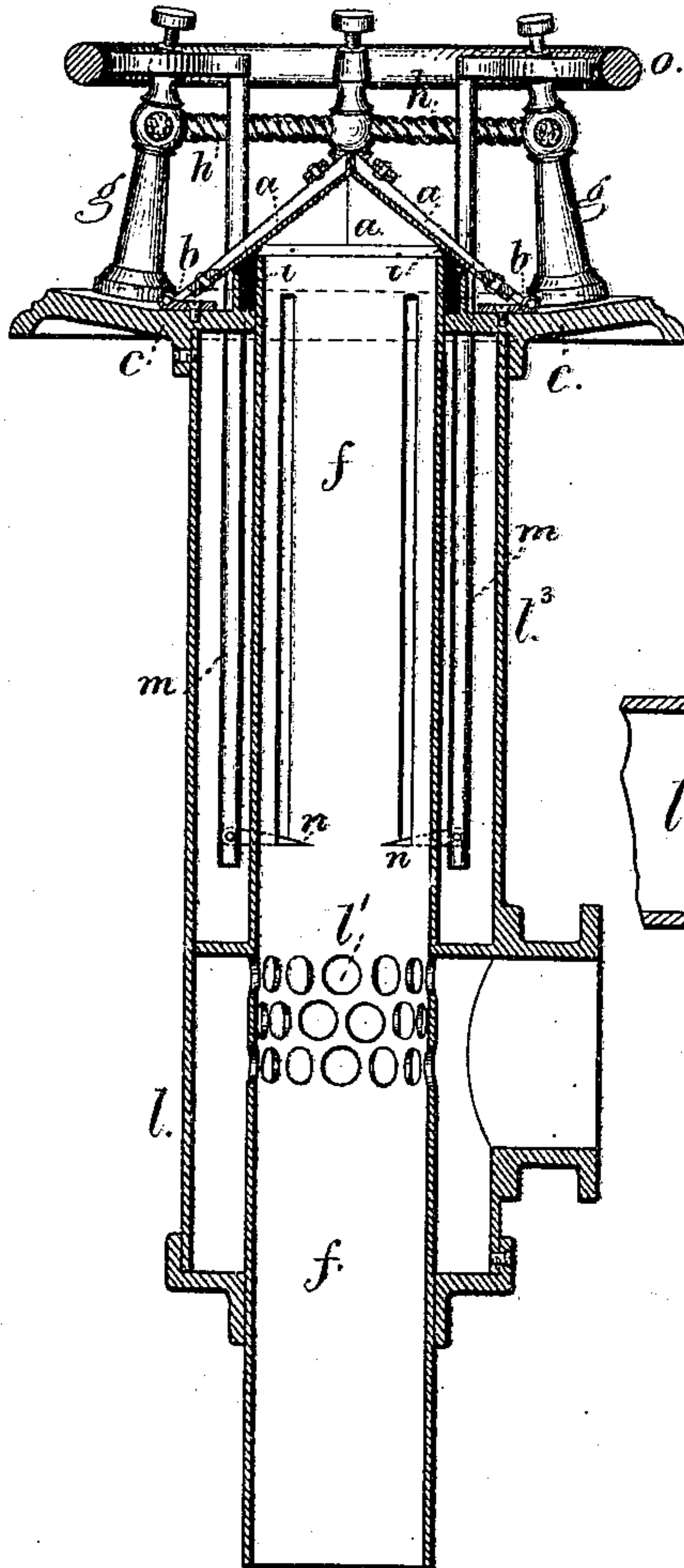


Fig. 3.

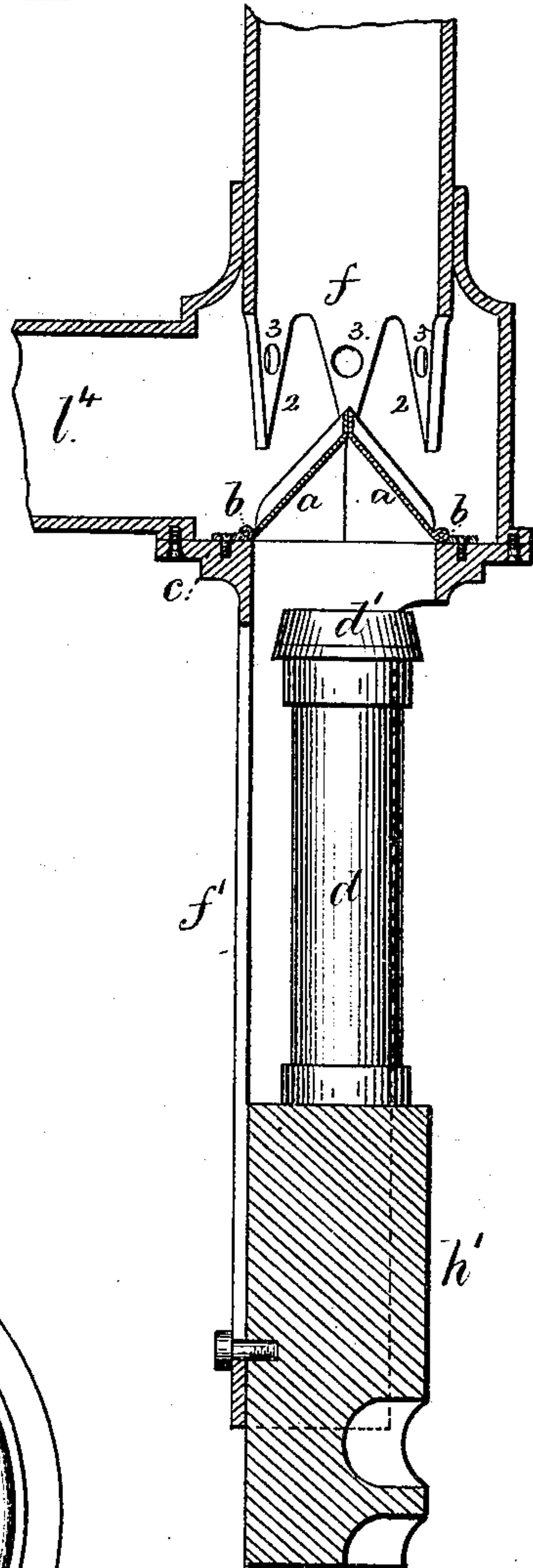


Fig. 4.

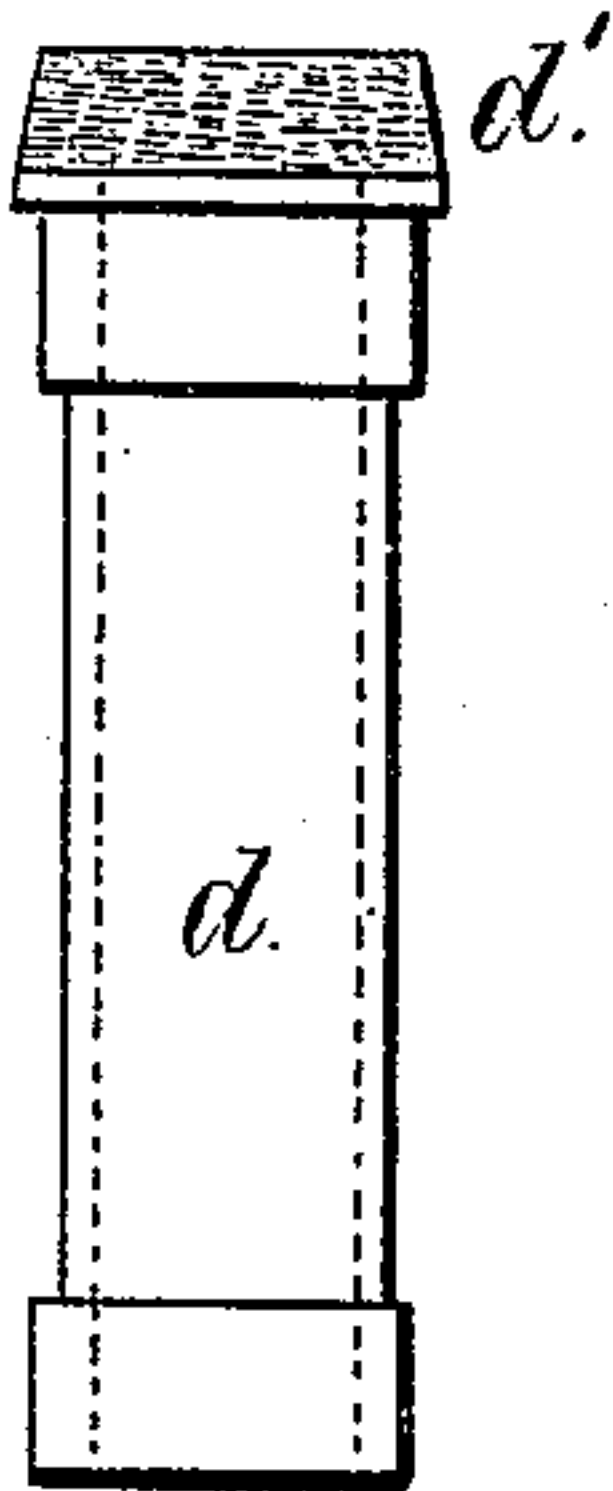
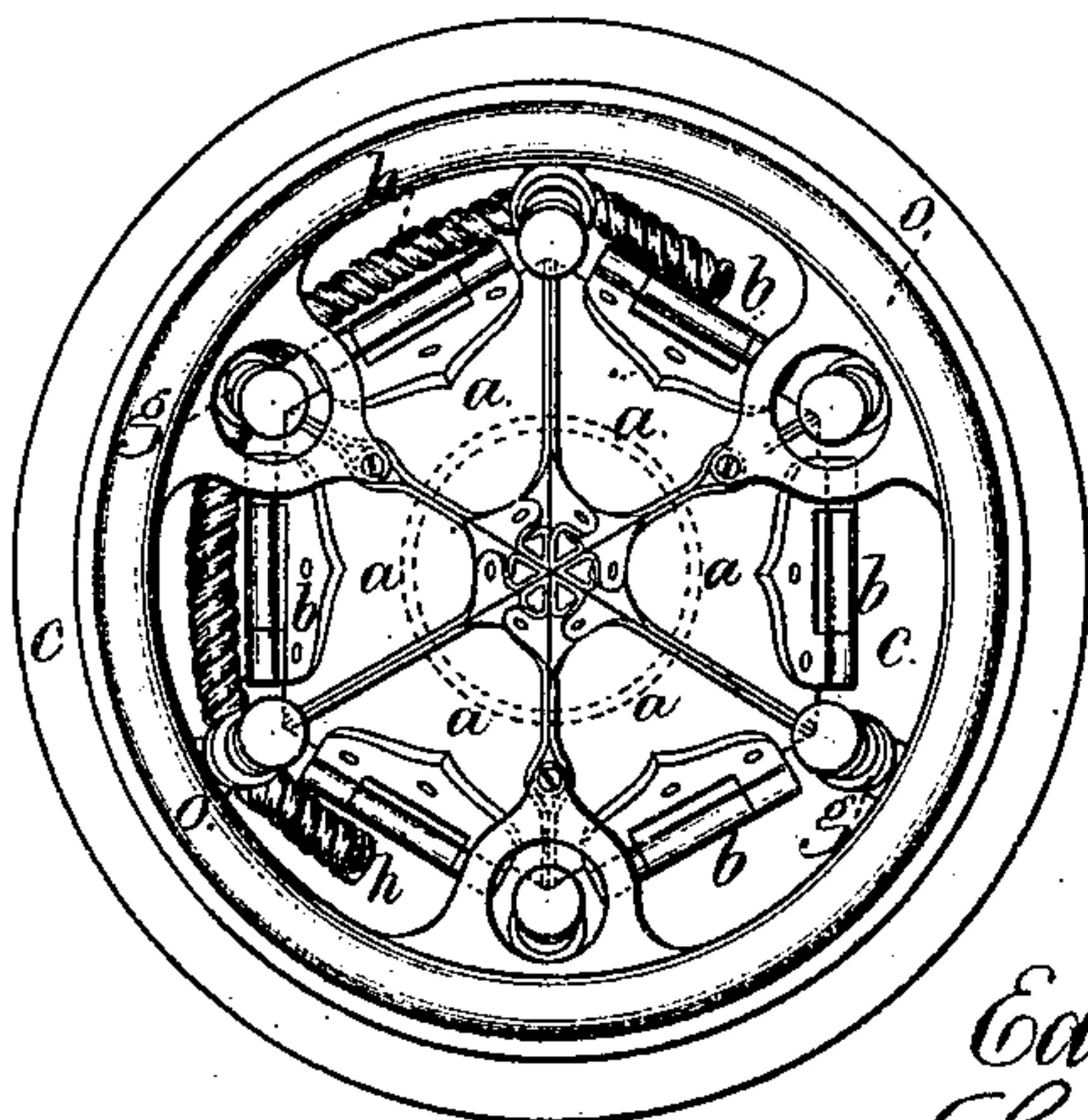


Fig. 2.



Witnesses

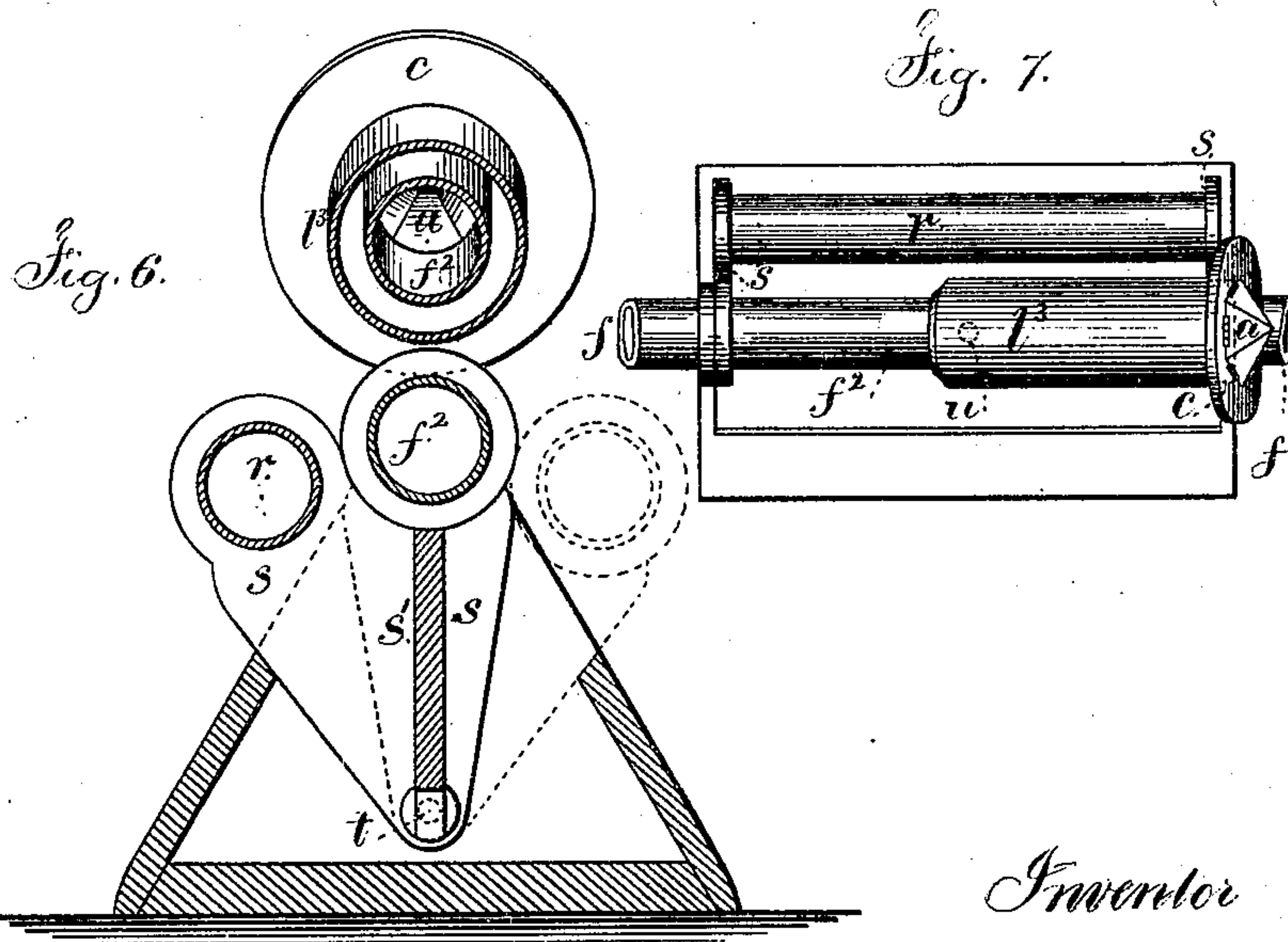
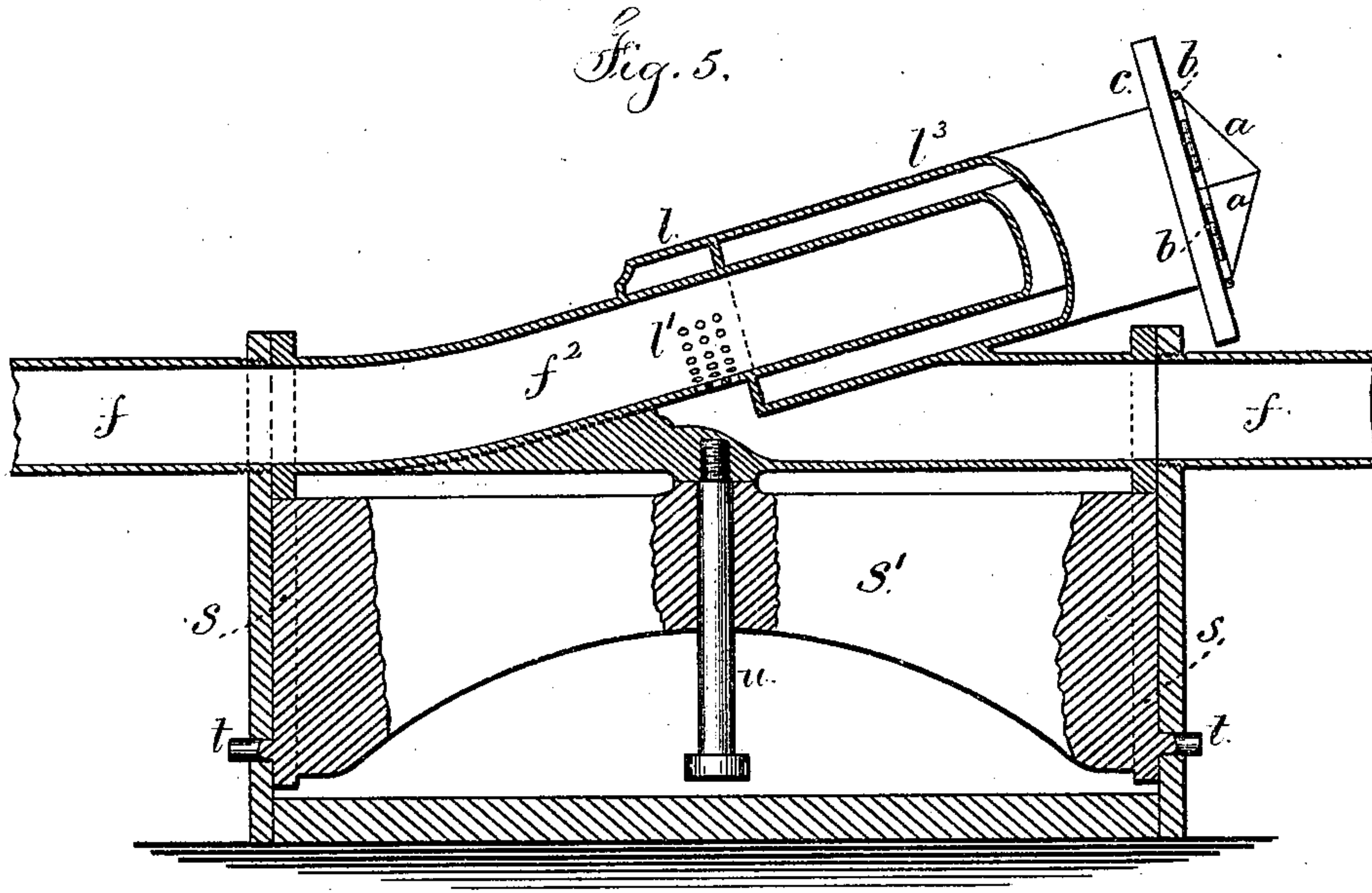
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UNITED STATES PATENT OFFICE.

EDWIN S. LEAYCRAFT, OF BROOKLYN, E. D., NEW YORK.

IMPROVEMENT IN PNEUMATIC PARCEL-DISPATCH TUBES.

Specification forming part of Letters Patent No. 178,784, dated June 13, 1876; application filed May 22, 1876.

To all whom it may concern:

Be it known that I, EDWIN S. LEAYCRAFT, of Brooklyn, E. D., in the county of Kings and State of New York, have invented an Improvement in Pneumatic Parcel-Tubes, of which the following is a specification:

This invention relates to the means for introducing or delivering the bucket or carrier without allowing the escape of air, or the interruption of the current of air, or the carrier passing through the tube.

In the pneumatic parcel-delivery apparatus heretofore constructed the carriers or buckets have passed into a chamber with a perforated partition for stopping the parcel-carrier, which necessitates the opening of some portion of the apparatus for extracting the carrier or bucket. This is attendant with labor and loss of time and obstruction to the current of air passing through the tubes.

I make use of a compound self-acting valve, that allows the bucket or carrier to pass, and, by closing, retains the air. This valve is available with tubes in which compressed air is employed; also, in the exhaust pneumatic apparatus.

In the drawing, Figure 1 is a longitudinal section of the pneumatic delivery apparatus in the form adapted to an exhaust. Fig. 2 is an end view of the tube, showing the compound valve. Fig. 3 is a section of the apparatus in the form adapted to compressed air. Fig. 4 is an elevation of the carrier. Fig. 5 is a longitudinal section; and Fig. 6 a cross-section, showing the apparatus in the form employed at intermediate stations on the pneumatic tube. Fig. 7 is a plan, in smaller size, of the device shown in Figs. 5 and 6.

The improved compound valve is made as a pyramid, preferably of six sides, each section of the valve being a triangular flap, hinged at the base of the triangle. The sections *a* of the valve are, preferably, made of thin sheet metal with the edges turned up, and the hinges *b* at one edge of each triangle unite the same to the base-plate *c*. This construction allows of the several sections *a a*, that form the complete valve standing in the direction of the movement of the bucket or carrier *d*. This bucket or carrier *d* is tubular, and, preferably,

of leather, with one end closed, and provided with a thick head, *d'*, of felt, or similar elastic material, at the front end, so that the shock upon the bucket, as it falls, or is stopped, is lessened.

The pneumatic tube *f* is of the desired size, and the bucket or carrier is adapted to fit the same loosely. The compound valve is in line with this tube, the axis of the pyramid of the cone corresponding to the axis of the tube, and the bucket passing against the inner surfaces of the triangular flaps, forming the compound valves, such flaps yield and the valve opens, to allow the bucket to pass.

In Fig. 1 this compound valve is at the outer end of the tube *f*, and there are short columns *g*, through which a cord, *h*, is passed, to form a recoil-stop for the moving ends of the flaps to strike against as they swing open. This cord is of fibrous or elastic material, and serves to stop the movement of the valve-flaps, and retain them to their seat without concussion or injury after the bucket has passed the compound valve.

The end of the tube *f* is adapted in shape to the under surfaces of the inclined flaps of the compound valve, and there should be an elastic packing at *i* around the end of said tube for the flaps *a* to fall against in closing.

The casing *l*, surrounding the tube *f*, is connected with the exhaust, and the tube *f* is perforated, so that the air can be drawn from the tube *f*, and the suction action maintained that moves the bucket.

The momentum of the bucket in the tube *f* causes it to pass beyond the casing *l* and perforations *l'*, and the inertia will generally be sufficient to carry the bucket entirely past the compound valve and out of the tube, in which case it will fall into a basket or receiver; but in cases where the speed is insufficient, or the bucket becomes obstructed, the swinging fingers *n* catch the bucket or carrier as it passes the exhaust-casing *l*. These fingers *n* are similar to pawls, and they are upon the rods *m*, that are outside the tube *f* in a continuation, *l''*, of the casing *l*, and the pawls pass through longitudinal slots in said tube *f*, and the rods *m* extend to, and are united with, a ring, *o*, that is outside the end of the tube *f*, so that

the rods can be drawn endwise, and the fingers will move the bucket out from the tube f , should it have remained therein.

In cases where this compound valve is made use of with compressed air, as in Fig. 3, the valve is applied within the tube f , and there is a receiver, f^1 , in line with the tube f , such receiver being open at the upper side, so that the bucket d can be laid therein, and the sliding plunger h' employed to force the bucket through the compound valve a into the tube f . This plunger h' closes the end of the tube f after it has forced the bucket forward into the tube f , so that the atmosphere under pressure, supplied by the lateral tube l^4 , forces the bucket along in the tube f .

In this form of pneumatic apparatus the flaps a , forming the compound valve, should be closed by a spring, so as to shut as the plunger h' is drawn back.

I make the end of the tube f with points, as shown at 2 2, so that the flaps turn up between those points, and the bucket is guided by those points and the flaps as it enters the tube f . There are perforations, at 3, for the free passage of the atmosphere from the lateral branch l^4 into the tube f .

In order to receive messages, parcels, &c., at an intermediate station, I make use of the swinging section r that is in line with the main or line tube f . This section r is provided at its ends with plates s that are pivoted at t , so that the tube r and plates s can be swung on the pivots t to move the tubular section r bodily aside, as in Figs. 5 and 6, and bring in the curved continuation f^2 that is united to the delivery apparatus before described, so that a bucket, coming along the tube, will be deflected, and delivered, as aforesaid. I remark that it is necessary to continue the tube f^2 the entire length of the section between the standing portions f of the air-tube, so that the atmospheric exhaust or circulation may be operative. Between the plates s there is a plate, s' , carrying a sliding pivot, u , and the plates s are recessed to re-

ceive the ends of the tube f^2 , and this tube f^2 is attached to the pivot u ; hence, the tube f^2 and pneumatic delivery apparatus can be drawn away from the plates s laterally, the pivot u sliding in s' , and then the said delivery apparatus can be turned around upon the pivot u , and moved back to its place, so as to reverse the delivery apparatus, and thereby adapt it to the reception and discharge of packages coming in either direction.

I claim as my invention—

1. The compound valve for a pneumatic parcel tube, made of triangular flaps placed together pyramidally, substantially as set forth.

2. The combination, with the compound pyramidal pneumatic valve, of the cord h , to arrest the movement of the flaps, as set forth.

3. The fingers n , rods m , and ring o , in combination with the pyramidal compound valve a , substantially as set forth.

4. The combination, with the compound pyramidal valve a , of the plunger h' , tube f , and lateral air-supply pipe l^4 , substantially as and for the purposes set forth.

5. The swinging tubular section r and plates s , in combination with the tube f , delivery-tube f^2 , and compound valve a , substantially as set forth.

6. The sliding pivot u , in combination with the tube f^2 , reversible pneumatic delivery apparatus, tube r , and plates s s' , substantially as set forth, to allow of receiving the pneumatic bucket from either direction, as set forth.

7. The pneumatic bucket or carrier formed as a tube, open at one end, and provided with a thick disk of felt, or other elastic substance at the closed front end, substantially as set forth.

Signed by me this 17th day of May, A. D. 1876.

EDWIN S. LEAYCRAFT.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.