

No. 720,619.

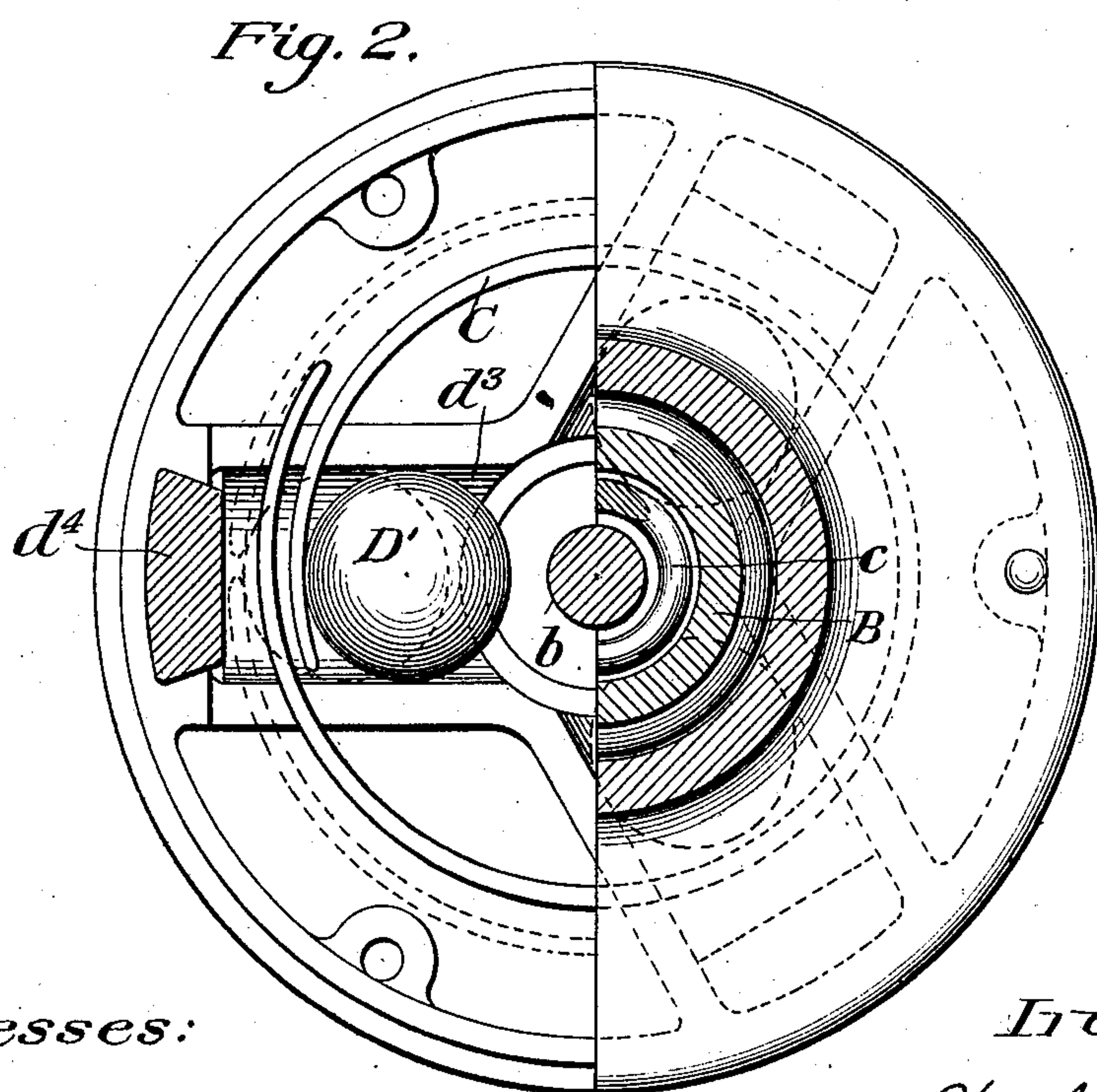
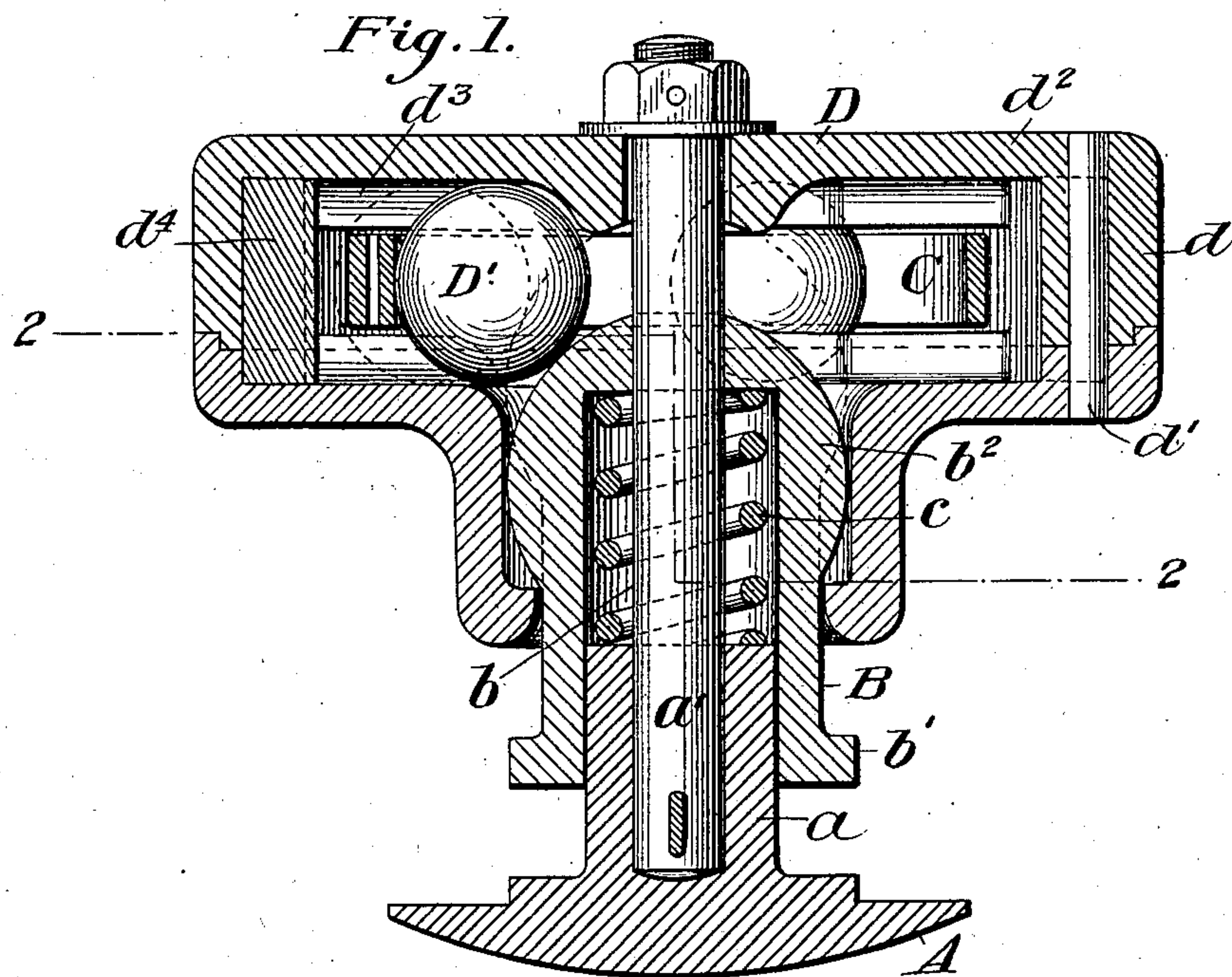
PATENTED FEB. 17, 1903.

C. RETTIG.
CAR BUFFER.

APPLICATION FILED OCT. 1, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses:

Peter C. Hunkeler.
R. P. Schuyler

Inventor:

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No. 720,619.

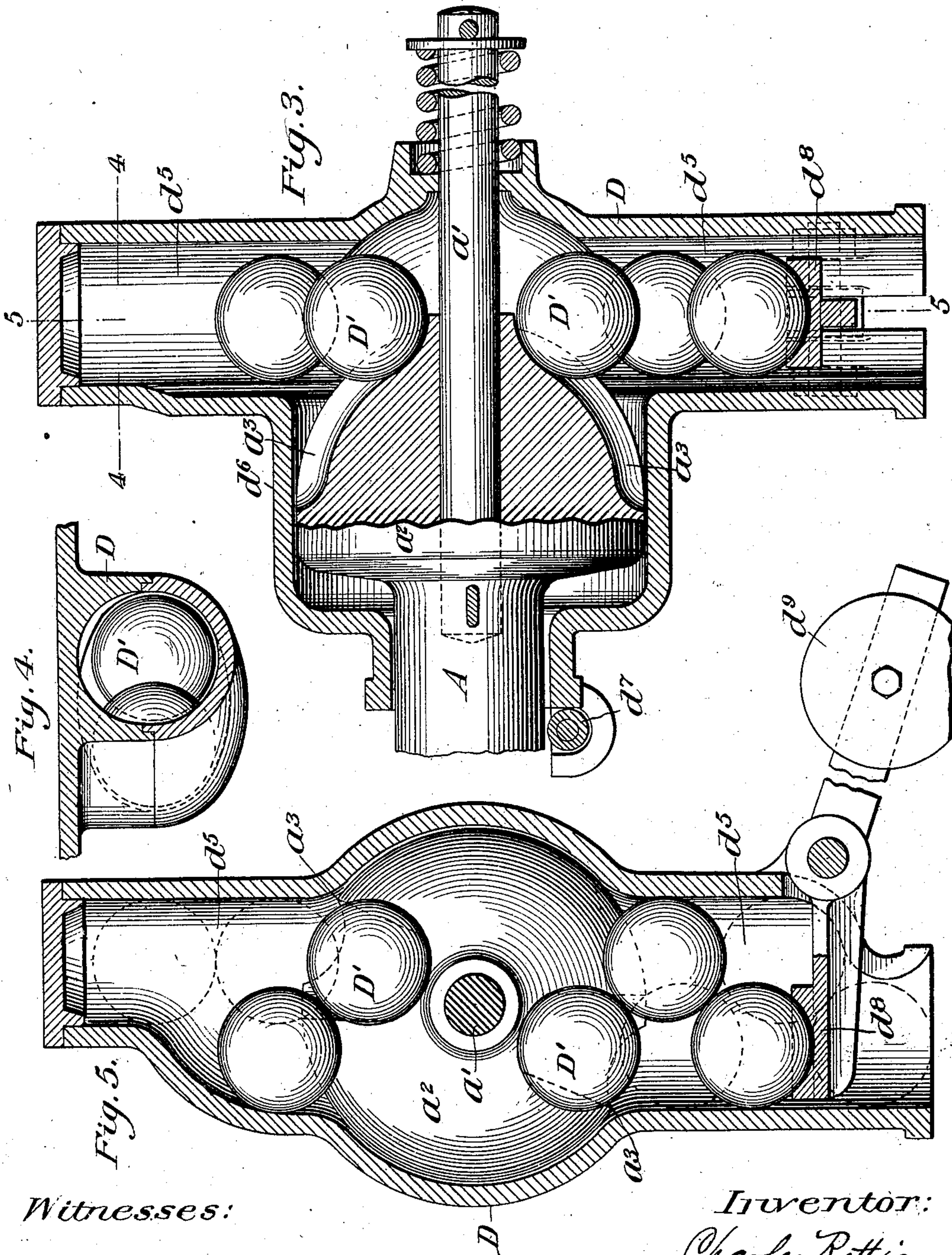
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NO MODEL.

4 SHEETS—SHEET 2.



Witnesses:

Arthur C. Newhall.
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4 SHEETS—SHEET 3.

Fig. 7.

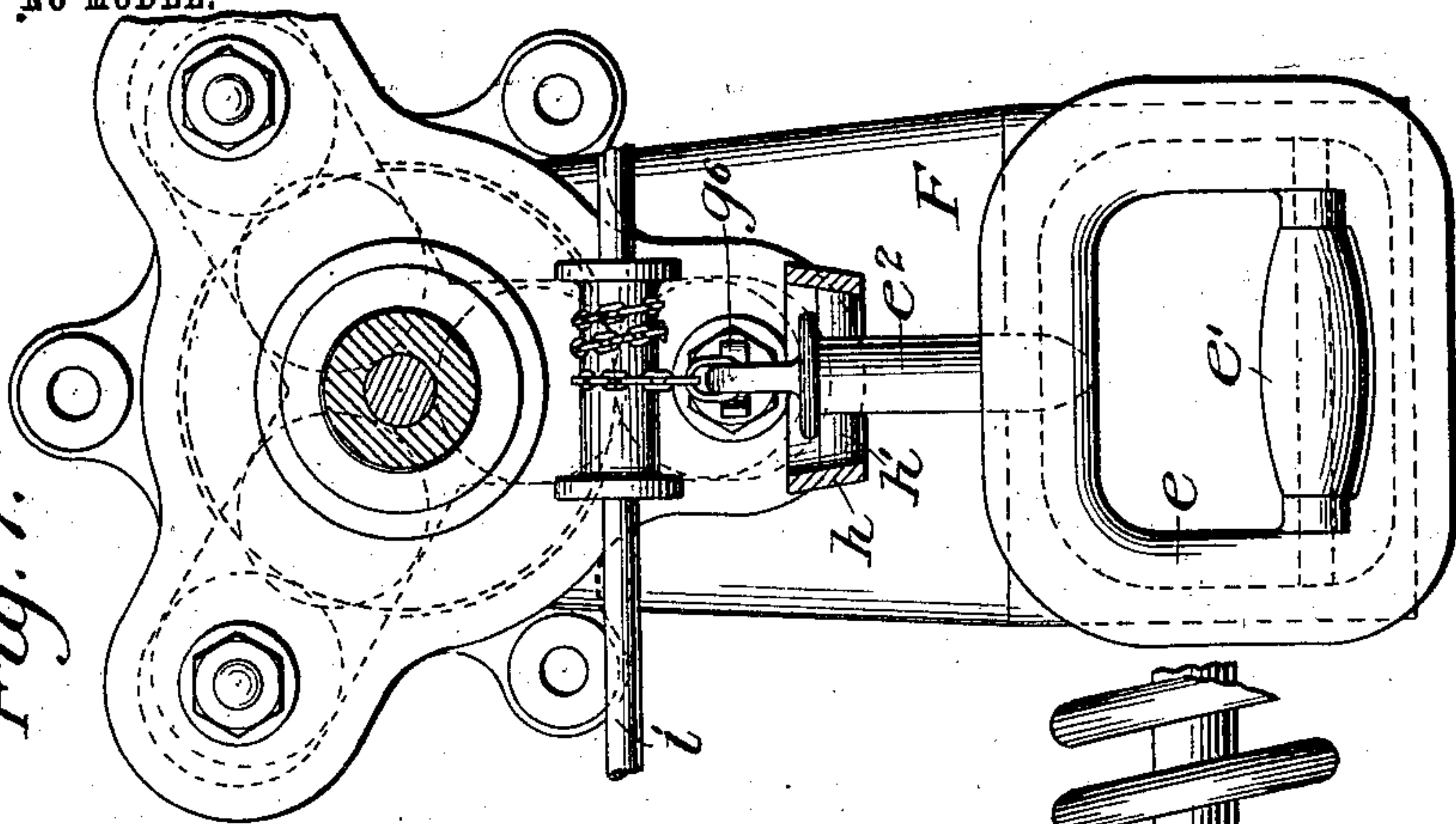


Fig. 6.

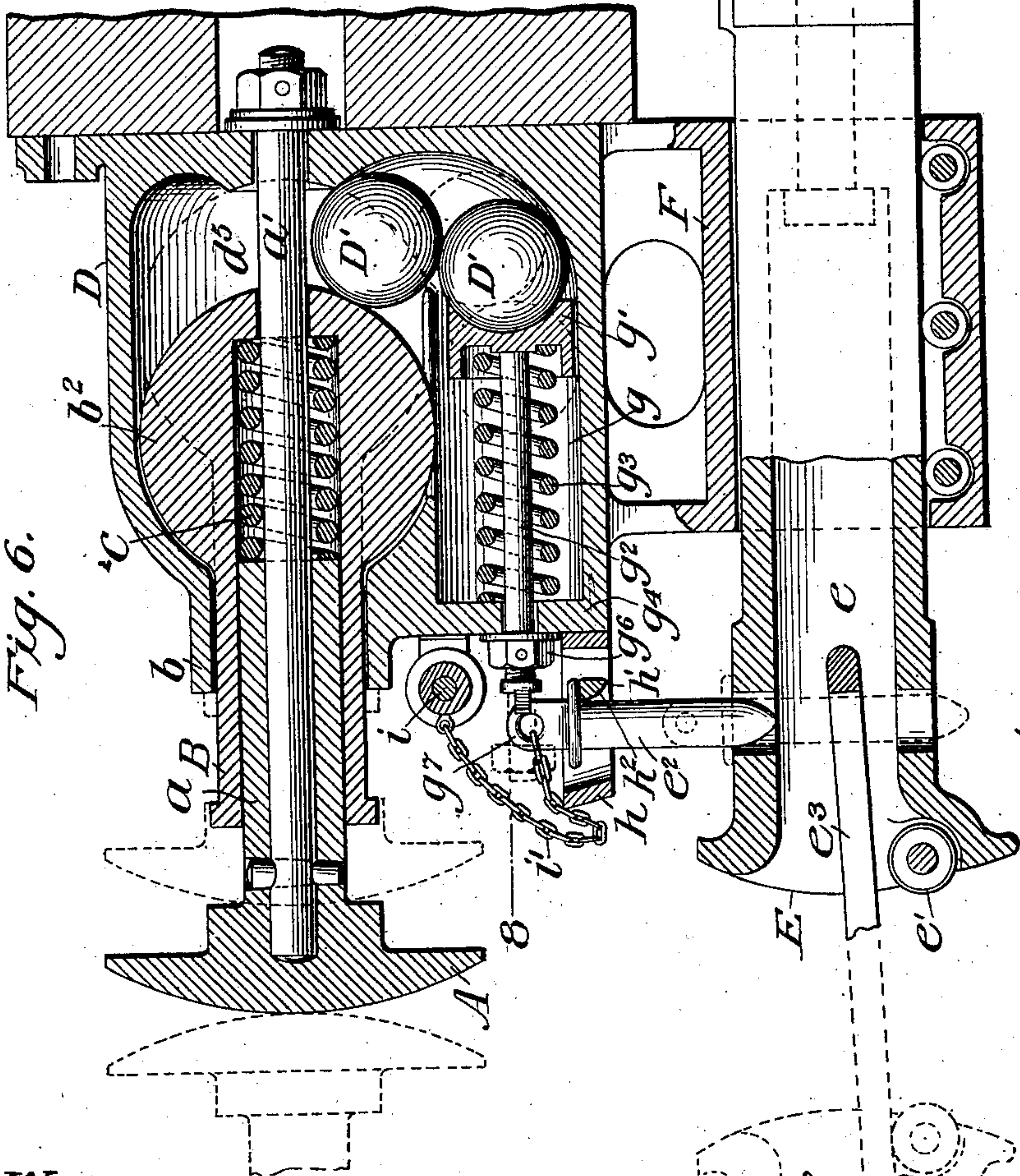
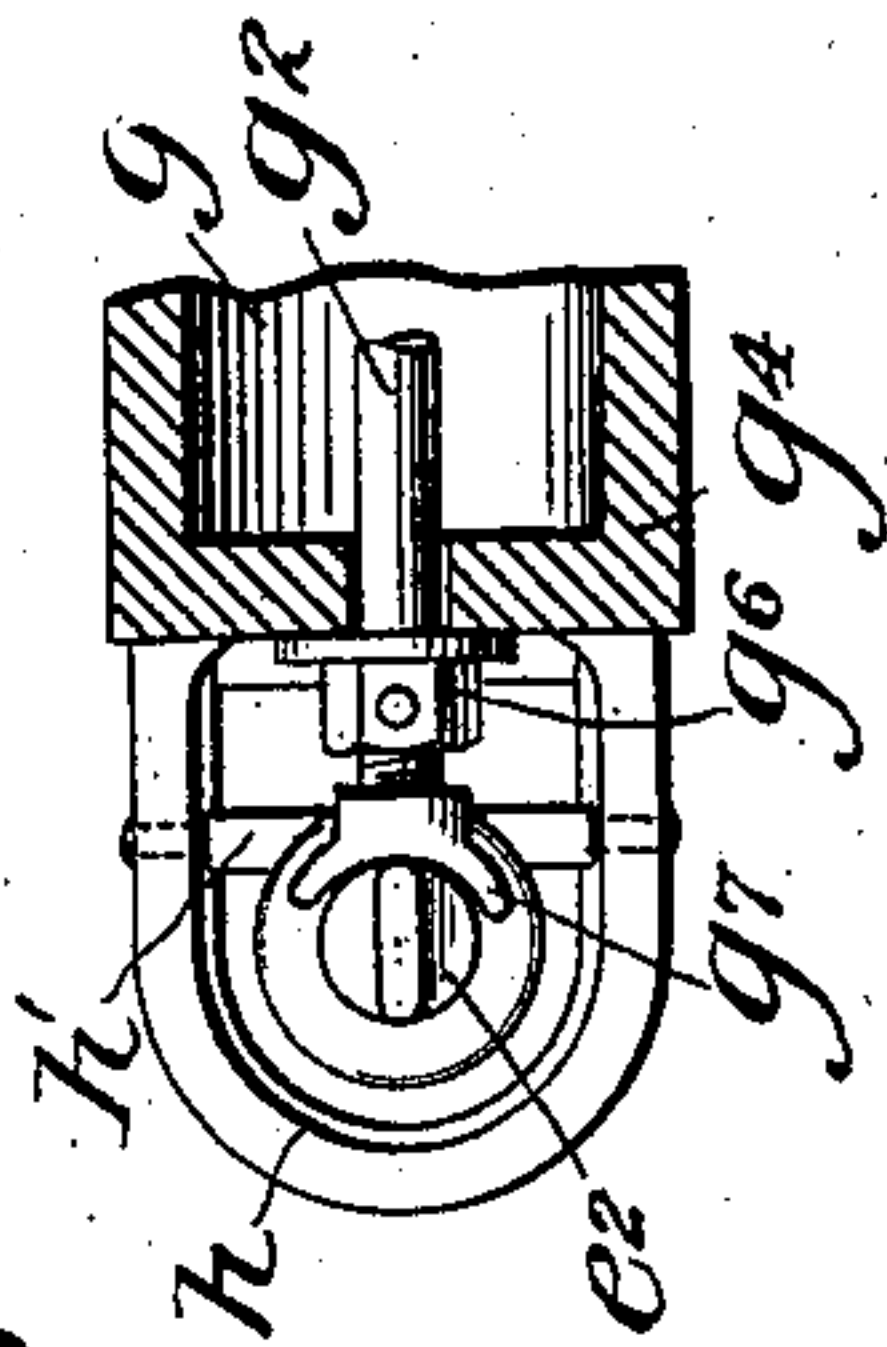


Fig. 8.



Witnesses:

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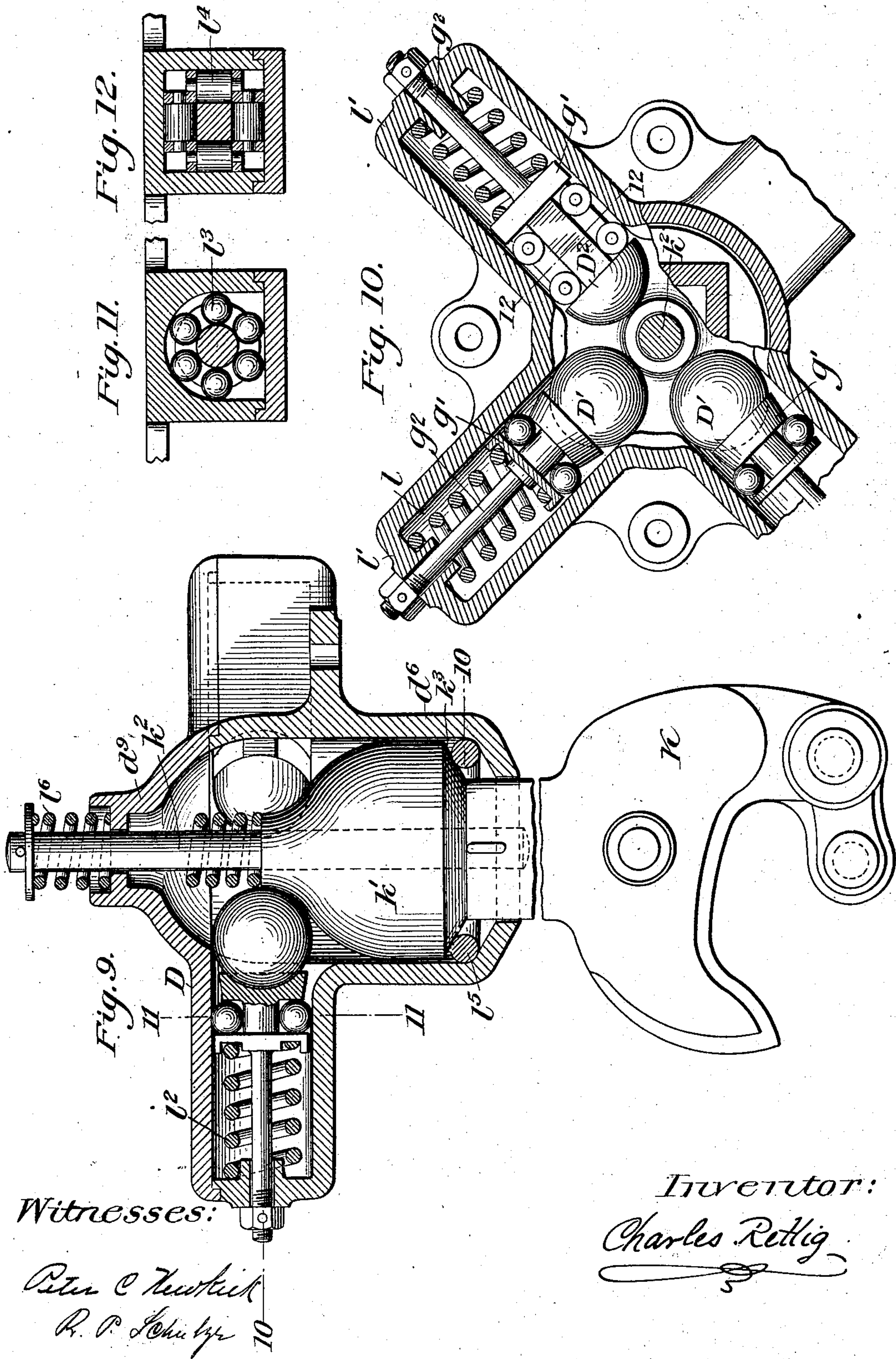
PATENTED FEB. 17, 1903.

C. RETTIG.
CAR BUFFER.

APPLICATION FILED OCT. 1, 1902.

NO MODEL.

4 SHEETS—SHEET 4.



Witnesses:

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Inventor:
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UNITED STATES PATENT OFFICE.

CHARLES RETTIG, OF CLOSTER, NEW JERSEY.

CAR-BUFFER.

SPECIFICATION forming part of Letters Patent No. 720,619, dated February 17, 1903.

Application filed October 1, 1902. Serial No. 125,604. (No model.)

To all whom it may concern:

Be it known that I, CHARLES RETTIG, a citizen of the United States, residing at Closter, Bergen county, and State of New Jersey, have
5 invented certain new and useful Improvements in Car-Buffers, of which the following is a specification.

The object of my invention is to provide a car-buffer which by the coupling of cars, sudden stopping of a train, or by decreasing the
10 speed of a train diminishes the shocks and jars of the cars attending the mentioned actions.

It has been found in practice that most of
15 the accidents to attendants of trains, &c., were due to the shocks and jars caused by the actions as before mentioned; furthermore, that the common spring-buffers were insufficient to readily and effectively overcome such shocks and jars, and that owing to
20 this insufficiency and ineffectiveness of the spring and other buffers the wear and tear on the ends of the cars was very great, causing numerous repairs to be made, and often complete destruction of such car ends. By my
25 improved car-buffer all such disadvantages are obviated, as the shocks and jars attending the coupling of cars, principally freight-cars, are decreased to a minimum. The shocks and jars received by my improved car-
30 buffer are not transferred from one car to another to react again and again on the same number of cars, but are taken up by the first buffers which come in contact with each other and are diverted and directed in other
35 directions, as that of the longitudinal axis of a car or train of cars, so that no reaction of the shocks and jars in the length of a car or train of cars can take place. The first and
40 only jar or shock produced at the collision of two ends of cars provided with my improved buffer is instantly checked and reduced in force.

The invention consists of a buffer applicable to freight, passenger, or other cars comprising a common buffer-head, a casing
45 around the stem of said head, a spring between said head and casing, and a box containing balls, which, together with the rounded or other-shaped end of said casing, cause the
50 diversion of the force of the jar sidewise and against the walls of the said ball-box, which

latter may or may not be provided with springs, rollers, and cushions for the balls.

My invention further consists of a buffer 55 comprising a buffer-head, a casing around said buffer-head, and balls in said casing, which are moved to cause the diversion of the force of the shock or jar and to direct the same lateral to the longitudinal axis of the
60 car and against the walls of the said casing.

My invention further consists of a combined buffer and car-coupler and mechanism by which the force of the shock or jar as produced is diverted in direction other than longitudinal to the car and by which use is
65 made of the force to couple or cause to couple the ends of cars.

My invention further consists of the improvements hereinafter more fully described, 70 and pointed out in the claims.

The invention will be more fully understood taken in connection with the accompanying drawings, forming part hereof, and in which— 75

Figure 1 is a section of my improved car-buffer, showing a box made in two sections in which are provided ways to guide balls from the center of said box to the walls thereof, a casing having a rounded end and entering the said box, and a buffer-head whose stem protrudes through both the said casing and the said box. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is a vertical longitudinal section of a modified form of buffer 85 applicable to a car-arrester, showing a ball-box containing balls, a buffer-head with stem, and mechanism with a counterweight to sustain the diverted force of the shock or jar which may be produced when a car runs
90 against said car stop or arrester. Fig. 4 is a section on the line 4 4 of Fig. 3. Fig. 5 is a section on the line 5 5 of Fig. 3, showing the ball-box, the buffer from its rear end, and a counterweighted wing. Fig. 6 is a longitudinal section through a combined buffer and car-coupler, the buffer containing balls which are employed to move the coupling-pins in the action of coupling cars. Fig. 7 is a view, partly in section, of the front end of the combined buffer and coupler as shown in Fig. 6. 100
Fig. 8 is a section on the line 8 8 of Fig. 6. Fig. 9 shows a modified form of my improved buffer in connection with a "Janney coup-

ler," showing the ball-box and spring-operating stems to force the balls normally toward the center of the ball-box and against the curved end of the coupling-bar. Fig. 10 is a section on the line 10 10 of Fig. 9, showing the location of the spring-operating stems and housings therefor and friction-reducing mechanism for said stems. Fig. 11 is a section on the line 11 11 of Fig. 10, and Fig. 12 is a section on the line 12 12 of Fig. 10.

Referring now to the drawings for a further description of my invention, and more particularly to Figs. 1 and 2, A is a buffer of any suitable form, having a hub a , to which a stem a' is fastened. B is a casing surrounding the hub a of the buffer A and having a bore b of sufficient depth to allow a spring c to be inserted between the bottom of the bore b and the hub a and around the stem a' . The casing B is provided with a flange b' and a rounded-off end b^2 for a purpose to be presently described. D is a box made in two sections d and d' , bolted or otherwise fastened together and secured at its rear part d^2 to the cross end timber of a car. (Not shown.) The two sections of the circular or other-shaped box D are each provided with three or more channels d^3 , in which balls D' are allowed to roll or glide freely. The front part d' of the said box is provided with a neck d^4 , encircling the rounded end b^2 and guiding the shank of the casing B when it is being moved into the box D by the action of the buffer A and spring c . Within the box D and between the ribs forming the channels d^3 of the two sections d and d' is placed a strong spiral spring C, embracing the balls D' and pressing them firmly toward the center of the box D and against the end b^2 of the casing B, so that when the buffer A receives a shock the latter is transmitted to the casing B by the spring c , the rounded-off end b^2 being forced into the box D and against the ball D' , which causes the latter to diverge to divert the force of the shock to the spring C, so that the said shock is diverted radially from the center of the buffer-stem a' and not transmitted longitudinally thereof. To form a resilient or elastic stop to the expansion of the spiral spring c and the moving of the balls d' , the walls of the sections d and d' at the ends of the channels d^3 may be provided with elastic material or sub-buffers d^4 , which when the cars are brought together violently come into effect and transmit the greatly-reduced shock or shocks to the walls of the sections d and d' —i. e., radially from the center of the buffer-stem a' . As soon as the pressure between two buffers decreases or the buffers recede from each other the spring c causes the balls to be forced toward the center of the buffer-stems a' and against the rounded end of the casing B, whereby the buffer is pushed outwardly.

In Figs. 3, 4, and 5 is shown a buffer of similar construction as that shown in Figs. 1 and 2, with the exception that this buffer is

more applicable to a car-stop as employed at the ends of tracks for arresting running cars. In this instance an oblong ball-box D is provided, which comprises the ball-chambers d^5 , situated above and below the central buffer-stem a' , and the neck d^6 , in which the rounded-off end a^2 of the buffer A is incased. This rounded end a^2 is provided with radial grooves a^3 , with which certain of the balls D' engage. On the end of the neck d^6 is journaled a roller d^7 to reduce friction between the buffer A and the neck d^6 . At the lower end of the lower ball-chamber d^5 is hinged a counter-weighted support d^8 , on which the lower balls D' normally rest. The action of this buffer may be described as follows: When the buffer A is moved toward the car—i. e., when the rounded-off end a^2 is forced against the balls D' —the latter are driven away from the center of the buffer-stem a' to divert the shock or jar from a longitudinal direction and to direct such shock or jar divided or undivided against the walls of the channels or chambers d^5 , so that a resilient stop for cars is provided by which reciprocating shocks or reactions thereof are avoided. As the lower balls D' are forced against the counteracted or counter-weighted support d^8 the latter is forced downward; but as soon as the pressure on the buffer ceases the weight of the upper balls and the weight of the ball d^9 causes the balls and buffer to regain the normal positions, as shown.

In Figs. 6, 7, and 8 is shown a car-buffer of about the same construction as that in Figs. 1 and 2, with the exception that a car-coupler of usual or any preferred construction is connected with the said buffer in such a way that the latter acts automatically to couple two cars. The coupler E, which comprises the common draw-bar e , is slidingly supported in an extension F of the ball-box D. To reduce friction between this extension F and the draw-bar e , rollers f may, if desired, be arranged on the bottom or bottom and upright sides of the interior of the said extension F. At the mouth of the draw-bar e is journaled a roller e' to support, together with one coupling-pin e^2 , one end of the coupling-link e^3 when it is desired to couple cars. Below the ball-chamber d^5 , Fig. 6, is a circular opening g , communicating at one end with the ball-chamber d^5 , and within the same is placed a piston g' , having a stem g^2 , around which a helical spring g^3 is placed to normally press the piston g' away from the buffer A—i. e., toward the opening leading into the ball-chamber d^5 and away from the front wall g^4 . The outer end of the stem g^2 is provided with a shoulder g^6 , terminating in a fork g^7 , for a purpose to be presently described. h is a guard having the cross-bar h' with a beveled edge h^2 to support the coupling-pin e^2 in place to readily couple two cars when it is moved or disengaged from said support h' . As will be understood from Fig. 6, the forked end g^7 of the piston-stem g^2 is in engagement with the upper end of

the coupling-pin e^2 , and when the buffers A of two cars collide the balls D' are driven away from the center of the buffer-stem a' and force the piston g' , against the action of the spring g^3 , toward the front wall g^4 of the cylindrical opening g , causing a sudden release of the pin e^2 from the bar h' and a ready and sure coupling of two car ends by means of a common link and pin. To uncouple such two ends of cars, a shaft i may be journaled and arranged above the guard h and a chain 11 fastened with one end to the shaft i and with its other end to the pin e^2 , so that by turning the shaft i from the long side of the car the pin e^2 may be readily withdrawn from the link e^3 and draw-bar e . As soon as the pressure of the respective buffers A against each other ceases the spring g^3 forces the balls into their normal position, and any movement of the said buffers subsequent to the coupling of the cars only causes a sliding of the piston g' and piston-stem g^2 in the opening g .

In Figs. 9 to 12, inclusive, is shown a modified form of a buffer having connected with it a coupler K of the Janney type, of well-known construction. In this instance the coupling-bar k is provided with a curved end k' and a stem k^2 , the former incased by the neck d^6 of a ball-box D and the latter leading through an extension d^9 , by which it is guided. As shown, there are four circular ball-chambers i provided; but any convenient number may be employed, and these chambers may be of any suitable shape or form. The outer or end walls of these chambers are formed to guide a piston g' or other stem g^2 , against which a ball D' abuts. Each stem g^2 is normally pressed toward the center of the curved end k' of the coupling-bar k by the spring i^2 , surrounding such stem g^2 , and the piston g' or piston-stem g^2 may be provided with any friction-reducing mechanism, several of which are shown, and such mechanism may consist of balls 13, Fig. 11, of rollers 14^v, Fig. 12, supported or journaled in any preferred manner or as shown in the several views. If desired, full balls may be dispensed with and only half-balls may be employed, as shown at D^2 , in which case the latter is directly formed with or connected to piston-stem g^2 . The effect and operation of my improved buffer is the same as disclosed with reference to the description of the other figures—*i. e.*, the force of the shock is not transmitted longitudinally to the car or train, but is diverted from such direction by the balls, transferring such shocks radially from the buffers, which in this instance form at the same time the car-coupler. The neck d^6 of the ball-box D may further be provided with a cushion 15, against which the shoulder k^3 of the enlarged and curved end k' of

the coupling-bar k impinges, and also a spring 16 may be employed to soften or overcome the first shock or jar produced by the drawing of the coupled cars forwardly.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A car-buffer comprising a buffer proper, a rounded end thereon; a casing or box provided with chambers to contain balls; means for normally pressing said balls against said rounded end of the said buffer, substantially as and for the purposes set forth.

2. A car-buffer comprising a buffer proper, a curved end thereon, a casing or box provided with chambers, balls in said chambers, spring-supports in said casing or box to normally press the said balls against the rounded buffer end, substantially as and for the purpose set forth.

3. A car-buffer comprising a buffer proper, a stem thereon, a casing surrounding said stem, a spring between said casing and said buffer, a box containing balls, a guide on said box in which said casing and buffer-stem slides, and means for normally forcing the said balls toward the buffer-stem, substantially as and for the purposes set forth.

4. A car-buffer comprising a buffer proper, a hub and stem thereon, a casing surrounding said buffer hub and stem and a spring between said hub and casing, a box having guides for the buffer-hub and buffer-stem, balls contained in the said box, and a spring-support tending to force the said balls toward the center of the buffer-stem, to normally hold the casing supporting the buffer in an extended position, substantially as and for the purposes set forth.

5. A car-buffer comprising a box attached to the end of a car, balls within the same and bearings in said box, a buffer-bar held in the said bearings and having a rounded-off end normally contacting with said balls, yielding supports for said balls, adapted to force the said buffer-bar outwardly, substantially as and for the purpose set forth.

6. A car-buffer comprising one or more boxes attached to the end of a car, ways provided within the same, balls in said ways, bearings on said box or boxes to guide a car-buffer, a spring surrounding said balls to normally force the said buffer-bar outwardly from the said box, and cushions at the end of the said walls substantially as and for the purposes set forth.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

CHARLES RETTIG.

Witnesses:

OTTO HEINZMAN,
A. TAESCHKE.