

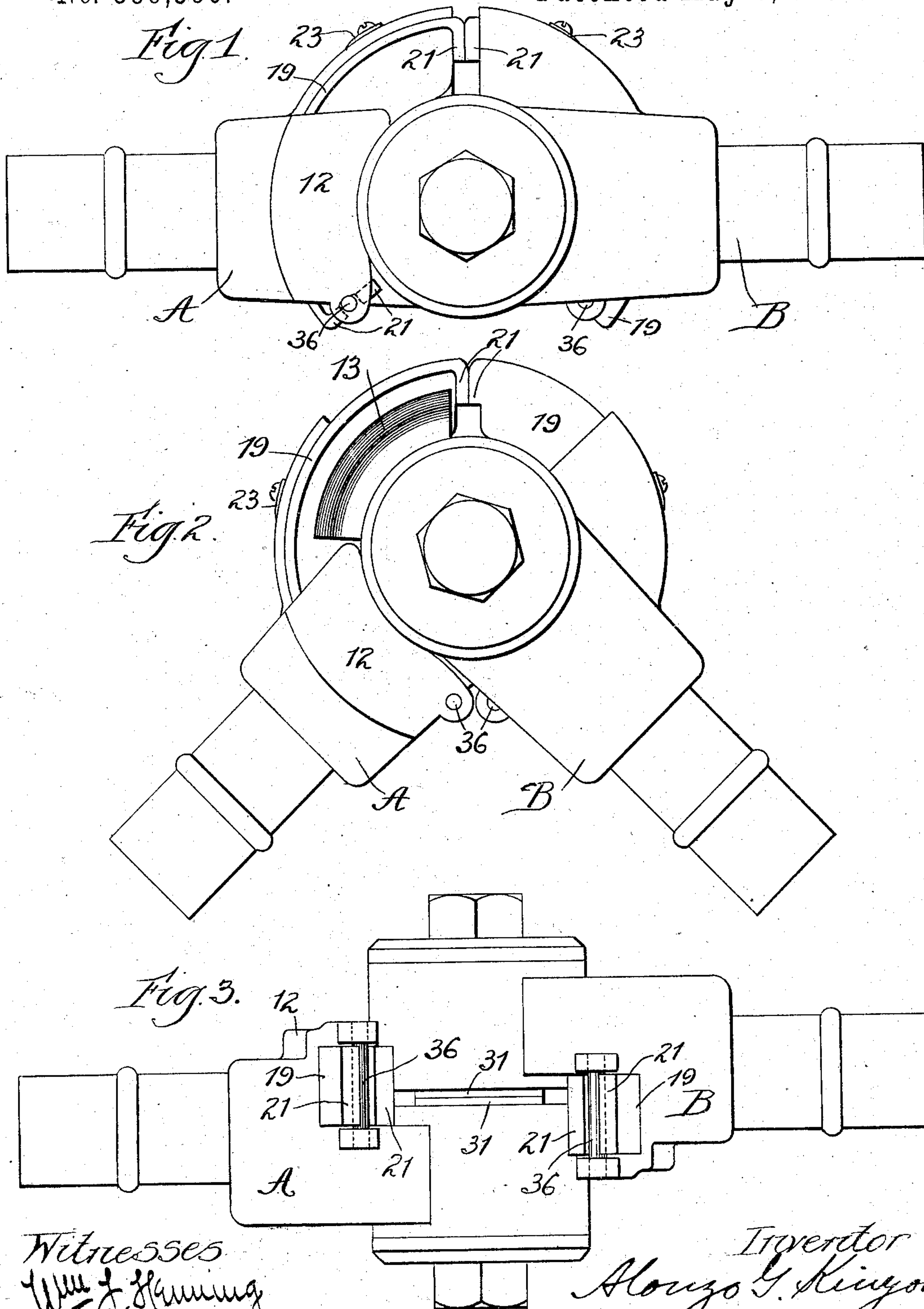
(No Model.)

3 Sheets—Sheet 1.

A. G. KINYON.  
HOSE COUPLING.

No. 559,390.

Patented May 5, 1896.



Witnesses  
Wm. J. Hanning  
St. M. Rheum.

Inventor  
Alonzo G. Kinyon  
by Brown & Darby Atty.

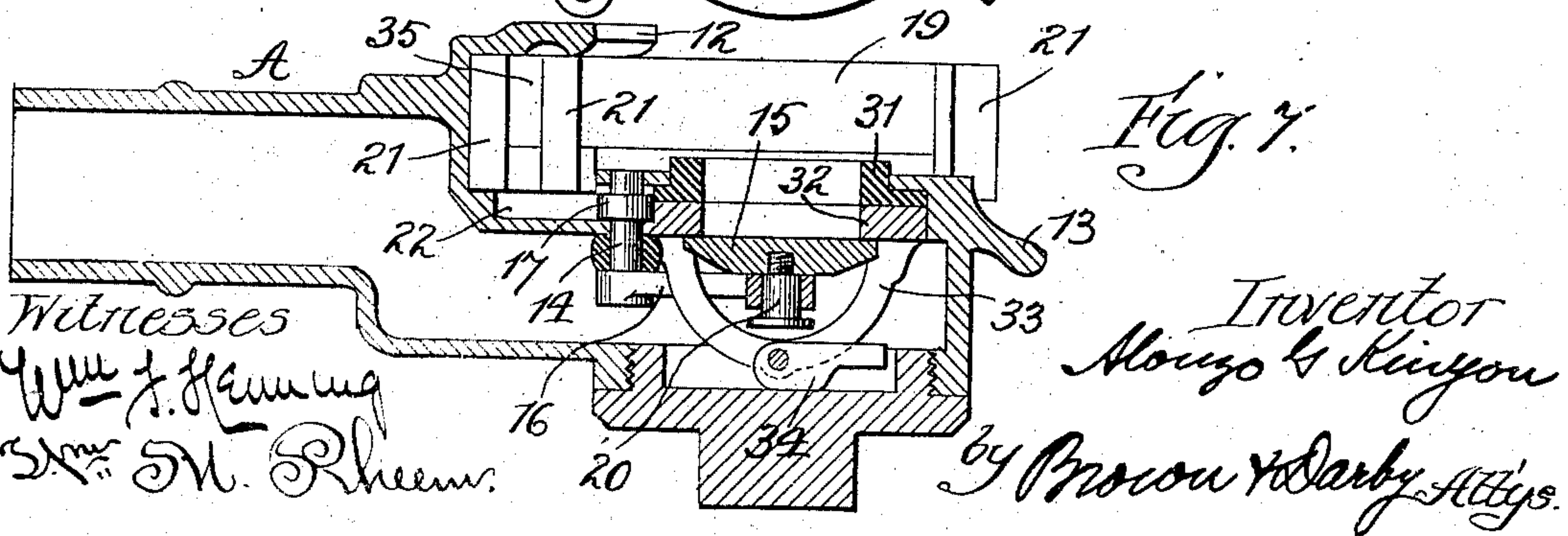
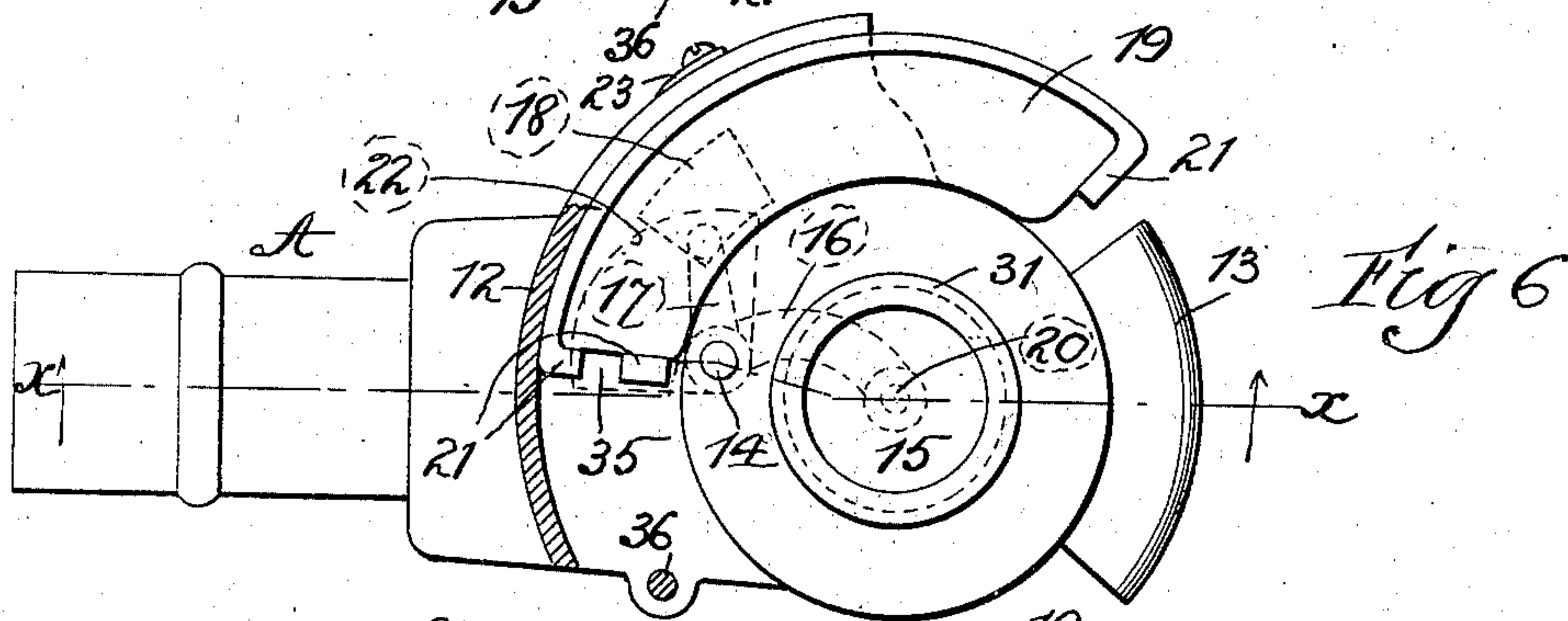
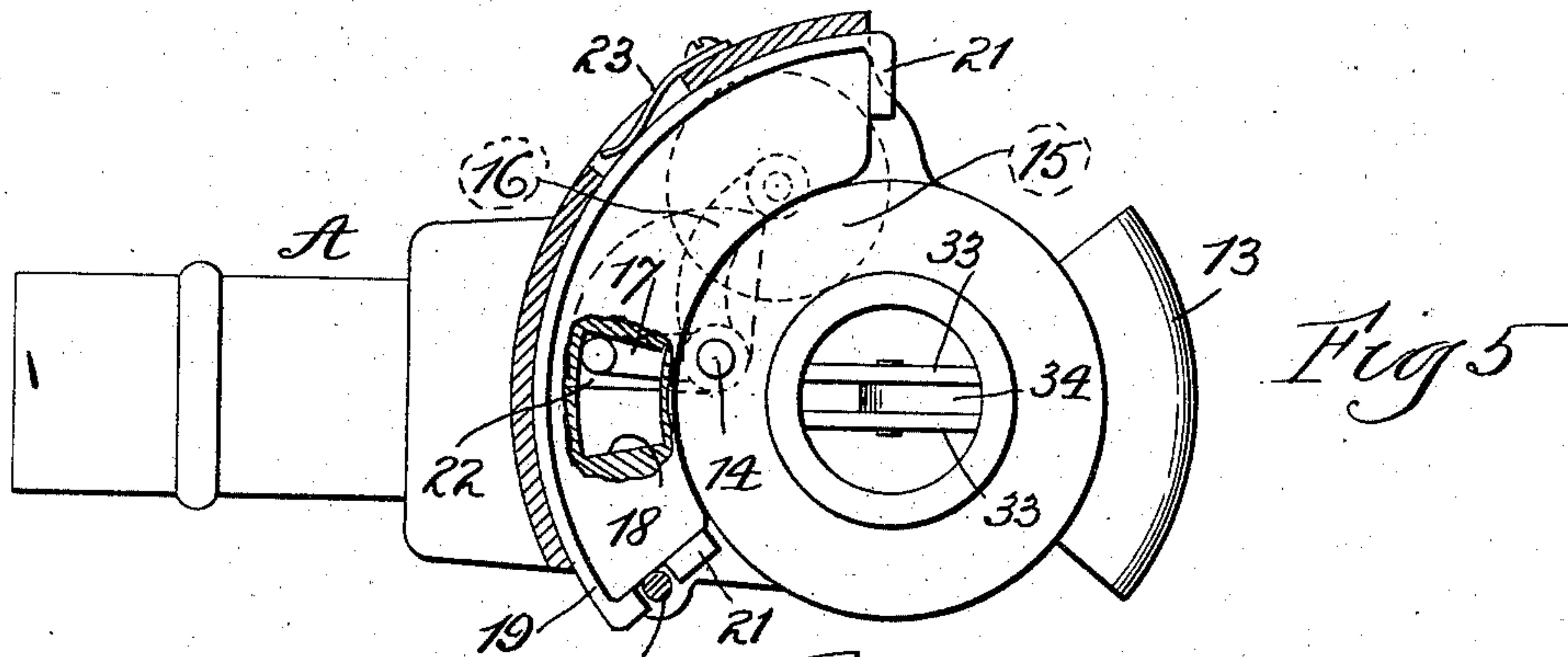
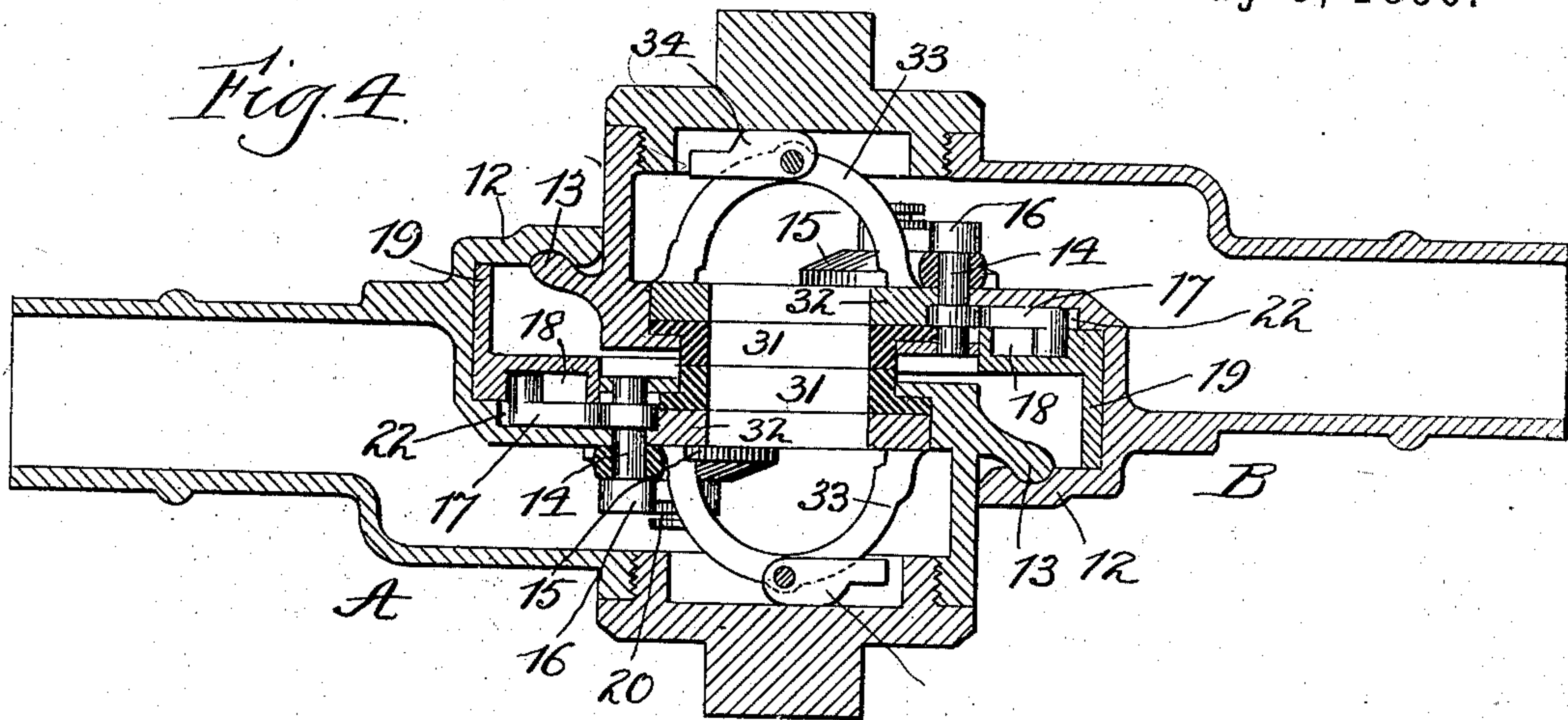
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3 Sheets—Sheet 2.

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S. M. Rheem.

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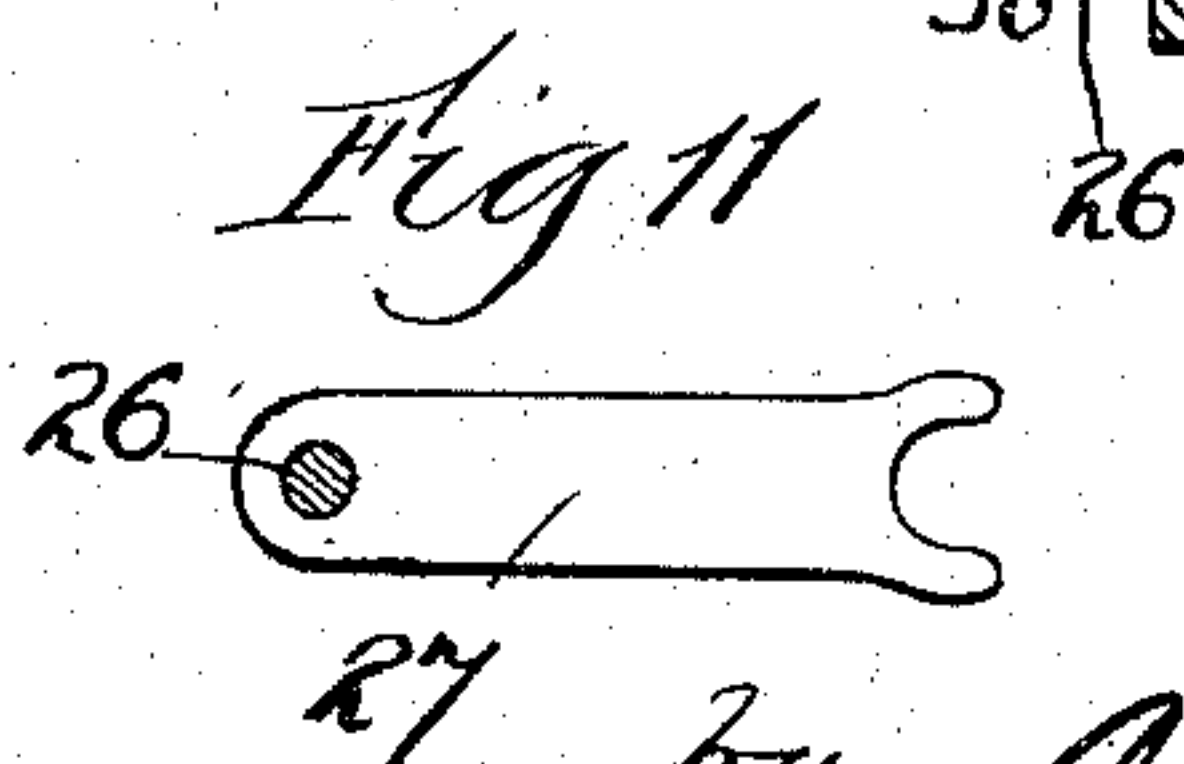
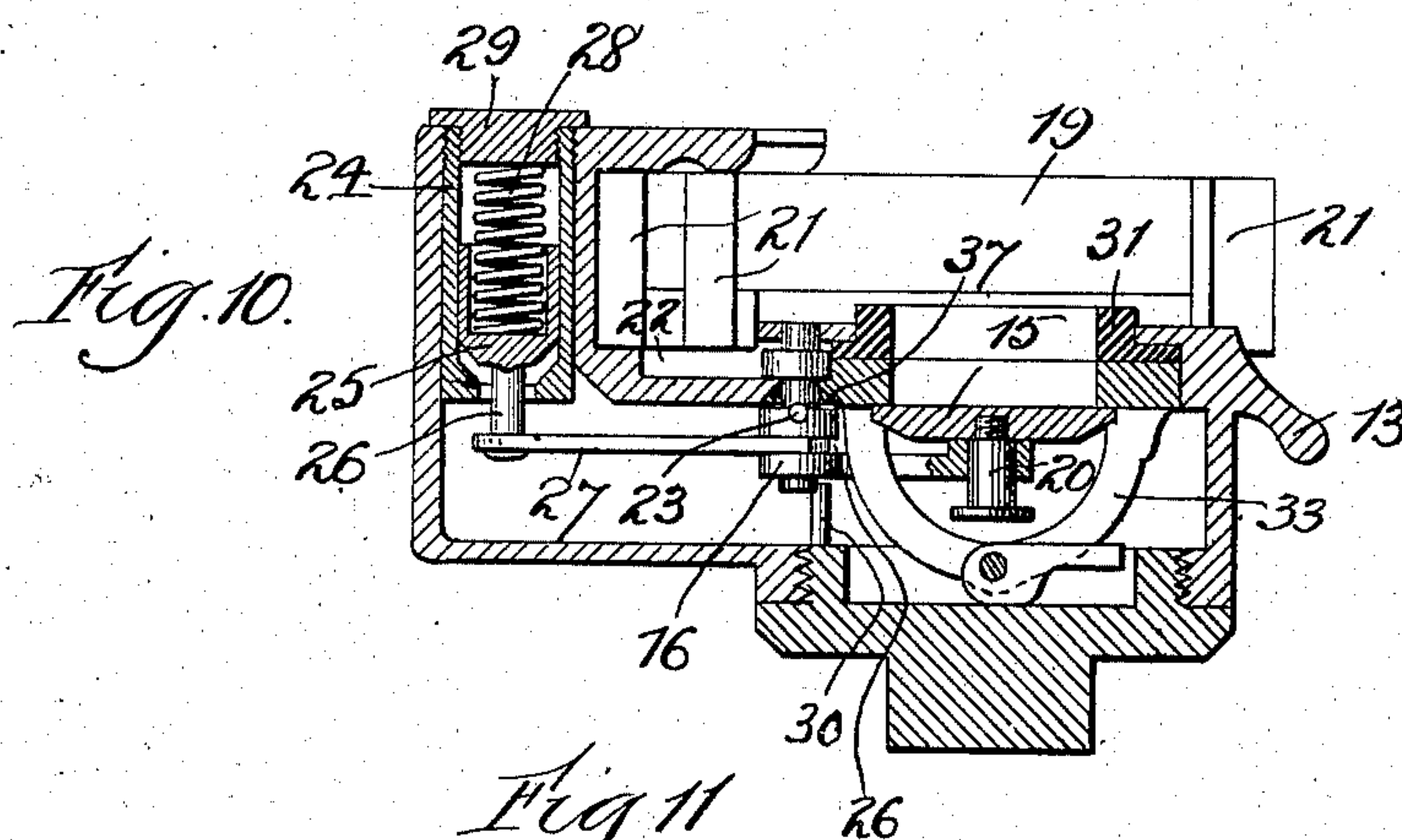
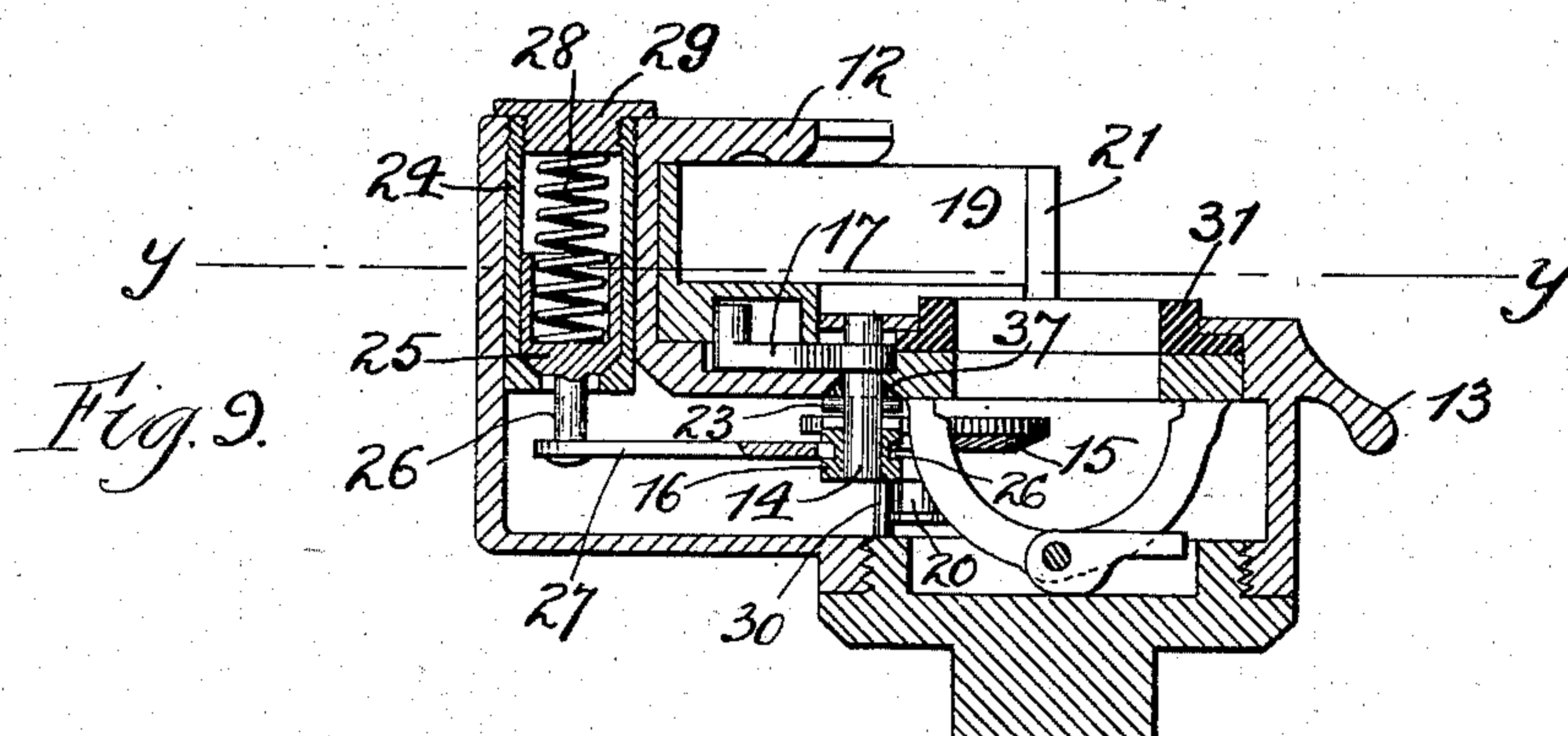
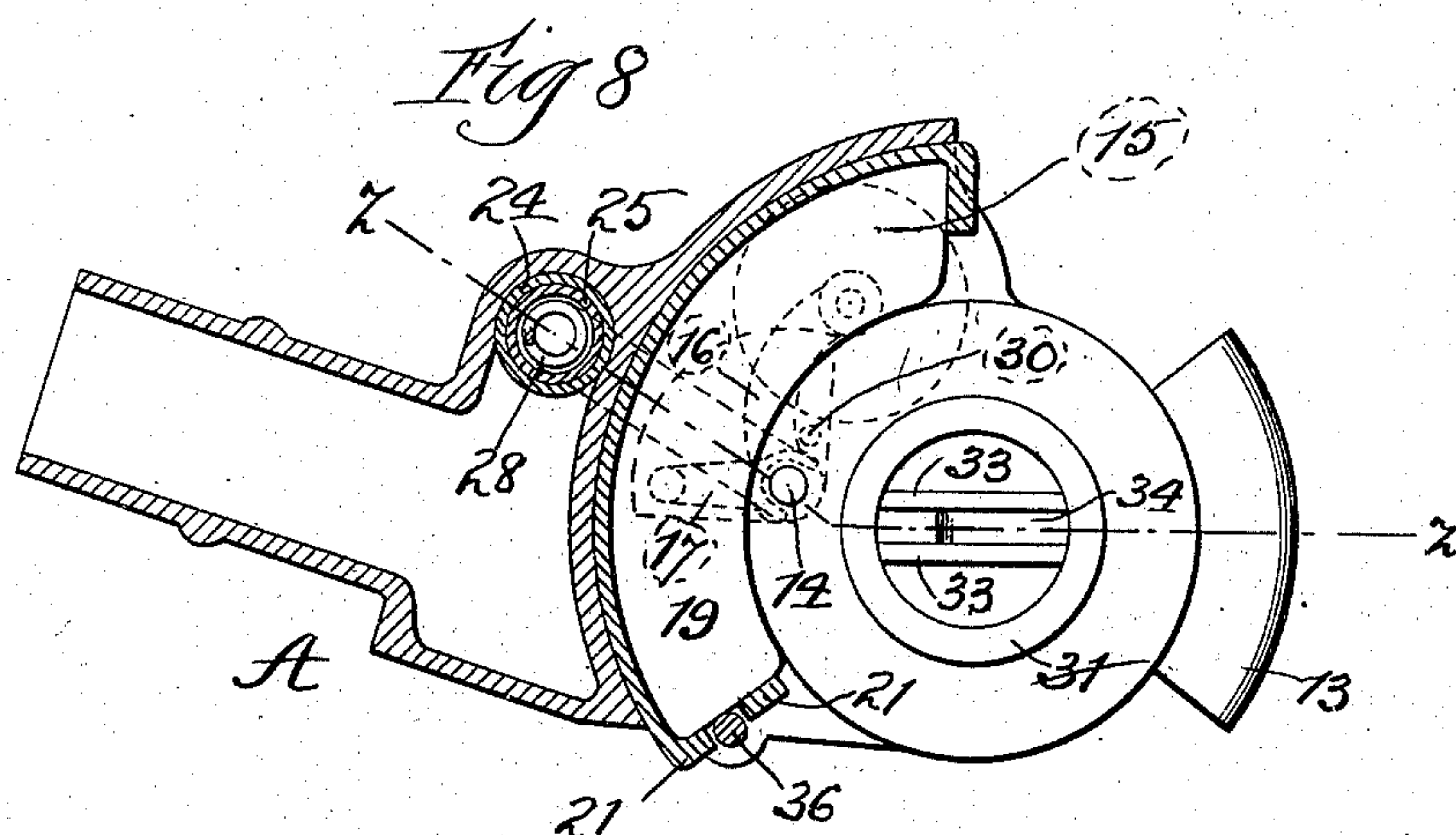
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3 Sheets—Sheet 3.

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# UNITED STATES PATENT OFFICE.

ALONZO G. KINYON, OF ELGIN, ILLINOIS, ASSIGNOR TO JAMES M. BARR, OF ST. PAUL, MINNESOTA.

## HOSE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 559,390, dated May 5, 1896.

Application filed December 22, 1894. Serial No. 532,643. (No model.)

*To all whom it may concern:*

Be it known that I, ALONZO G. KINYON, a citizen of the United States, residing at Elgin, in the county of Kane and State of Illinois, have invented a new and useful Hose-Coupling, of which the following is a specification.

This invention relates to air-brake hose-couplings.

The object of the invention is to provide an air-brake hose-coupling of novel construction and arrangement which is simple and efficient in operation.

Another object of the invention is to provide an air-brake hose-coupling with a simple and efficient valve-operating mechanism.

Another object of the invention is to provide simple and improved means of novel construction and arrangement for securing and retaining removably the gasket in air-brake hose-couplings.

Another object of the invention is to provide means when desired for retaining the valve in open position, as occasion may require.

Other objects of the invention will appear more fully hereinafter.

The invention consists, substantially, in the construction, arrangement, combination, and relative location of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Reference is had to the accompanying drawings, and to the various views and reference-signs appearing thereon, and wherein—

Figure 1 is a plan view of a pair of half-blocks of a hose-coupling embodying my invention, said half-blocks being shown coupled up. Fig. 2 is a similar view of the same, the half-blocks being shown in position to effect a coupling thereof. Fig. 3 is a side elevation of the arrangement shown in Fig. 1. Fig. 4 is a central longitudinal section of the same. Fig. 5 is a plan view of a single hose-coupling, parts being in horizontal section and parts broken out, illustrating the valve in open position. Fig. 6 is a view similar to Fig. 5, showing the valve in closed position. Fig. 7 is a longitudinal sectional view taken on the line  $x x$ , Fig. 6, and looking in the direction of the arrows. Fig. 8 is a plan view of

a half-block, parts being in horizontal section, illustrating means for retaining the valve in open position, the section being on the line  $y y$ , Fig. 9. Fig. 9 is a vertical sectional view of the same, taken on the line  $z z$ , Fig. 8. Fig. 10 is a view similar to Fig. 9, showing the valve in position in its seat and the clutch mechanism in its engaging position. Fig. 11 is a detail view of the clutch-operating arm.

The same reference-sign designates the same part wherever it occurs throughout the several views.

Reference-signs A and B designate, respectively, the members of half-blocks of a hose-coupling, each provided with the usual engaging lip 12 and projection 13 for maintaining two half-blocks in position when a coupling has been effected.

I will first describe the mechanism, construction, arrangement, and location of parts for automatically operating the valve to open or close the same when a coupling is made or broken. Heretofore it has been usual to arrange the valve in a half-block of a hose-coupling at a distance from the mouth of the half-block. It has also been customary to provide a reciprocating valve. This construction and arrangement are objectionable for the reason that dirt, grit, or other obstructions entering the mouth of the half-block fill the valve-seat or clog around the valve-stem, thereby causing undue wear, and frequently resulting in objectionable leakages. In devices of this nature it is a matter of great importance to afford the compressed air the greatest freedom of passage through the train-pipe, in order that the brake mechanism may readily respond thereto. It is therefore essential that the valve in the coupling-block be so constructed and arranged as to permit the greatest possible uncovering of the mouth of the block, to the end that the least possible restriction is offered to the passage of the brake-operating medium. I avoid these objections and at the same time provide a construction wherein the valve is automatically operated to open or close when a coupling is made or broken by the following construction:

Reference-sign 14 designates a stub pintle or shaft, having a suitable bearing formed in the casing of the half-block adjacent to the



mouth formed in the engaging face of the half-block.

15 designates a valve, preferably circular in shape and of suitable material and corresponding to the mouth of the opening in the engaging face of the half-block. This valve is carried by an arm or lever 16, suitably sleeved or otherwise mounted upon the pintle or shaft 14. Suitably mounted upon the other end of said pintle or shaft 14 is an arm 17, provided at its outer extremity with an upturned end, as shown, (see Figs. 4 and 9,) arranged to project up into a recess 18, formed on the under side of a plate 19, movably mounted and arranged in position to be engaged by the engaging lip or projection on an adjacent half-block when a coupling or an uncoupling is effected and to be moved thereby, whereby the upturned end of arm 17 is engaged by the walls of recess 18 and said arm rocked. It will be observed that arms 16 and 17, being rigidly secured to pintle or shaft 14, constitute in effect a double crank, and when arm 17 is rocked a rocking of pintle or shaft 14 results, and hence a swinging of arm 16, carrying valve 15, is effected, thereby swinging the valve 15 away from or into position to cover the mouth of the opening in the coupling-block.

In order to provide a construction wherein the valve 15 may rock about a central axis, whereby it can the more readily be slid into its closing position, and in order to permit a slight motion of the valve relatively to its supporting-arm, whereby it may be acted upon by the pressure contained in the train-pipe to more closely fit its seat, I provide the valve end of arm 16 with a perforation. To the valve, and preferably centrally thereof, is suitably secured a pin 20, slightly longer than the thickness of the end of the valve-carrying arm and adapted to be received loosely in the perforation in the end of said arm. By this construction the valve may freely rotate within the socket formed in its supporting and carrying arm and at the same time be permitted a movement transverse thereto.

It will be understood that the pintle or shaft 14 is arranged adjacent to the mouth of the half-block, and the end upon which arm 16 is mounted is arranged to project into the body or the space forming the chamber of the half-block, and that the arm 16 and valve are also arranged within this space. In the construction shown the pintle or shaft is arranged with reference to the mouth or opening in the engaging space of the half-block, so that the arm 16, and hence the valve 15, is rocked in a plane parallel with the engaging face of the half-block; but I do not desire to be restricted to this particular location and arrangement, as many other forms and arrangements of mechanism would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention.

In order to suitably support and guide the

sliding plates 19, I provide said plates with a flange adapted to bear against and to be received by the wall of the half-block formed by the projecting lip 12, as shown. (See Figs. 4 and 9.) This flange is preferably curved, as shown, to correspond with the curved wall and also to the path of travel of the engaging lip upon an adjacent half-block when two half-blocks are rocked to effect a coupling. At the respective ends of said plate 19 I provide upturned ends 21, and said plate is constructed of a length sufficient to receive between its upturned ends the engaging lip upon an adjacent half-block, as will be readily understood by reference to Fig. 2, and said plate is adapted to rest upon the top portion of the horizontal face of a half-block. In order to avoid obstruction to the free movement of said plate, and at the same time in order to secure compactness, I provide a recess 22 in the seat of said plate in the face of the horizontal portion of the half-block, said recess or countersink adapted to receive therein the arm 17. (See Figs. 4 and 7.) The plate 19 is designed to fit in its seat snugly and to be held by frictional contact therein in any position in which it may be moved. If desired, however, in order to impart additional friction thereto, I may, when necessary, mount a small leaf-spring 23 upon the casing, forming the covering for said plate and arranged to bear against said plate in any suitable manner. (See Fig. 5.)

It will be understood from the above construction that when two half-blocks are placed in position to effect a coupling up—as, for instance, as shown in Fig. 2—a flange or projection 13 of one block rests between the upturned ends of the sliding plate 19, it being understood that when the parts are in the position shown in said figure the valve is in its closed position. When the half-blocks are rotated upon each other to effect a coupling up, the edge of the lip 13 engages the upturned end of the plate when the half-blocks have been rotated upon themselves a sufficient distance, and thereafter the sliding plate moves with the engaging lip or projection. At the beginning of the movement of the sliding plate 19 the upturned end of arm 17 occupies a position in the countersink or recess 18, formed in the under side of the sliding plate adjacent to the inner edge or wall of said recess or countersink, as indicated in dotted lines in Fig. 6. After the sliding plate moves a distance equal to the length of said countersink or recess said upturned end is engaged by the outer wall of said countersink or recess and is moved thereby to effect a rocking of the arm 17, pintle or shaft 14, arm 16, and hence a swinging of the valve from its closed to its open position, as indicated in Fig. 5. A reverse movement of the half-blocks effects a movement of the sliding plate in the opposite direction, and hence effects a closing of the valve. It will be understood that when the valve is in its open position, as shown, for



instance, in Fig. 5, if a break occurs—that is, should the coupling pull apart—the projection or lip 13 is withdrawn from between the upturned ends of the sliding plate without effecting a movement thereof, and hence retaining or leaving the valve in its open position, thereby permitting the air-pressure in the train-pipe to escape, and hence setting the brake immediately.

From the foregoing description it will be seen that the valve when moved about its support moves bodily to cover or uncover the mouth of the half-block, the valve-support being arranged out of line with said mouth. By this arrangement the entire area of opening of the mouth of the half-block is covered or uncovered by the valve.

I am aware that it is not new to provide a rotary valve having a port-opening therein and adapted to be rotated to cover or uncover a port-opening formed in a disk, which disk is arranged in the mouth of the half-block, as shown, for instance, in Patent No. 214,336, dated April 15, 1879, to Westinghouse, and therefore I do not claim such construction.

In some cases it may be desirable to provide a construction wherein the engineer is notified in case of a malicious uncoupling of coupling-blocks constructed in accordance with my invention. In other words, it may be desirable to place the valve mechanism of the coupling-block under the automatic control of the engineer. I have shown in Figs. 8, 9, and 10 a construction for accomplishing this result. In this construction I slidably mount the arm 16, supporting the valve 15, upon the end of pintle or shaft 14, and provide a suitable clutch whereby, when the sleeve or hub of the valve-carrying arm is in one position, it is rigidly secured to rock with the pintle or shaft, but is released therefrom to permit said pintle or shaft to rock loosely therein in another position of said sleeve. This clutching may be effected in a convenient and simple way by providing a pin 23, passing transversely through the pintle or shaft and having its projecting ends adapted to be received in suitable slots or seats provided in the hub or collar, as shown, when said hub or collar is moved into the proper position, the said hub or collar being adapted to slide along said pintle or shaft to effect a disengagement of said pin. In order to effect this sliding movement in a simple way, and at the same time to place this clutching or unclutching under the control of the engineer, I provide the following construction: Within a portion of the casing forming the coupling-block I mount a sleeve 24, comprising an open-ended cylinder, the end of said cylinder projecting into the body or space formed by the casing, forming a valve-seat adapted to receive a sliding piston 25 therein, said piston being arranged within said sleeve and having a stem 26 projecting through the opening in the end of said cylinder and into the interior of the half-block

chamber. An arm 27, carried by said stem, is provided and arranged to engage the hub of arm 16. By this construction it will be seen that when the piston 25 is moved in one direction the hub of valve-carrying arm 16 is moved in a direction to effect a coupling or clutching of said hub to the shaft or pintle 14, and when said piston 25 is moved in the opposite direction an uncoupling of said hub to said pintle or shaft is effected. I mount a suitable spring within the sleeve 24 and arrange said spring to bear against piston 25 to normally seat the same, a screw-plug 29 being arranged to close the outer end of said sleeve and to receive the thrust of said spring. The arrangement is such that when the piston 25 is seated the hub of valve-carrying arm 16 is unclutched from pintle or shaft 14. The tension of spring 28 is so arranged as to be slightly in excess of the normal pressure in the train-pipe, whereby the valve-carrying arm 16 is normally unclutched. When, however, the pressure in the train-pipe is increased by the engineer suitably manipulating his pressure-controlling apparatus, the tension of spring 28 is overcome, piston 25 is raised from its seat, and a clutching of valve-carrying arm 16 to shaft 14 is effected. It will be understood that when valve-carrying arm 16 is uncoupled from shaft or pintle 14 the position of valve 15 is not effected by a coupling or uncoupling of the coupling-block, for in that case any rocking motion imparted to shaft or pintle 14 will not be imparted to the valve-carrying arm.

The operation of this part of my invention is as follows: Assuming that the train is coupled up and that there is normal pressure in the train-pipes, under these conditions it will be understood from the foregoing description that, inasmuch as the tension of spring 28 is designed to be in excess of the normal train-pipe pressure, piston or plunger 25 will be seated, thereby unclutching the valve from its operating-shaft 14, and since the act of coupling up has moved the valve to its open position it is retained in that position and cannot be seated until again clutched to its actuating-shaft. Now, if an uncoupling is desired, the engineer admits abnormal pressure to the train-pipes sufficient to overcome the tension of spring 28, thereby causing the piston or plunger 25 to be moved in a direction to effect a clutching of the valve to its operating-shaft, and then the act of uncoupling effects a closing of the valve. If an unauthorized uncoupling is made while the valve is unclutched, the engineer is immediately notified by the setting of the brakes and by the fall of pressure, as indicated by his pressure-gage, due to the escape of air through the open mouth of the coupling-block. When a car is added to the train, the act of coupling up the hose-pipes opens the valves. If the equalization of pressure in the train-pipes is not sufficient to reduce the pressure to the point where the piston or plunger 25 is re-



leased, the engineer reduces the train-pressure sufficiently to permit the spring 28 to again unclutch the valve. If desired, a suitable retaining-pin 30 (see Fig. 8) may be provided to retain the valve in its open position when uncoupled from the operating-shaft 14.

I will now describe the construction and operation of my improved means for securing removably the gasket in place in the mouth of the opening formed in the face of the coupling-block, whereby said gasket may be easily and readily removed and new ones inserted for repairs when desired or required. Reference-sign 31 designates the gasket, 32 a circular ring arranged to hold said gasket to its seat, and 33 arms secured to or forming part of said rings and constituting a spider. Suitably journaled in said arm is a cam-block 34, of suitable construction and arrangement, adapted to bear against the back walls or roof of the valve-chamber (see particularly Figs. 4, 7, 9, and 10) and adapted when turned in one position—as, for instance, in position shown in said figures—to force said spider and ring against the gasket to hold the same in place, and at the same time to maintain said cam block or lever in a fixed position, said cam block or lever being so constructed that when suitably manipulated or rocked about its pivot the pressure upon the gasket may be relieved, the ring 32 being withdrawn therefrom, thereby permitting the removal and renewal from the face of the half-block of said gasket, as will be readily understood.

In order to provide a compact arrangement of parts, the inner upturned end 21 of plate 19 may be grooved, as at 35, to receive therein the usual binding or clamping screw or rivet 36. (See Figs. 3, 5, and 6.)

If desired, the clutch-pin 23 may be employed as a means for holding the packing 37 for the valve-operating shaft or pintle 14. (See Figs. 9 and 10.)

Having now fully described my invention, its objects, purposes, and function, and the principle thereof, and having fully set forth a form of mechanism embodying the same, and having explained the principle and mode of operation thereof, I desire to be understood that I do not desire to be limited to the specific details of construction and arrangement shown and described, as many variations therefrom may be readily made by persons skilled in the art and still fall within the scope of my invention; but

What I do claim as my own invention, and desire to secure by Letters Patent of the United States, is—

1. In a hose-coupling a half-block, having an opening therein, a shaft arranged in said half-block, carrying an arm, a valve carried by said arm, and adapted when seated to close said opening, and means adapted to be operated by the adjacent half-block when a coupling or uncoupling is effected for rocking said shaft, whereby said valve is seated or unseated; as and for the purpose set forth.

2. In a hose-coupling a half-block, having an opening therein, a rock-shaft arranged in said half-block adjacent to said opening, but out of line therewith, a valve carried by said rock-shaft adapted when seated to close said opening, and means adapted to be actuated by the engagement therewith of the engaging lip or projection on an adjacent half-block during the act of coupling or uncoupling, for rocking said shaft whereby said valve is automatically seated and unseated; as and for the purpose set forth.

3. In a hose-coupling, a half-block, a valve arranged to effect a closing of the opening therein, a shaft journaled in said half-block adjacent to said opening, an arm mounted thereon to support said valve, a sliding block, adapted to be engaged by the engaging lip or projection upon an adjacent half-block when a coupling is effected, whereby said block is moved, and connections between said block and said shaft for rocking the latter; as and for the purpose set forth.

4. In a hose-coupling a half-block, a valve arranged to control the opening therein, a shaft mounted in said half-block adjacent to said opening, connections between said shaft and valve for operating the latter from the former, a block, arranged in the path of the movement of the engaging lip or projection upon an adjacent half-block whereby said block is moved, an arm mounted upon said shaft and adapted to be engaged by said block, whereby said shaft is rocked; as and for the purpose set forth.

5. In a hose-coupling, a sliding plate, arranged to be engaged and moved by the engaging lip or projection upon a half-block when a coupling of two half-blocks is effected, said plate provided with a recess in the face thereof, a shaft, an arm, rigidly mounted on said shaft and provided with an upturned end adapted to be received in said recess, whereby said shaft is rocked when said plate is moved, and connections between said shaft and a valve; as and for the purpose set forth.

6. In a hose-coupling a half-block, a valve adapted when seated to close the opening therein, provided with a supporting-stem, a shaft mounted in said half-block, and arranged out of line with said valve and opening, an arm carried by and to move with said shaft, and provided with a perforation to receive the valve-stem loosely therein, and means for rocking said shaft when a coupling or uncoupling is effected whereby said valve is seated or unseated; as and for the purpose set forth.

7. In a hose-coupling a half-block, a valve arranged to control the opening therein, means for actuating said valve and means for throwing said actuating means into and out of operative connection; as and for the purpose set forth.

8. In a hose-coupling, a half-block, a valve arranged to control the opening therein, means for actuating said valve and means for



automatically connecting or disconnecting said actuating means; as and for the purpose set forth.

5 9. In a hose-coupling, a half-block, a valve arranged to control the opening therein, detachable means for actuating said valve, and devices for automatically connecting or disconnecting said detachable means, said devices being under the control of the engineer; as and for the purpose set forth.

10 10. In a hose-coupling, a half-block, a valve arranged to control the opening therein, a shaft, an arm, mounted on said shaft and carrying said valve, means for operating said shaft, means for detachably connecting said arm to said shaft, comprising a clutch, a piston, means for actuating said piston, and connections between said piston and clutch; as and for the purpose set forth.

20 11. In a hose-coupling, a half-block, a piston arranged therein to be moved by abnormal pressure in the train-pipe, a valve for controlling the opening in said half-block, means for actuating said valve, detachable connections between said valve and its actuating means, actuated by the movement of said piston for controlling said connections; as and for the purpose set forth.

30 12. In a hose-coupling, a half-block, a valve arranged to control the opening therein, a shaft, means for rocking the same, an arm mounted on said shaft and adapted to be detachably connected thereto, said arm arranged to support said valve, a piston arranged in said block, connections between said piston and arm, and means for actuating said piston, whereby said arm may be engaged or disengaged from said shaft; as and for the purpose set forth.

13. In a hose-coupling, a half-block, having 40 the usual open mouth in the face thereof, a valve-seat formed along the edge of said mouth, a valve supported out of line with said open mouth, and means for moving said valve into or out of position to be received 45 in said seat, thereby covering or uncovering the entire area of said mouth; as and for the purpose set forth.

14. In a hose-coupling a half-block having the usual open mouth in the face thereof, a 50 seat formed along the edge of said mouth, adapted to receive a valve, a rock-shaft arranged in said half-block, adjacent to said mouth, but out of line therewith, a valve carried by said shaft, and means for rocking 55 said shaft whereby said valve is moved into or out of position to be received in said seat; substantially as and for the purpose set forth.

15. In a hose-coupling a half-block having an opening in the face thereof, a valve-seat 60 formed along the edge of said opening, a shaft arranged in said block adjacent to said opening but out of line therewith, a valve carried by said shaft and adapted to be received in said seat, an arm mounted on said 65 shaft and arranged to project into the path of movement of an adjacent half-block when a coupling or uncoupling is effected, whereby said shaft is rocked, thereby seating or unseating said valve; as and for the purpose set 70 forth.

In witness whereof I have hereunto set my hand this 20th day of December, 1894.

ALONZO G. KINYON.

In presence of—

E. E. KENYON,  
R. G. KINYON.