

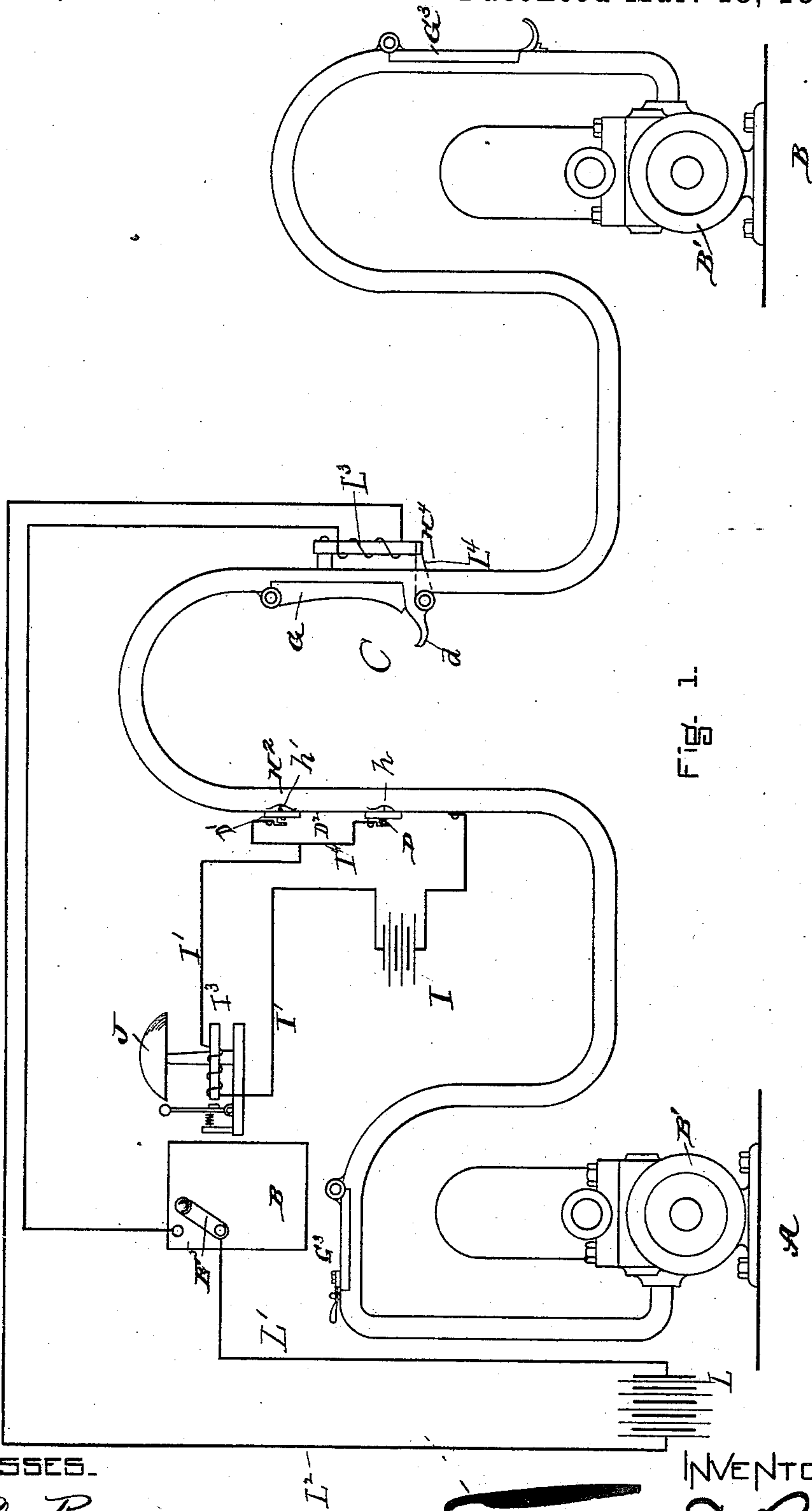
(No Model.)

3 Sheets—Sheet 1.

G. D. BURTON.
PNEUMATIC CARRIER.

No. 379,503.

Patented Mar. 13, 1888.



WITNESSES.

Jos. A. Ryan,
W. L. Boyden.

INVENTOR.

G. D. Burton
Chas. E. Barber *Atty*

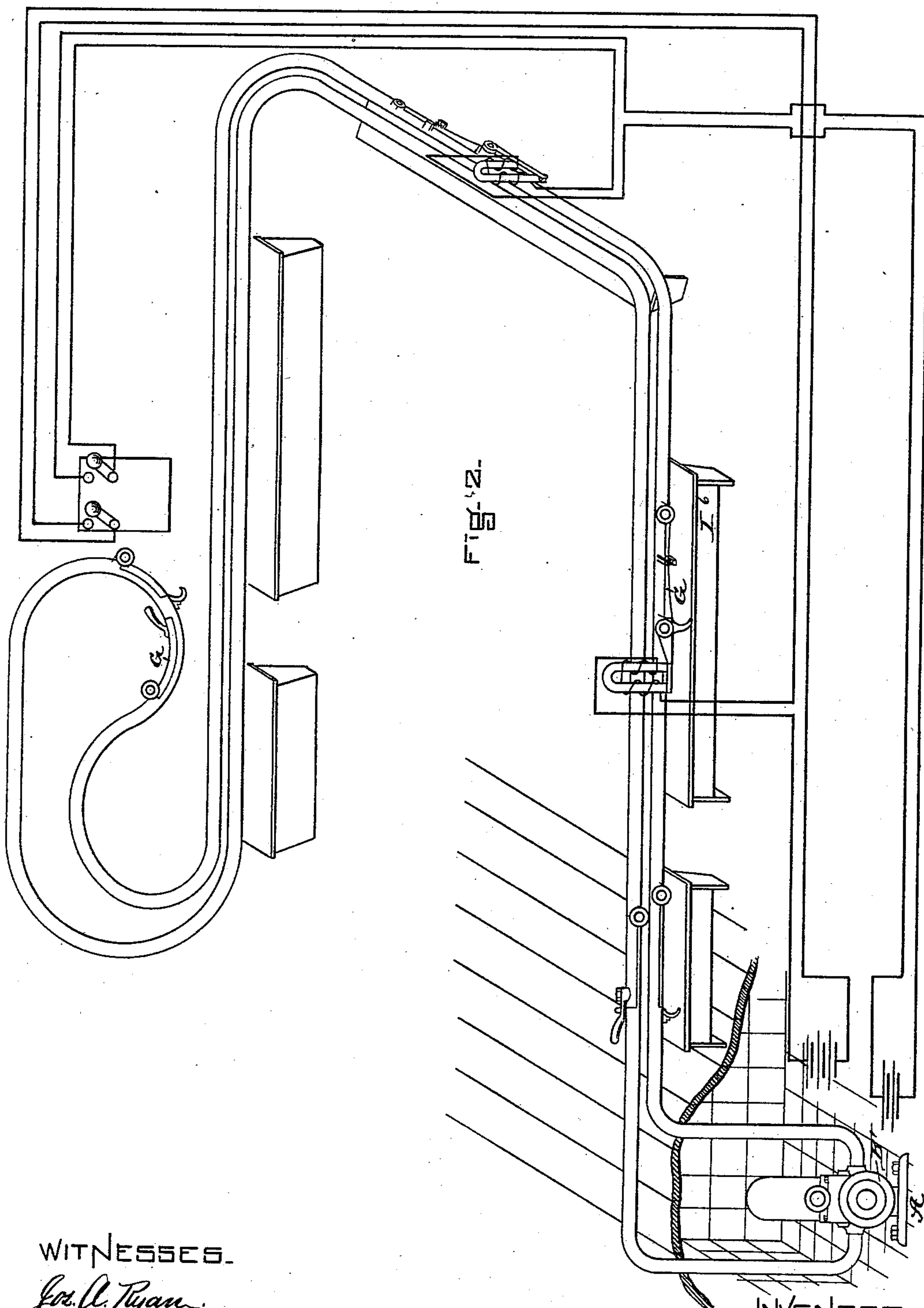
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(No Model.)

3 Sheets—Sheet 3.

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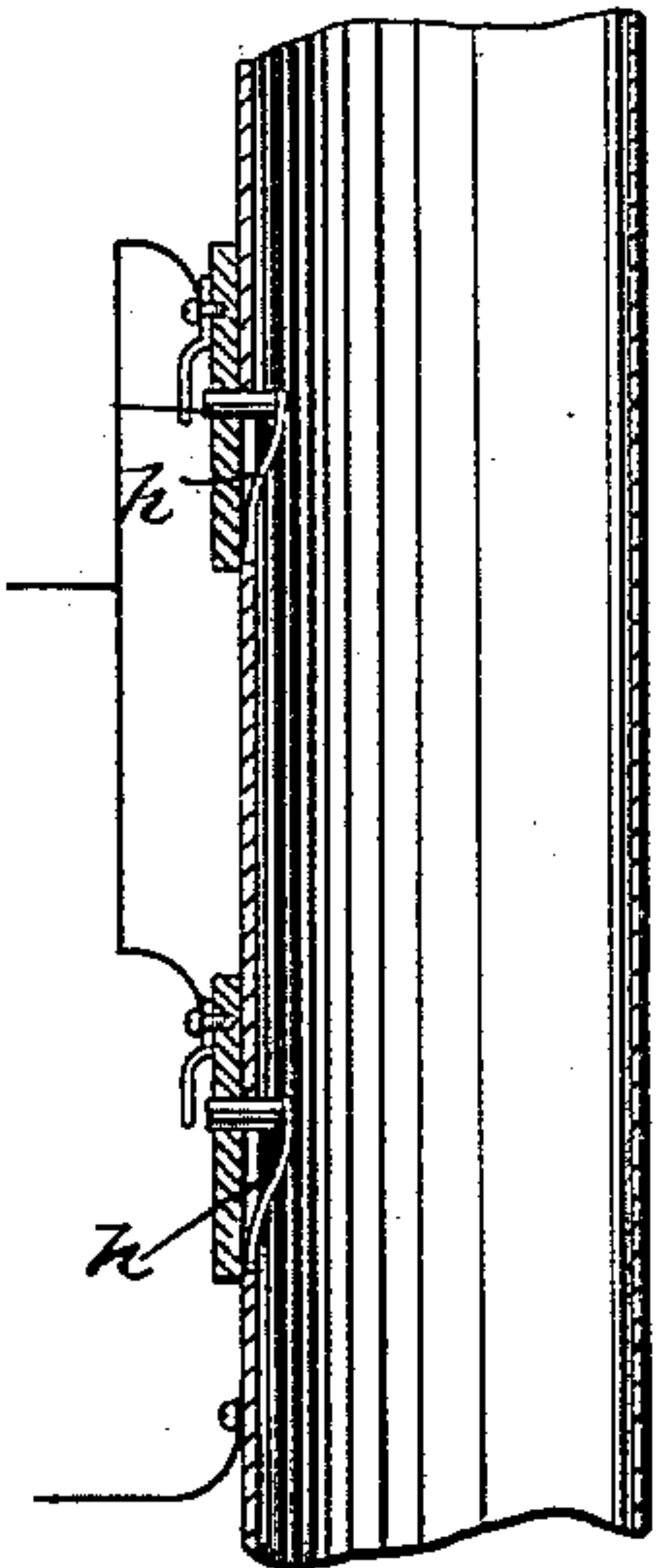


Fig. 3.

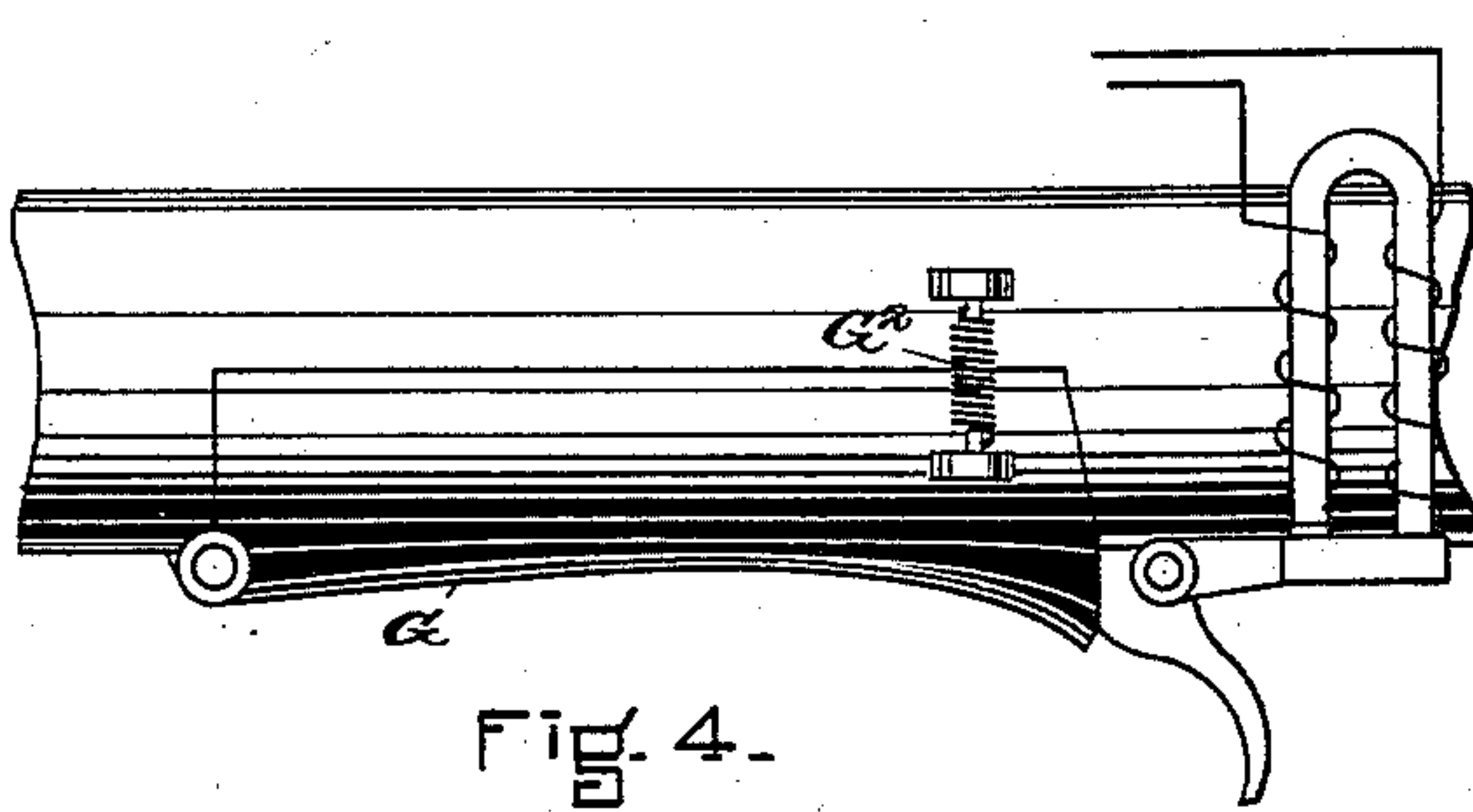


Fig. 4.

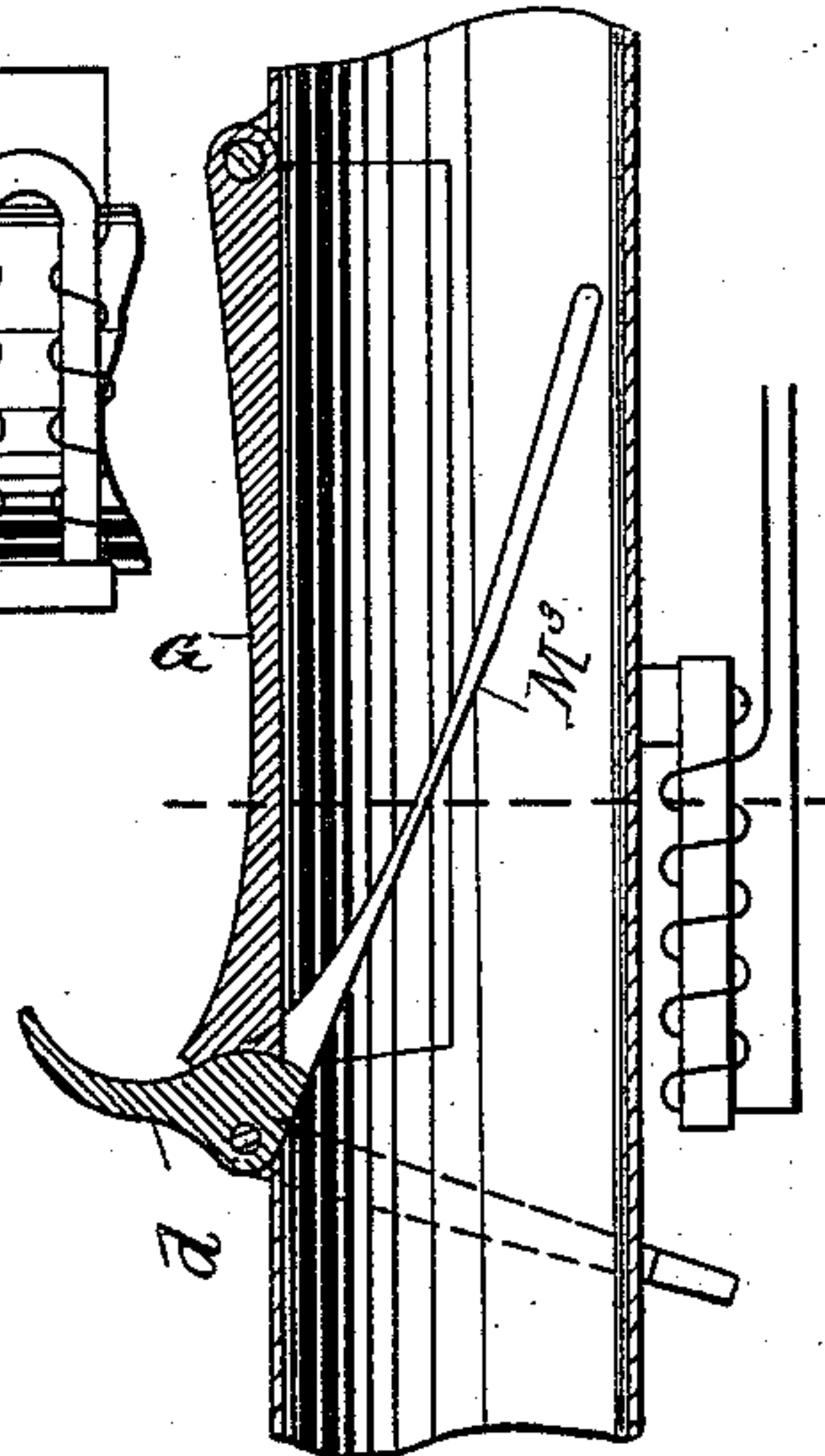


Fig. 8.

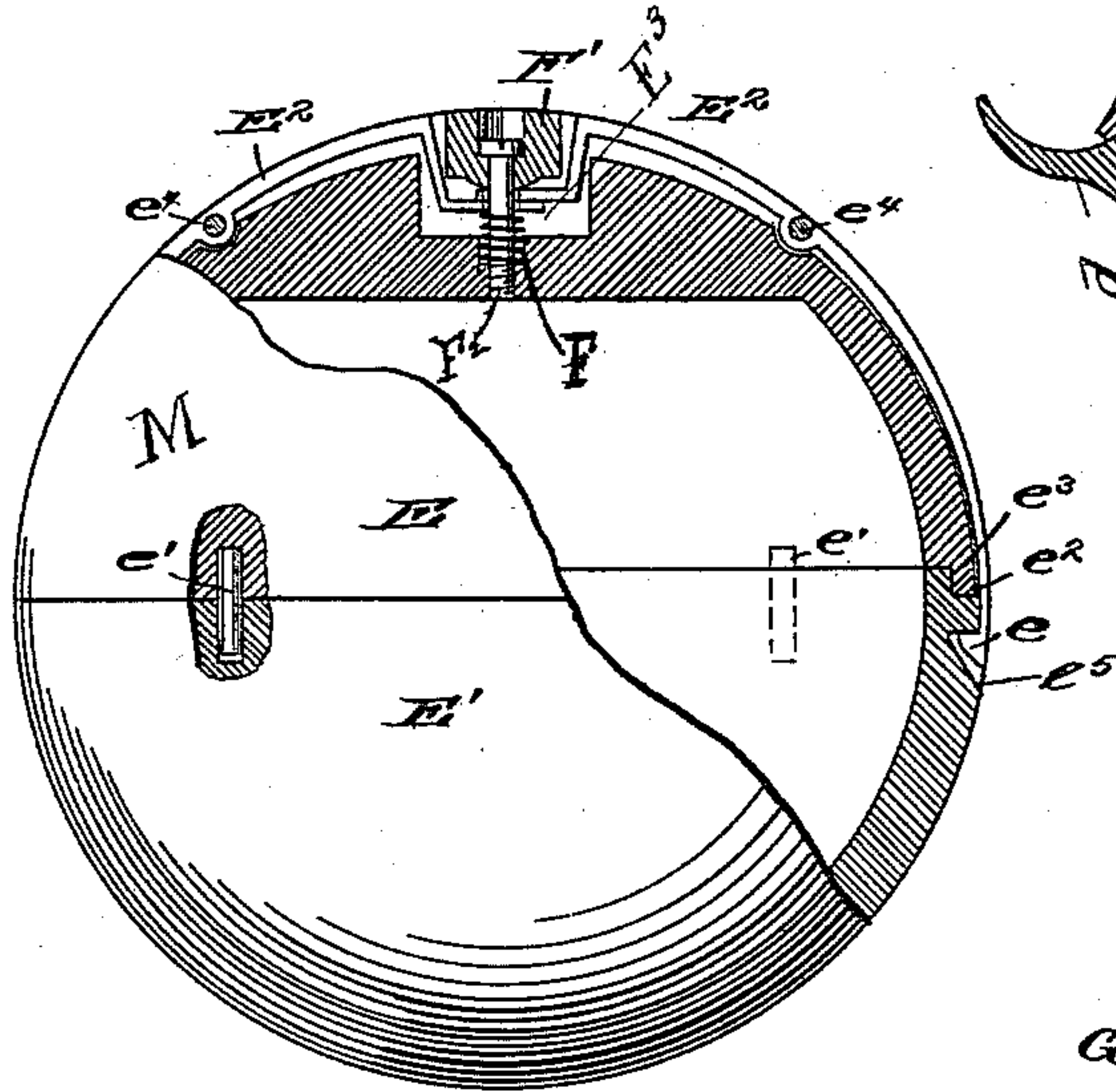


Fig. 11.

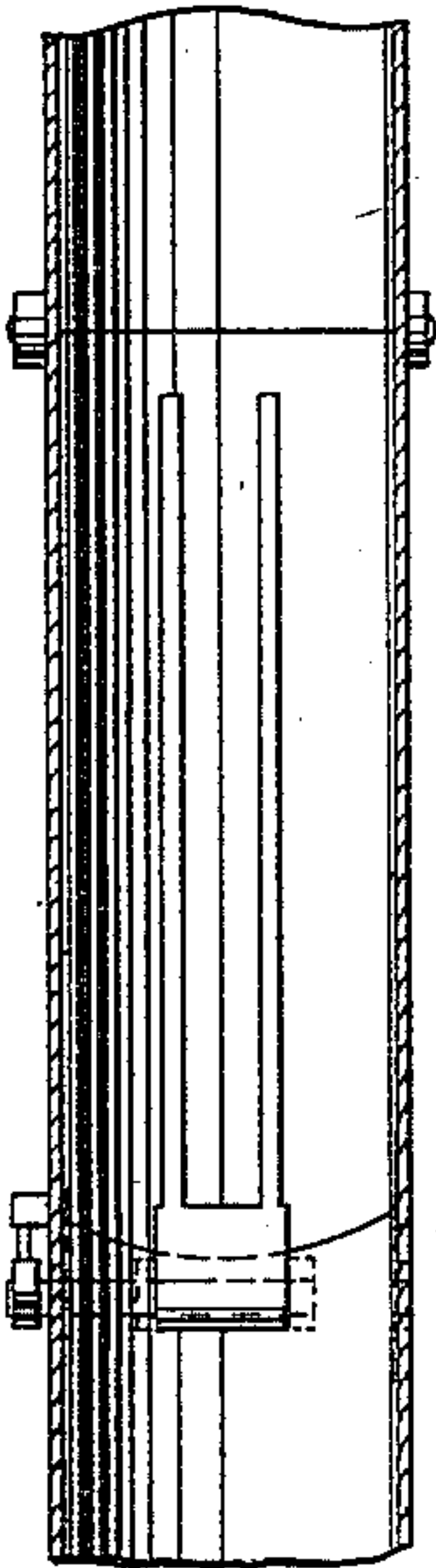


Fig. 6.

Fig. 5.

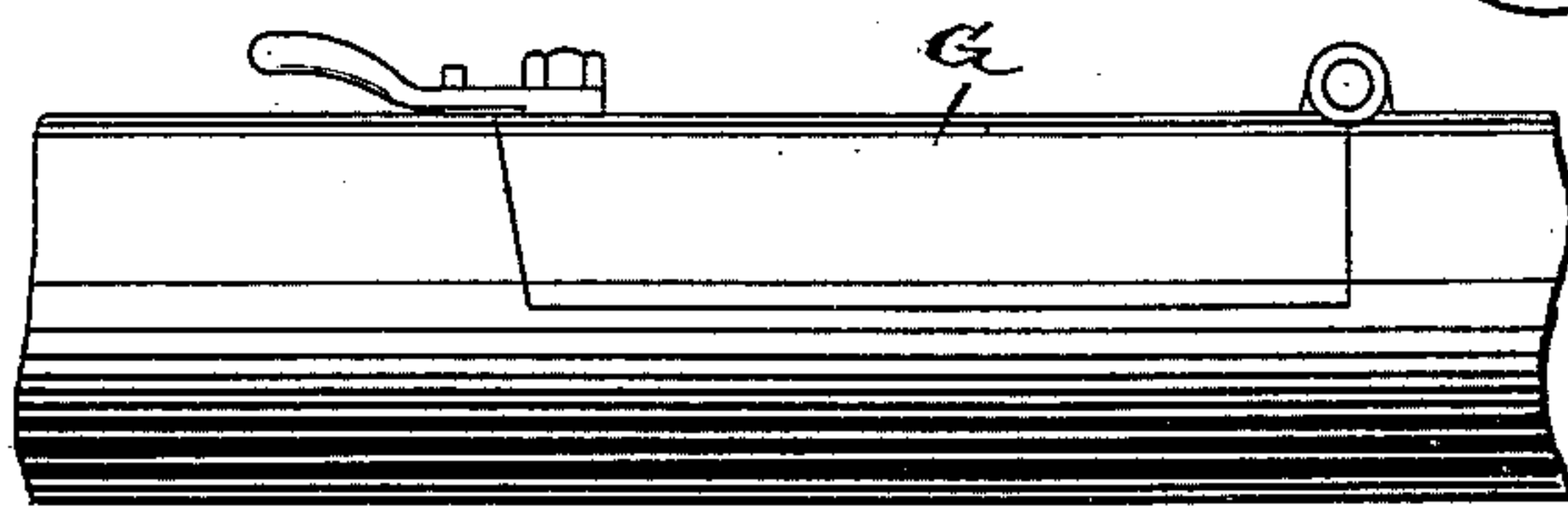


Fig. 7.

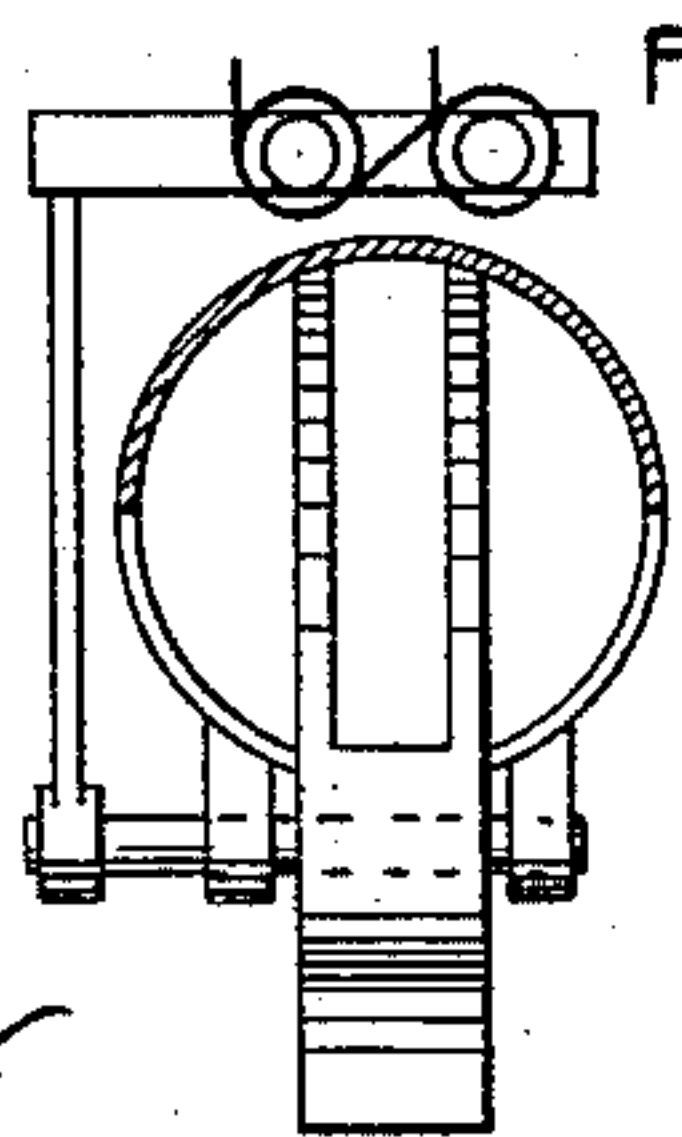


Fig. 9.

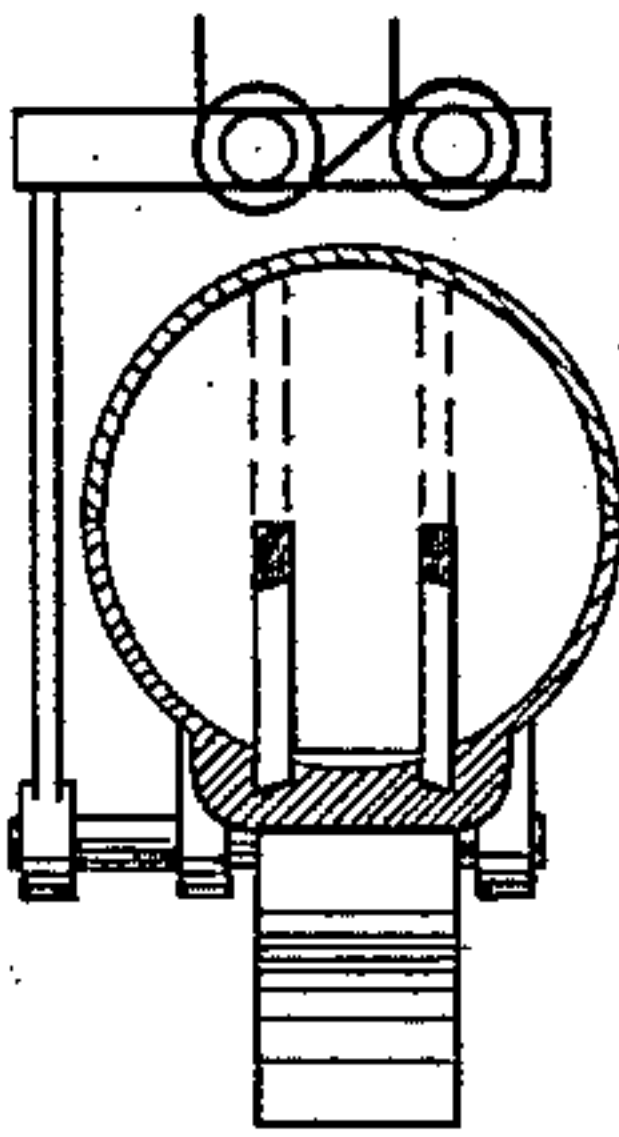


Fig. 10.

WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE D. BURTON, OF NEW IPSWICH, NEW HAMPSHIRE.

PNEUMATIC CARRIER.

SPECIFICATION forming part of Letters Patent No. 379,503, dated March 13, 1888.

Application filed April 6, 1886. Serial No. 197,937. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. BURTON, a citizen of the United States, residing at New Ipswich, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Pneumatic Carriers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has relation to improvements in pneumatic carriers; and it consists in the novel construction and arrangement of parts, as will be hereinafter described, and particularly pointed out in the claims.

15 The object of my invention is to provide a means for transporting articles, large or small, from one point to another through air-tight tubes, the parcels to be propelled by pneumatic pressure, which shall act upon the carriers which fit the pipe.

20 Another object of my invention is to provide this system with electrical applications which will serve to indicate the locality of the package as it is passing through the pipe.

25 Another object of the invention is to provide the pipe with means whereby the guide will be automatically raised immediately upon the exit of the ball or package, even though the electricity should not be flowing at the time, thus leaving in any event the pipe open for the next package.

30 In the accompanying drawings, Figure 1 is a side view of my apparatus. Fig. 2 is a perspective view of a modification of the same. Fig. 3 is a detail view of a portion of the pipe, showing how the parcel coming through the pipe indicates its location. Fig. 4 is a detail view of the outside of one of the traps in the pipe. Fig. 5 is a longitudinal sectional view of a modification of the trap. Fig. 6 is a longitudinal sectional view of Fig. 5, showing the latch which operates the trap. Fig. 7 is a side view, partly in perspective, of a section of the pipe. Fig. 8 is a longitudinal sectional view of a part of the pipe. Figs. 9 and 10 are detail end views of the pipe. Fig. 11 is a view of the ball made in section and partly broken away to show its construction.

35 Fig. 1 represents a continuous pipe running from two stations, A and B, each of which stations is provided with a pump, B', which may be either force or suction pumps, which-

ever may be preferred, so that if the pump B' at station A is a suction-pump it will serve to draw parcels from the station B, or vice versa, and if B' is a force-pump it will force parcels to the station B, and vice versa. About midway between the stations A and B the pipe is provided with an intermediate station, C, which is composed of a trap, G, hinged to the pipe at one end, and is made to conform to the general contour of the pipe in such a manner that when it is closed the pipe is completed and the inner surface thereof is unbroken. The trap G may be held in its closed position by a spring, G², as shown in Fig. 4.

I wish it to be understood that I may arrange traps similar to the one above described to be operated by electrical connections at any point along the body of the pipe. The traps G³ at both ends of the pipe are constructed as shown in the drawings, and are to be opened by hand; but I can also construct them to be opened the same as the trap G at station C.

Immediately beneath the trap G is a pivoted shoe, d, having connection with an armature, L¹, preferably formed with a perforation to receive the pipe, and also having connection with a guide, M³, situated within the pipe.

L represents an electrical battery, with the opposite poles of which are connected wires L¹ and L², bending to the coil of an electro-magnet, L³, situated immediately above the armature L⁴, and which serves, when the circuit is closed and the current flowing, to hold the guide M³ in its upright position by attracting the said armature L⁴. When it is desired to have the ball or package leave the pipe, the circuit is opened, causing the electro-magnet to release the armature, and the guide, then dropping across the pipe to the position shown in Fig. 8, will obstruct the further passage within the pipe of the ball or package, causing the same to make its exit therefrom by opening the trap G.

It will be quite obvious that the opening and closing of the circuit is accomplished by moving the switch E⁵ in certain directions.

When the ball or package leaves the pipe in the manner above explained, it strikes the pivoted shoe d, and its weight thereupon will cause the guide M³, and also the armature L⁴, by reason of the peculiar connection of the said shoe therewith, to be immediately raised, and the said guide will be held in its upright

position by the attraction of the said armature to the electro-magnet if the circuit is closed. It will thus be seen that in the event of a failure to close the circuit immediately upon the exit of the ball or package from the pipe the guide will nevertheless be raised to its upright position, and thus no obstruction will be formed to the free passage within the pipe of another ball or package closely following the first, but traveling to a different destination, and its miscarriage will therefore be prevented. The action of the ball upon the guide is only for an instant, as, obviously, when it is removed from the pivoted shoe the guide, if the current of electricity is not flowing, will drop across the pipe; but the time the ball remains on the shoe is ordinarily enough to compensate for any delay in closing the circuit. Should the delay be intentional—as, for example, in the event of another package being sent to the same station—the former ball will not remain upon the pivoted shoe a sufficient length of time to permit the latter to pass beyond. When the ball has left the pipe, the trap G will drop to its closed position by the force of gravity, or will be closed by the spring G², when such is provided.

The letter I represents an electrical battery, having connected thereto a wire, I', which is spirally wound around or otherwise connected to the magnet I³. The wire I' has also in its circuit the circuit makers and breakers D D' at the signal-station D², attached to the outer surface of the pipe, the inner surface of said pipe being provided with springs h h', which are attached to the breakers and makers D D', whereby when the ball is either coming or going through the pipe it will force the springs h h' outward, completing the circuit and causing the bell J to ring to indicate the position of the parcel passing through the pipe.

In Fig. 1 I show two circuit-closers, thus securing two strokes of the bell; but it will be quite obvious that either station may have any desired number of these circuit-closers without departing from the spirit of my invention.

The ball M, which travels in the pipe, is made in sections E E'. The former section, E, is provided with pins e', which engage perforations in the section E'. It is also provided with shoulders e², which rest on projections e³ of the section E'. This section E' is provided with notches e⁵, which receive the hook ends e of the spring-clamps E², which are pivoted to the section E, as shown at e⁴, Fig. 11, having bent perforated ends which are seated in a recess, E³, of the section E. A pin, F², having a coiled spring, F, serves to release the hook ends e of the clamps by pressure on the thumb-head F'. I attach importance to the ball as constructed, which is securely locked together, and which will pass through the pipes without interruption, there being no projection on the outer periphery of the ball, as the spring-clamps and means for operating them are all

below the general plane of the surface of the ball.

It will be quite obvious that troughs or receptacles, as I⁶, Fig. 2, will by preference be located beneath the traps to receive the ball or package when it leaves the pipe.

This system can be employed to advantage for a rapid transmission of merchandise, mail, grain, &c., and the advantage of having the stations electrically connected for the purpose of opening and closing said stations is that the action of electricity is quicker than that of air, thus obviating any delay to succeeding packages intended for stations farther ahead.

Fig. 2, a modification, shows a continuous pipe operated by a double pump, which may be constructed with two cylinders operating as a force or a suction pump. The switch-board, bells, and buttons may all be located in the office at the sending or receiving station, or both. Thus the operation is entirely under the management of one or two persons, who may communicate with each other by telegraph, telephone, or signal.

It is intended that my system be laid underground for long-distance communication, using a series of pipes. It can also be utilized for a cash system in stores or for communications between stores, offices, &c.

Having fully described my invention, I wish it to be understood that I do not limit myself to the precise construction shown in the drawings and described in my specification, as it is quite apparent that they may be varied in shape and details of construction without departing from the general spirit and scope thereof.

What I claim, and desire to secure by Letters Patent, is—

1. In a pneumatic carrier, the ball made in sections and secured together by pins and spring-clamps, as shown and described.

2. A ball for pneumatic carriers, constructed substantially as described, and provided with a spring-clamp which is set into the ball below the plane of the surface of the ball, and said clamp operated by a spring-button, substantially as described.

3. A ball for pneumatic carriers, made in sections, one of which is provided with a shoulder and a notch, the other having a projection, and pivoted clamps having hook ends adapted to engage the notch, as shown and described.

4. In a pneumatic carrier, a system of pipes having traps pivoted thereto, and a ball or carrier, in combination with a pivoted shoe beneath each of the said traps, a guide and an armature connected thereto, and an electro-magnet, all arranged to operate in the manner and for the purposes herein set forth.

5. A pneumatic carrier consisting of a series of pipes provided with traps pivotally secured to the pipes at their upper extremities, springs connecting the traps with the pipes, substantially as described, whereby the traps will be automatically closed when the ball or

carrier has passed through them, and the said ball or carrier, in combination with pivoted shoe, armature connected thereto, and electromagnet for attracting the said armature.

5 6. In a pneumatic carrier, the combination, with the system of pipes and their traps pivoted thereto and connected therewith by springs, substantially as shown, of a pivoted shoe beneath each of the said traps, a guide
10 connected with the said shoe, and a ball or carrier adapted to be propelled through the said pipes, all arranged to operate in the manner and for the purposes herein set forth.

15 7. In a pneumatic carrier, the system of pipes and their pivoted trap or traps, the lowermost

extremities of the said traps being heavier than their uppermost extremities, whereby they will be capable of being closed by the force of gravity when the ball or parcel has left the pipe, and the said ball or parcel in combination with a pivoted shoe beneath each of the said traps and a guide connected with the said shoe and located within the pipe.

In testimony whereof I affix my signature in presence of two witnesses, this 2d day of April, 25 1886.

GEO. D. BURTON.

Witnesses:

E. F. PERKINS,
CHAS. F. ADAMS.