

H. L. MINER,  
AUTOMATIC AIR AND STEAM CONNECTION.  
APPLICATION FILED JUNE 5, 1909.

951,196.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.

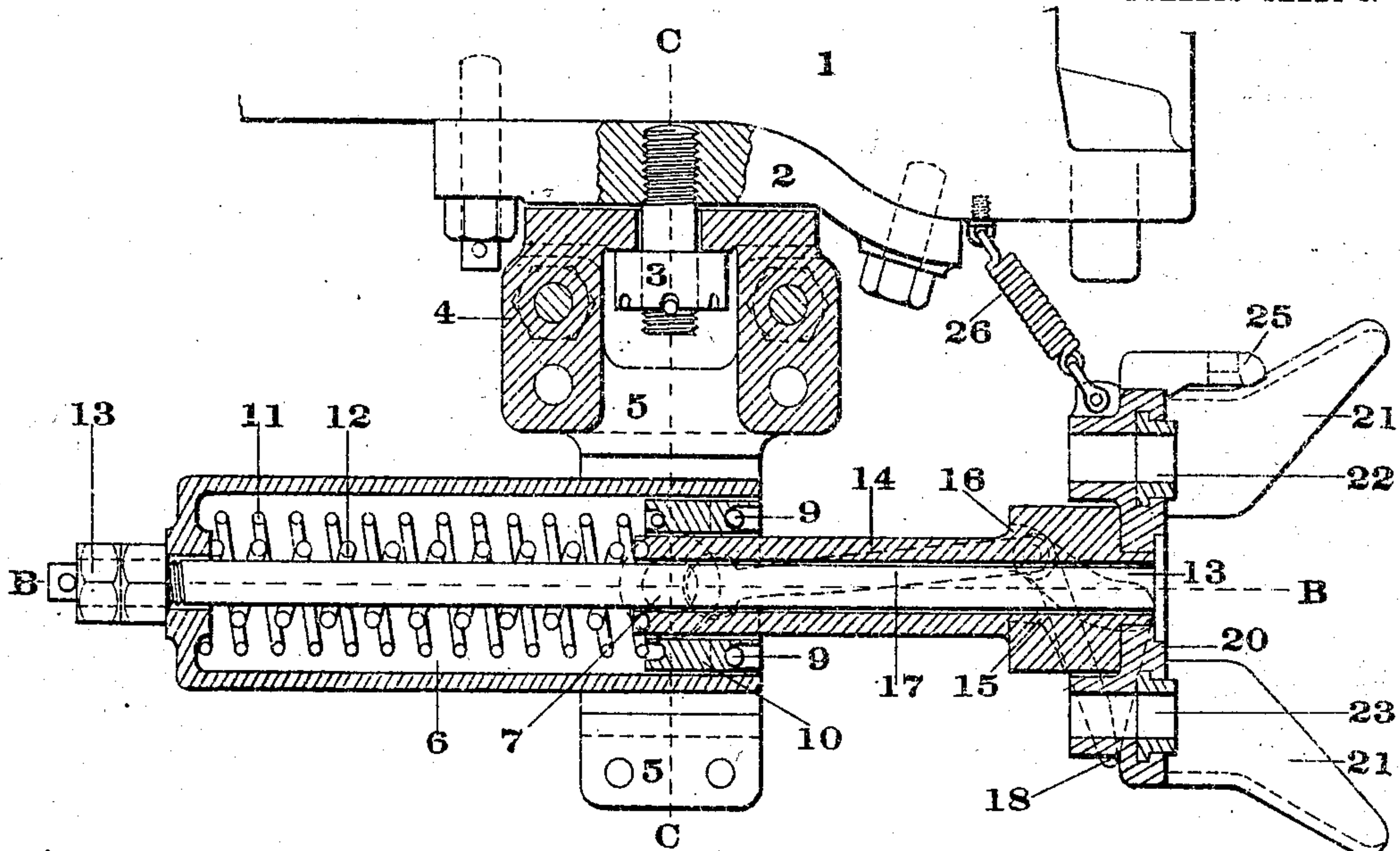


Fig. I

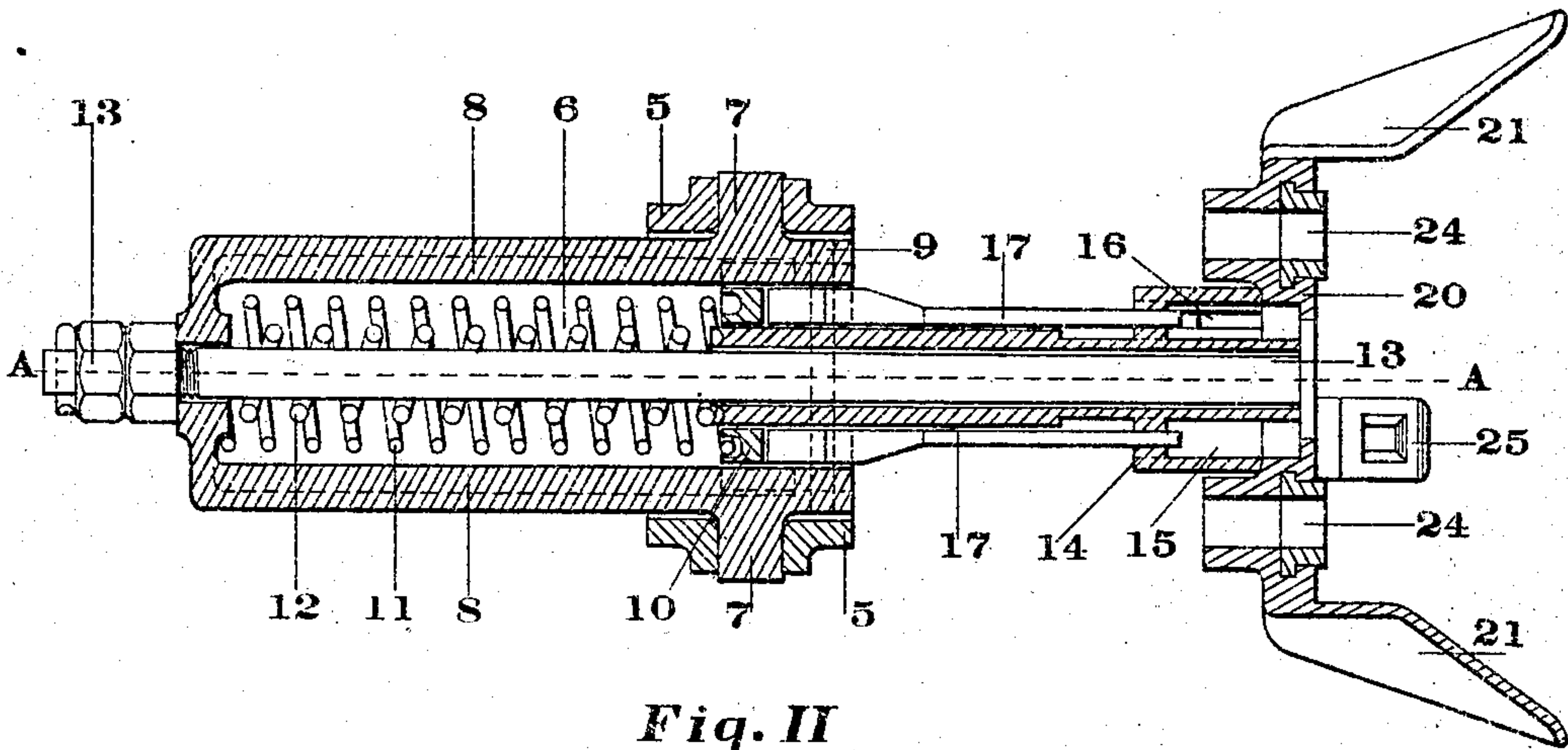


Fig. II

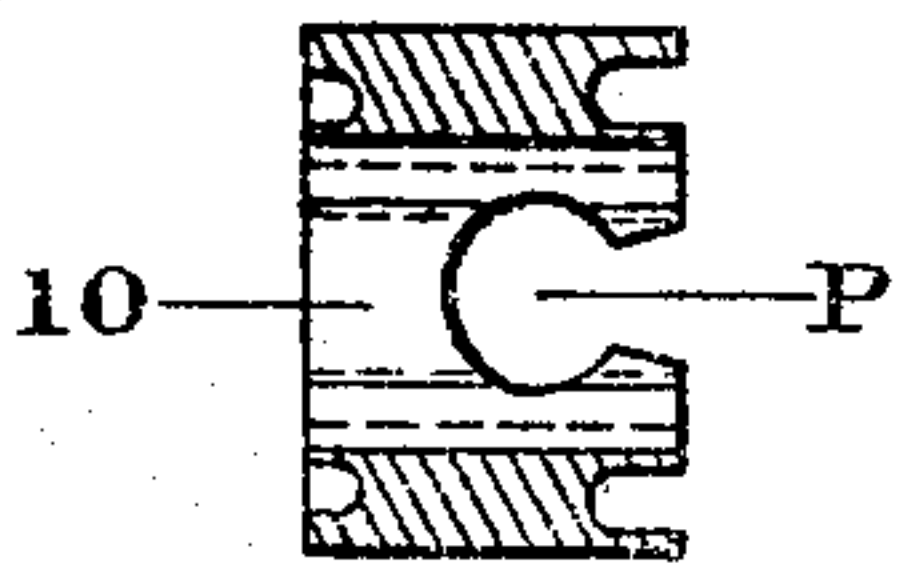


Fig. IX

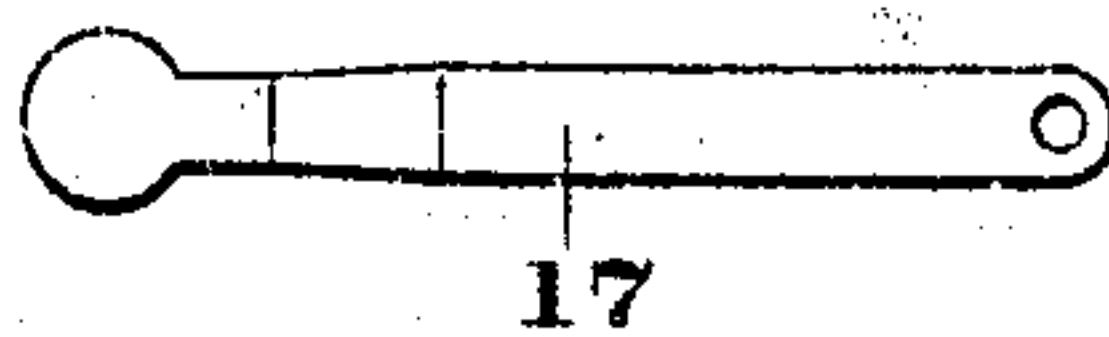


Fig. X

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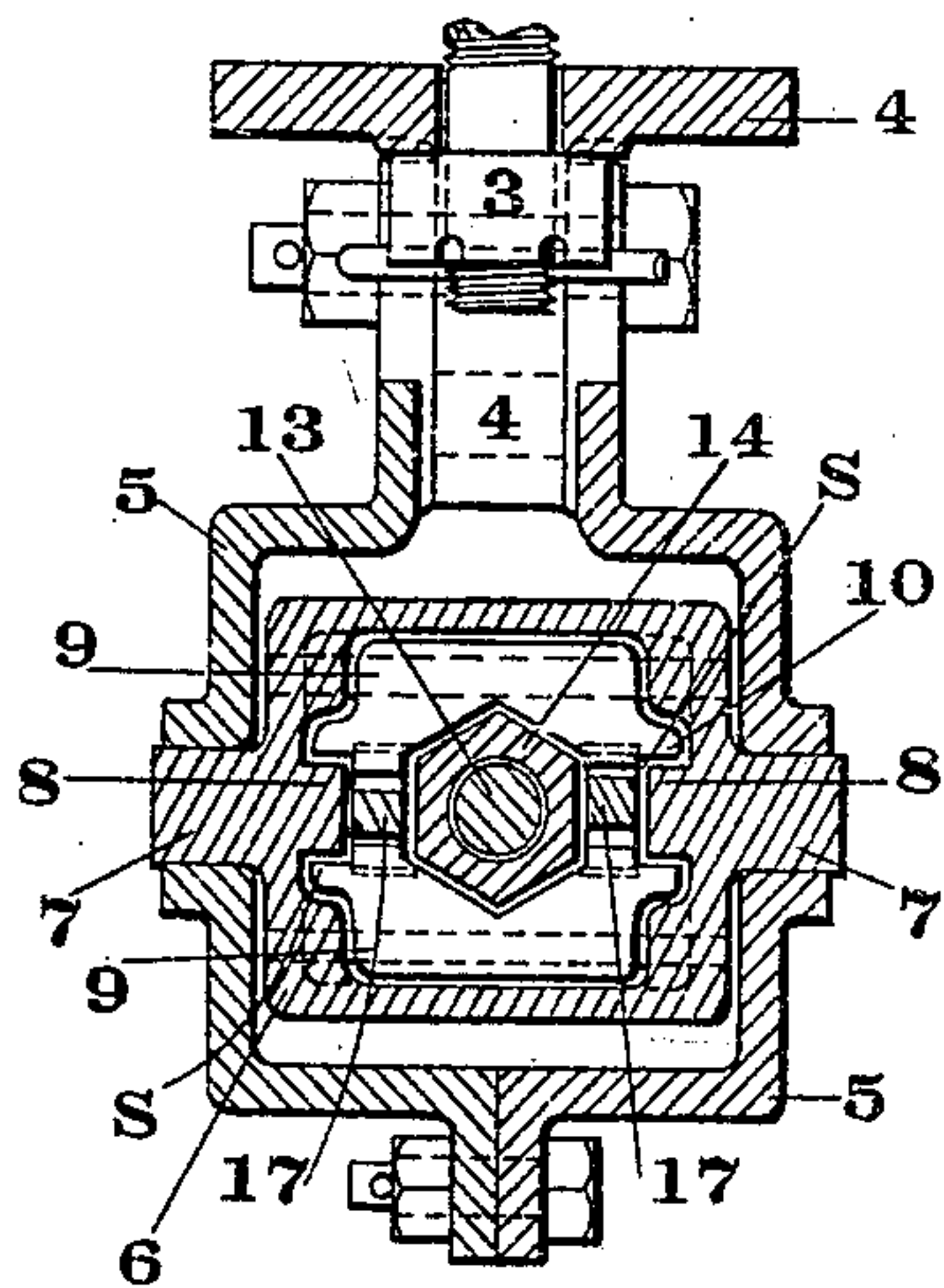


Fig. III

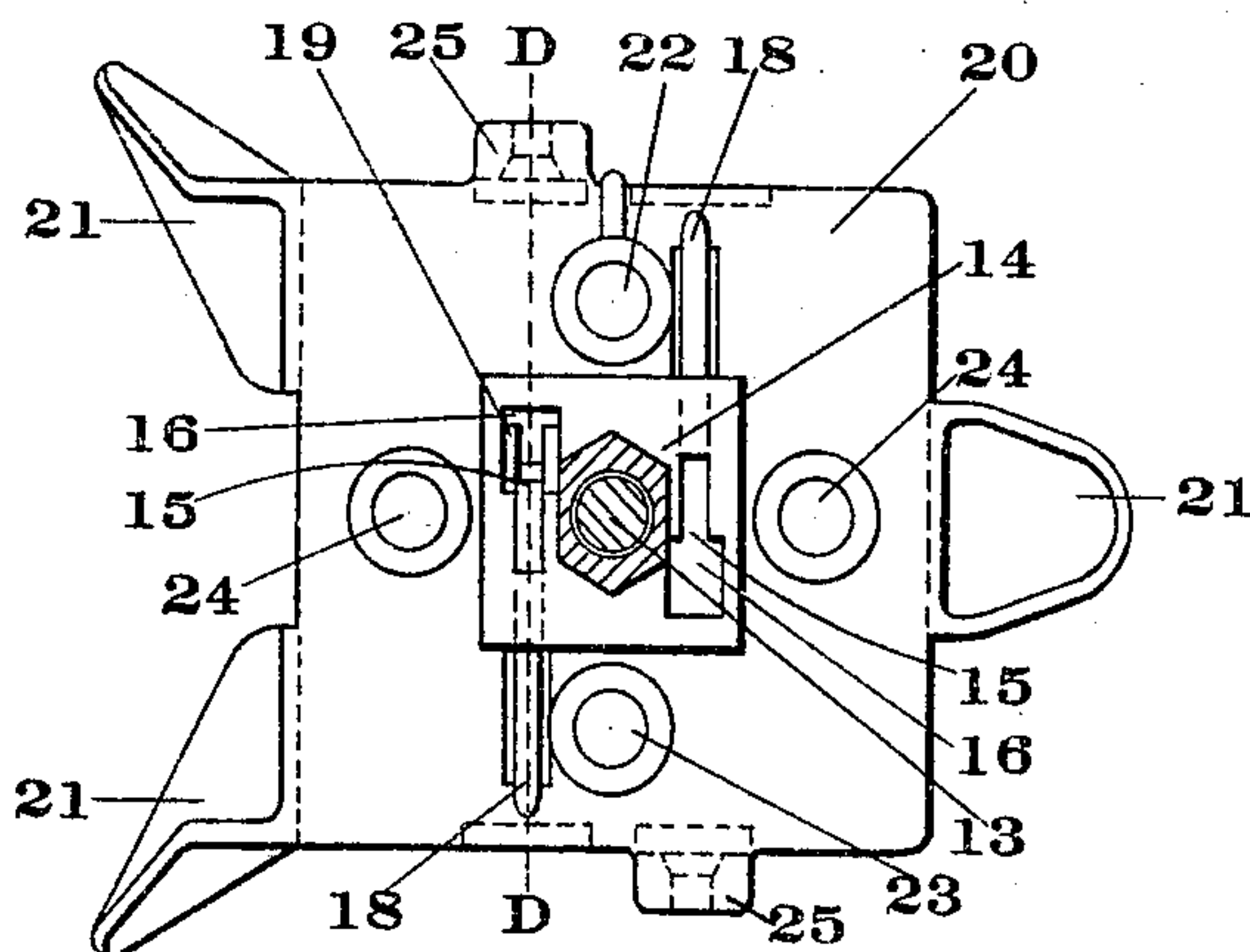


Fig. IV

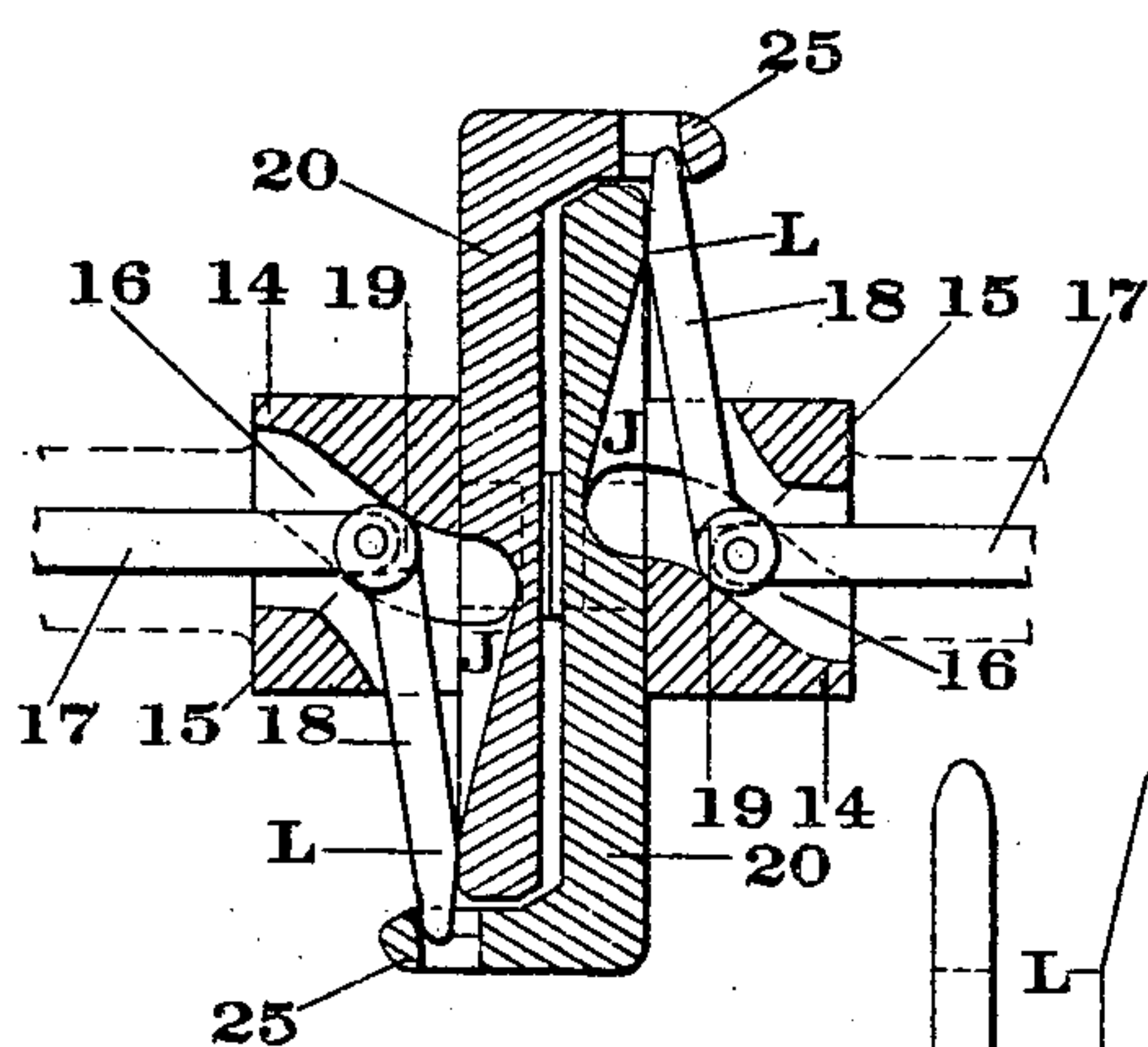


Fig. VI

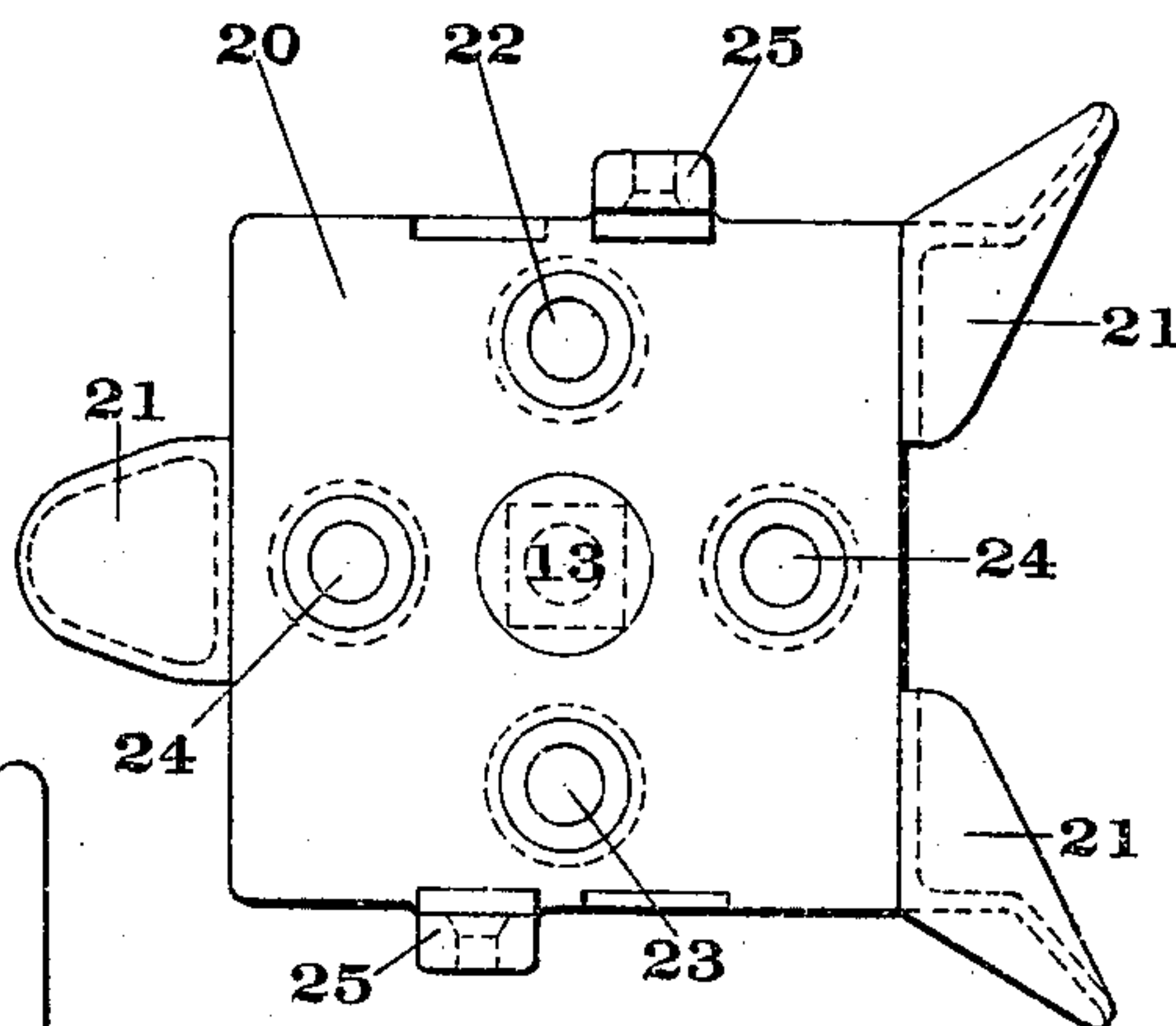


Fig. V

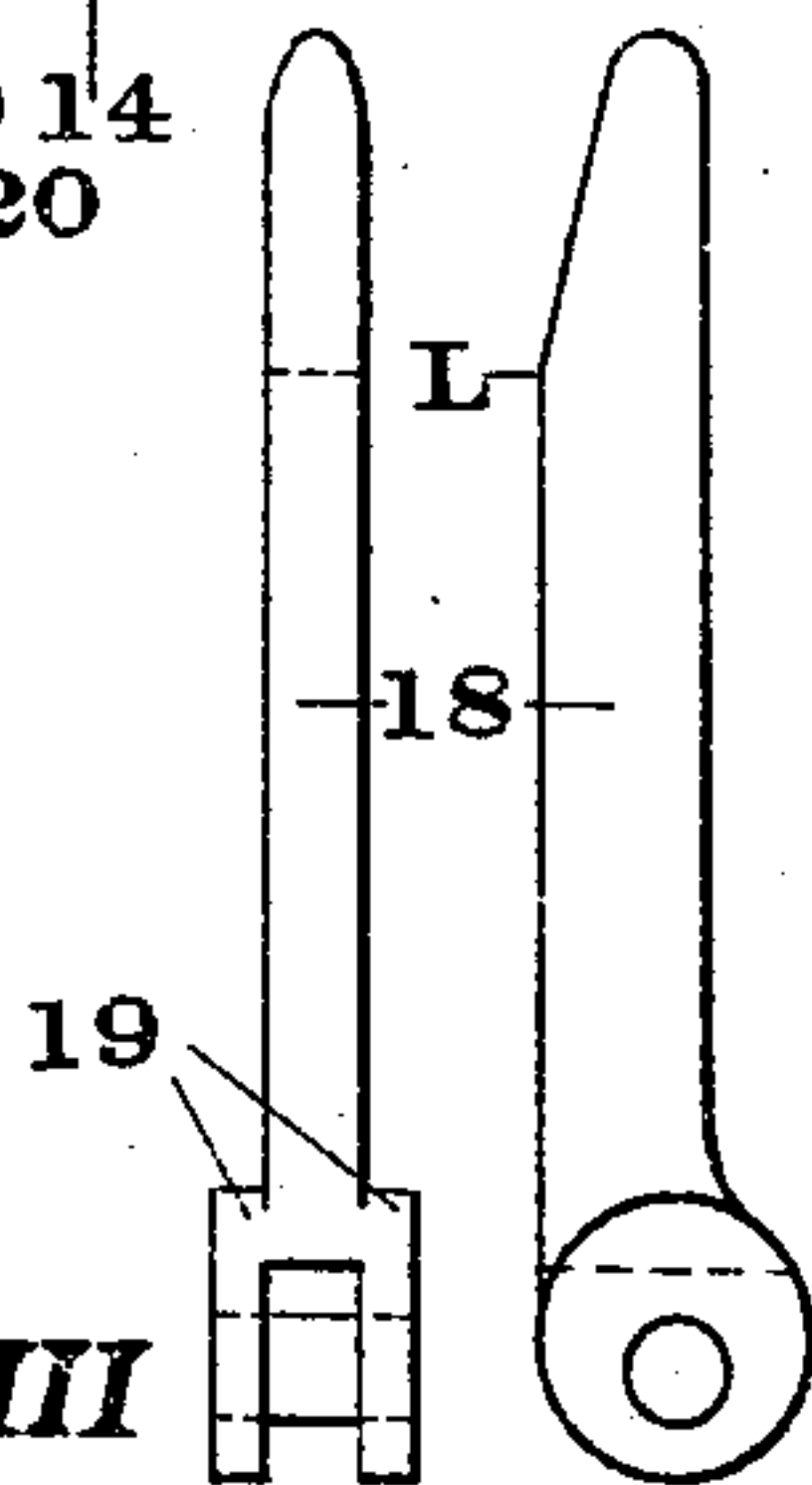


Fig. VIII

Fig. VII

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# UNITED STATES PATENT OFFICE.

HERKIMER L. MINER, OF ST. LOUIS, MISSOURI.

AUTOMATIC AIR AND STEAM CONNECTION.

951,196.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed June 5, 1909. Serial No. 500,389.

*To all whom it may concern:*

Be it known that I, HERKIMER L. MINER, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Automatic Air and Steam Connections, of which the following is a specification.

My invention relates to an improvement in automatic air and steam connections used for coupling the air and steam pipes on railroad cars.

The object of my invention is to provide connecting plates that will automatically contact and connect air and steam pipes of railroad cars under all ordinary conditions and retain the connection as long as the cars are in contact.

A further object of my invention is to provide a connecting device which, after coupling, will lock automatically.

A further object of the invention is to provide a connection which may be adapted for application to all railroad cars and co-operate with the standard automatic car couplers without interfering with the present construction.

A further and specific object of the invention is to provide a coupling suspended beneath the draw-bar or automatic coupler, the said coupler being complete in itself; of sufficient strength and effectiveness; which will automatically connect the air and steam connections, and automatically lock and release the same as the cars are coupled and uncoupled, without delay.

In the drawings—Figure I is a longitudinal sectional view taken on the line A—A of Fig. II. Fig. II is a horizontal sectional view taken on the line B—B of Fig. I. Fig. III is a cross-sectional view taken on the line C—C of Fig. I. Fig. IV is a view of the contacting plate viewed from the rear. Fig. V is a front view of the connecting plate. Fig. VI is a sectional view taken on the line D—D of Fig. IV with another contacting plate shown and both plates in locked position. Figs. VII and VIII are enlarged detail views of the locking bar made use of in carrying out my invention. Fig. IX is a detail sectional view of the guide-block made use of in connection with my invention. Fig. X is a detail side elevation of one of the thrust-bars.

Referring to the drawings in detail, 1 indicates a portion of an automatic car coupler or draw-bar and secured to the

under side thereof is a draw-bar bracket 2 in which is supported the stud 3 provided with a round nut, its under surface slotted, through which a pin may be inserted for preventing the nut from turning when said nut is placed in position. Around the stud and supported thereon by the round nut 3 is a circular hanger bracket 4 which is provided with a pair of downwardly projecting trunnion-hangers 5 in which is hingedly supported the spring-case 6 which is provided with a pair of trunnions 7 supported in openings formed in the trunnion-hangers 5. The spring-case 6 is rectangular in cross-section and is provided on its inner surface with a pair of guides 8 and two retaining pins 9 extending the entire width of the casing and with said pins 9 contacts a guide block 10 which is located in the casing, the two sides of said block provided with grooves corresponding with the guides 8, and on said guides the block 10 is permitted to operate.

The rear end of the case 6 is closed, but provided with a central opening and in said casing, contacting with the rear end and the inner end of the guide block 10, is a large coil spring 11, the one end of said spring resting in circular grooves formed in the surface of the block within said case and within the coil spring 11 is a second and smaller coil spring 12, its one end contacting with the end of the case and located immediately around the spindle bolt 13 which passes longitudinally through the center of the case, through the opening in the end, and on said bolt is located nuts by which the same is held in position.

The block 10 is provided with a central hexagonal opening in which is located a hexagonal sleeve 14, the upper end provided with a square head and in said head is formed two guide pockets 15 with grooves 16, in which operate locking bars.

The guide block 10 is provided with a pair of pockets in which is located and permitted to operate one end of the thrust-bars 17, said end and pocket acting as a ball and socket joint; the other end pivotally connected to the locking bars 18, the construction of said locking bars being shown in Figs. VII and VIII. The locking bars 18 are provided with shoulders 19 and connected to the thrust-bars by pins. The purpose of this is to prevent the locking bars from leaving the grooves 16, at the same



time acting as a support during the manipulation of the thrust-bars and locking bars.

On the front surface of the square head formed on the hexagonal sleeve is rigidly mounted the connecting face plate 20 provided with three guides 21, two on one side and one on the other, also four port connections; the ports 22 and 23 acting as air ports and to which are connected the air pipes; the remaining two ports, indicated by the numeral 24, one on each side, acting as steam ports, and to which are connected the steam pipes, all being provided with hose connections, which are not shown in the illustrations.

I provide the face plate with two lugs 25, one at the top and one at the bottom, in each of which is a hole to receive the outer ends of the locking bars 18 when the same are thrust outwardly by contact, and the said plate is supported to the drawbar by a supporting spring 26 so as to prevent the same from coming out of horizontal alinement.

The operation of my invention is as follows: The hanger bracket 4 supported to the drawbar bracket 2 is so arranged as to be permitted to rotate partially around the stud and in the projecting trunnion-hangers 5 is permitted to tiltingly operate the case 6 when the contacting plates of two cars contact, each being guided in their proper position by the guides 21, permitting the air and steam ports to properly unite. And at this juncture, pressure is placed upon the hexagon sleeve 14, which has a tendency to impart pressure upon the coil spring 12 located around the spindle bolt 13. The pressure of this spring is of sufficient tension to retain the contacting plates in position during the variation or irregular movement of the moving train; and while both couplers are connected and during the movement of the train, any extra pressure which might be brought against the coupling will operate upon said spring. When said plates are brought in contact this rearward pressure upon the spring has a tendency to cause the ends of the locking bars 18 to pass outwardly through the elongated slots 16 and outwardly into the openings formed in the projecting lugs 25 on the opposite connecting plate. Since the ends of the thrust-bars are held in the block 10 and connected to the pivotal end of the locking bars, the rearward movement of the block is not disturbed by the contact of each plate until the locking bars are in locked position, then when extraordinary pressure is brought upon the coupling, such movement is permitted to operate against the outer spring 11 in the casing, which permits resiliency to the block, yet holds the thrust-bars in rigid position.

The air and steam connecting face plate on each car is identical so as to perform an

absolute leak-proof connection when in contact.

In Fig. VI, I show a leverage effect on the action of the spring 11 under pressure on the locking bars which fulcrum from the lug L formed on the back of the connecting plate 20 and a sufficient portion of said material in the plate 20 is cut out at the point shown by J to allow a further motion of the locking bars 18 under action of the coil spring 11 transmitted through the thrust-bars 17, and the direction of the groove 16 being curved toward the connecting plate at the point indicated by the letter J reduces the resistance and tends to increase the wedging power of the short arm lever end of the locking bar 18, through the opening formed in the lug 25, bringing the connecting plates tightly together with each oscillation of the car and taking up any slack that might exist.

Having fully described my invention, what I claim as new and desire to have secured to me by the grant of Letters Patent, is:

1. An automatic air and steam connection comprising a face plate in which are located air and steam ports; a reciprocating sleeve; a casing; a hanger in which the casing is tiltingly mounted; a locking mechanism carried by the case and the sleeve; and a spring mechanism communicating with the sleeve and locking mechanism whereby the face plates and two couplers are held in rigid connection, substantially as specified.

2. A device of the class described comprising a hanger supported with a drawbar of a car; a casing tiltingly mounted in the hanger; a spindle bolt extending through the case and permitted to reciprocate therein; a sleeve mounted upon the spindle bolt; a guide block supported in the casing and around the sleeve; a face plate supported on the sleeve; a pair of thrust-bars connected to the guide block and supported to the sleeve; a pair of locking bars connected to the thrust-bars and operating in grooves formed in the sleeves; and lugs provided with openings formed on the face plates through which the ends of the locking bars are adapted to pass when said plates are brought in contact, and springs for retaining the sleeve and locking bars in contact when the couplers of adjacent cars are in contact, substantially as specified.

3. A device of the class described comprising a coupling composed of a face plate provided with a plurality of air and steam ports; a spindle bolt secured to said connecting plate; a sleeve located around said spindle bolt and connected to the connecting plate; a hanger-bracket; a casing tiltingly mounted in said hanger-bracket; a guide block slidably mounted in the casing, said block provided with a central hexagon



opening through which operates the sleeve; a spring located in said casing, one end contacting with the end of the casing, the other with the sleeve; a second spring located in  
 5 said casing, its one end contacting with the end of the casing, the other with the guide block; and a plurality of locking bars carried by the block and sleeve by which the contacting plate of the adjacent car is held  
 10 in locked position with the adjacent plate when said plates are brought in contact, substantially as specified.

4. A device of the class described comprising a hanger-bracket; a spring-case tilt-  
 15 ingly mounted in said bracket; a guide block slidably mounted in said case; a sleeve operating in said guide block; a connecting plate provided with a plurality of air and steam ports secured to the end of the sleeve;  
 20 a spindle bolt passing centrally through the sleeve and case; a spring located around the bolt contacting with the end of the case and sleeve; a spring located in the case contacting with the case and block; a plurality  
 25 of thrust-bars movably mounted in the block; locking bars connected to the thrust-bars and operating through slots formed in the sleeve; and lugs formed on the connecting plates with which the locking bars con-  
 30 tact for locking the adjacent plate when the couplers are brought in contact, substantially as described.

5. A device of the class described comprising a hanger-bracket in combination

with a drawbar; a case tiltingly mounted in 35  
 the hanger-bracket; a guide block slidably mounted in the case and supported on guides; a sleeve having a portion hexagonal in form and operating through a hexagonal  
 40 opening in the guide block; a connecting plate rigidly mounted on the end of the sleeve; a plurality of guides formed on the contacting plate for guiding the plate on the adjacent car so as to properly unite the  
 45 air and steam ports formed in each plate; a pair of thrust-bars supported to the guide block and movably mounted therein; a pair of locking bars connected to the opposite ends of the thrust-bars and operating  
 50 through grooves formed in the sleeve; lugs formed on the plates, each provided with openings through which the ends of the locking bars are passed for retaining the connecting plates in locked position when  
 55 brought in contact, and a plurality of springs located in the case contacting with the sleeve and guide block for regulating the movement of the sleeve and block during the variation of movement of the cars while in action, substantially as specified. 60

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

HERKIMER L. MINER.

Witnesses:

ALFRED A. EICKS,  
 WALTER C. STEIN.