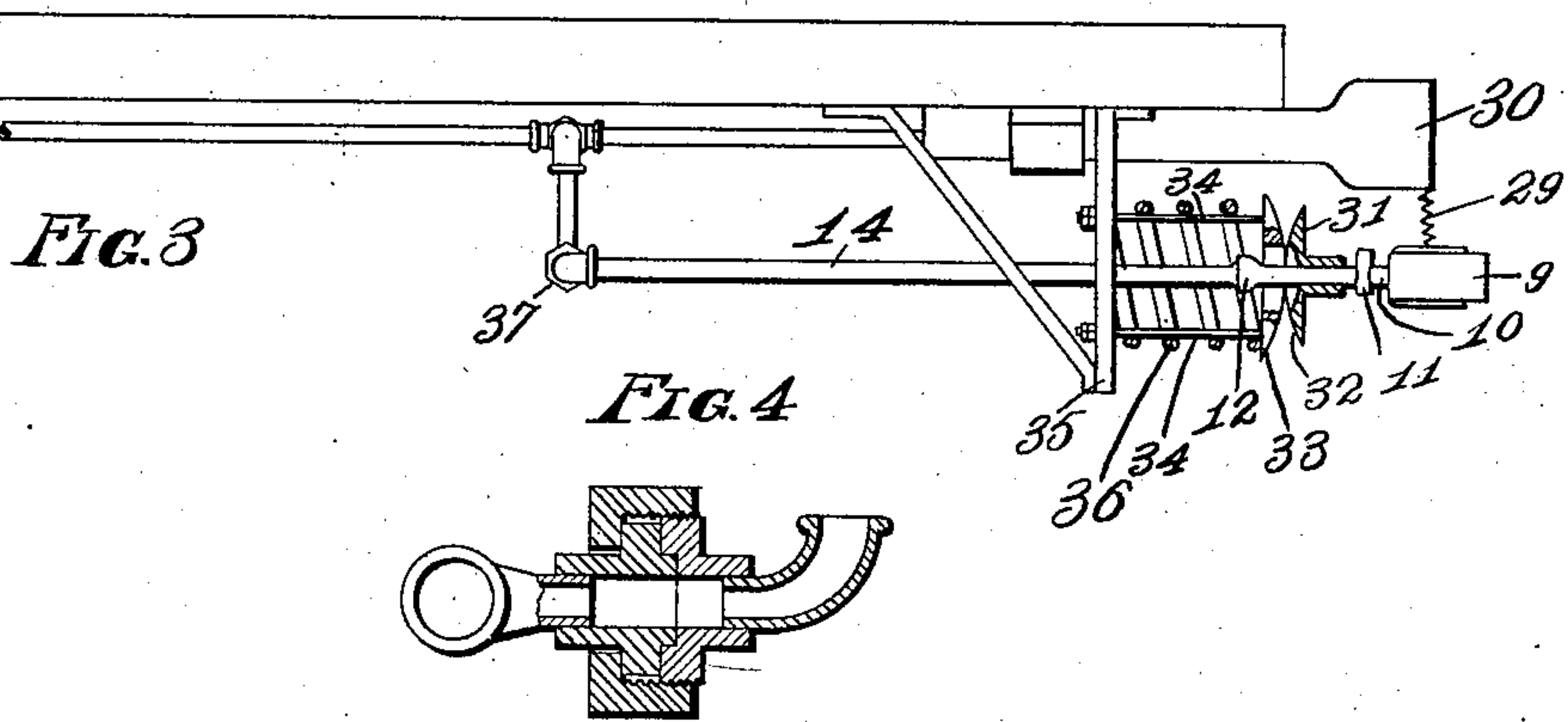
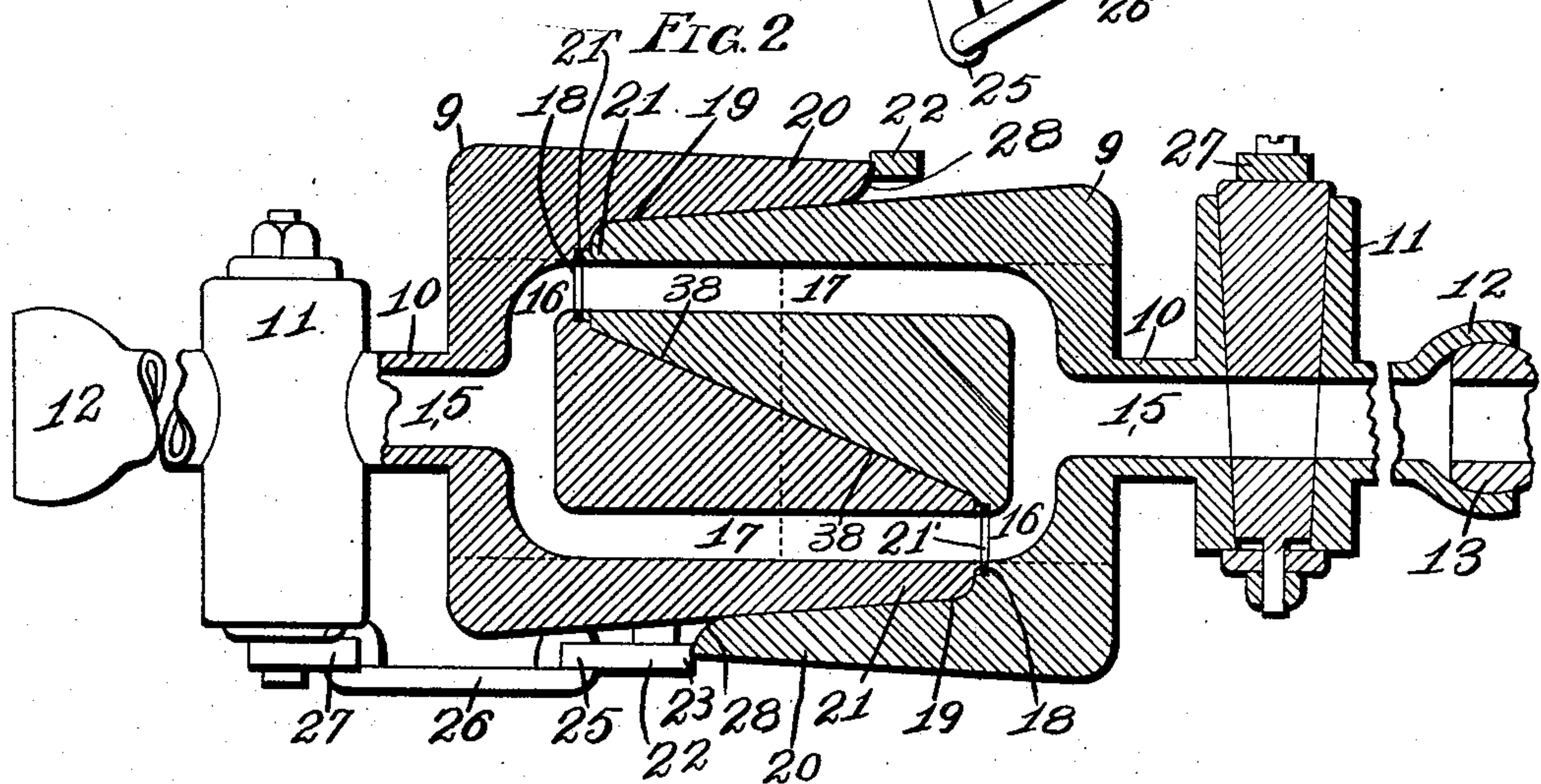
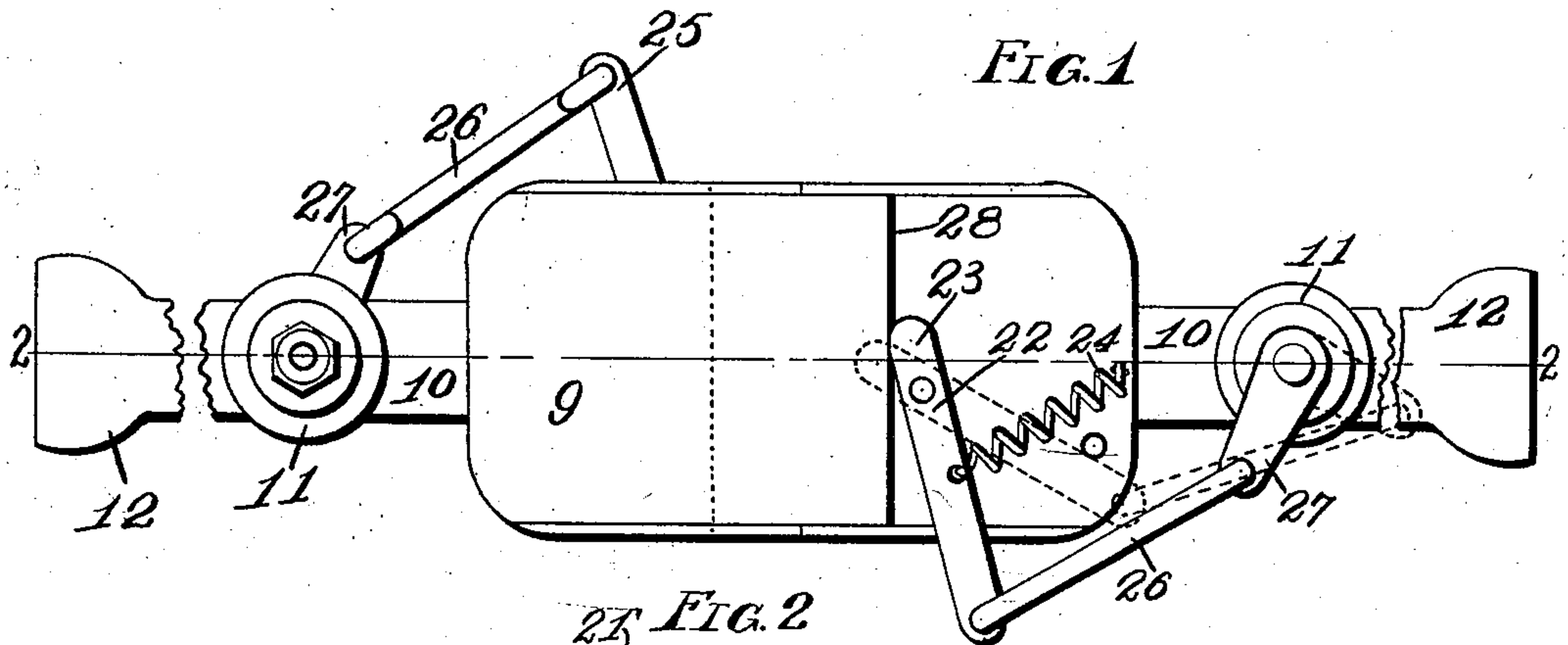


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AIR, STEAM, OR HOT WATER COUPLING.  
APPLICATION FILED FEB. 21, 1910.

969,637.

Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.



Witnesses  
W. C. Stein  
L. A. d. M. Intyre

Inventor  
George N. Knapp  
by Hopkins & Eick's Attys.

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Fig. 5

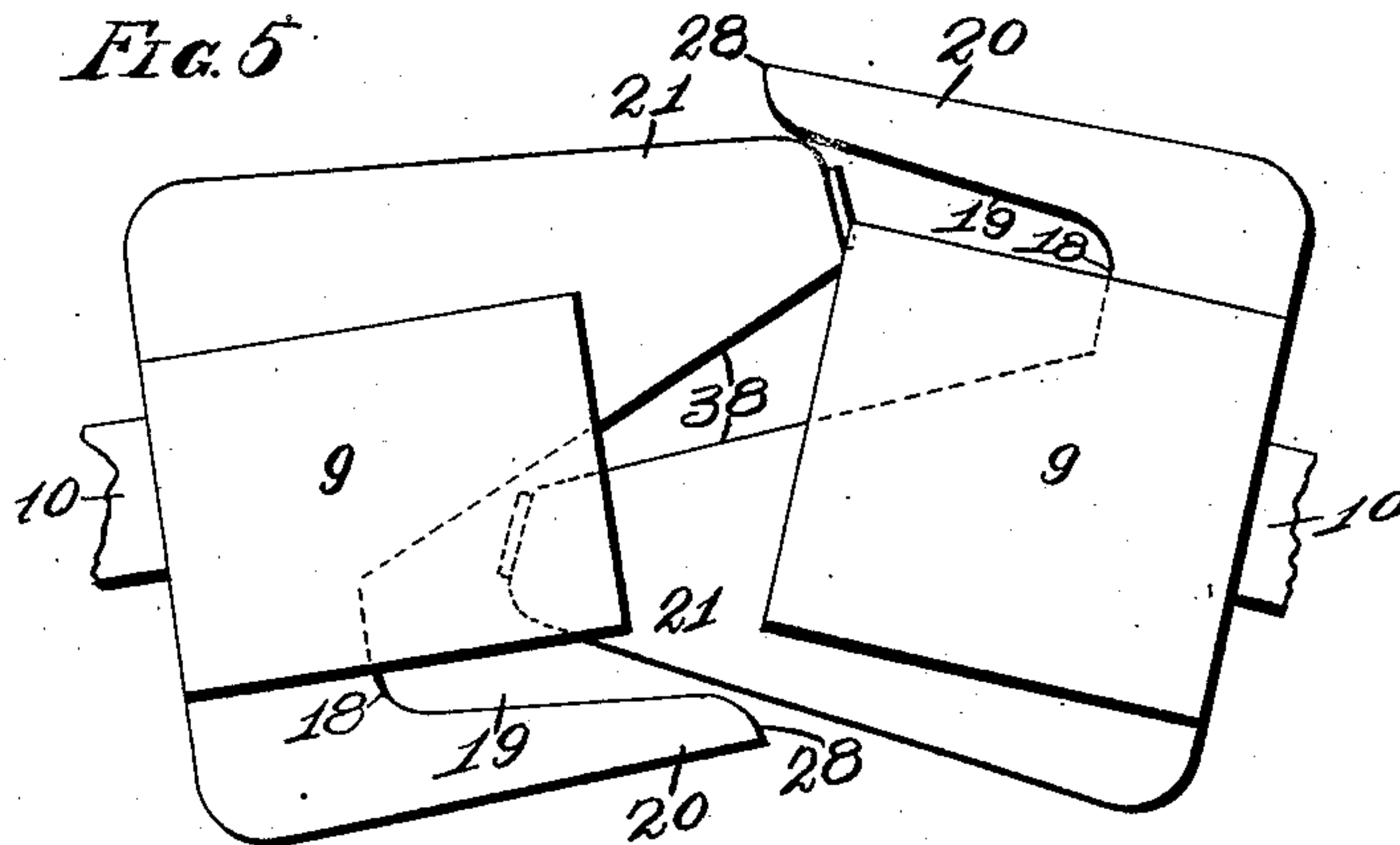


Fig. 6

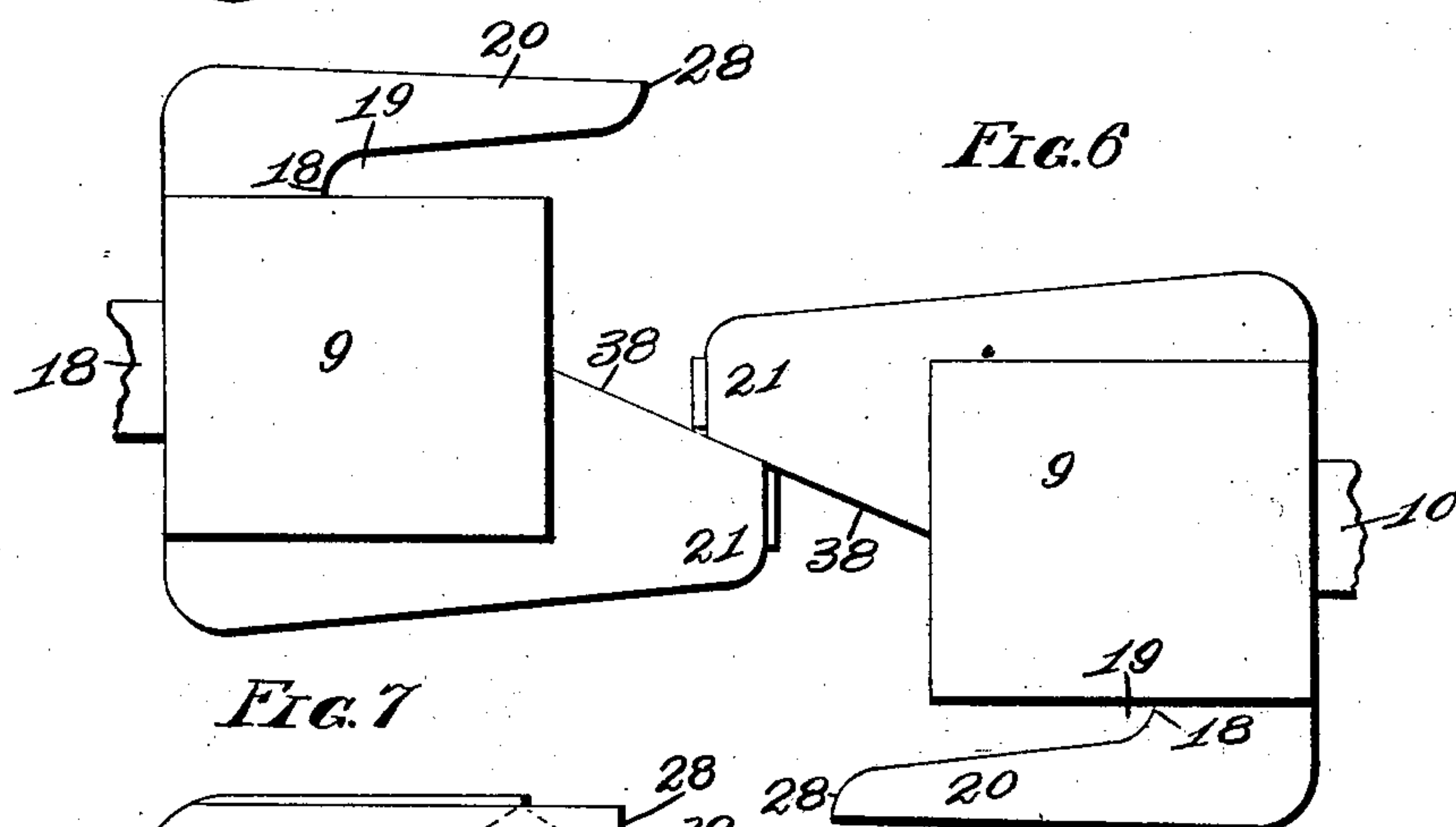


Fig. 7

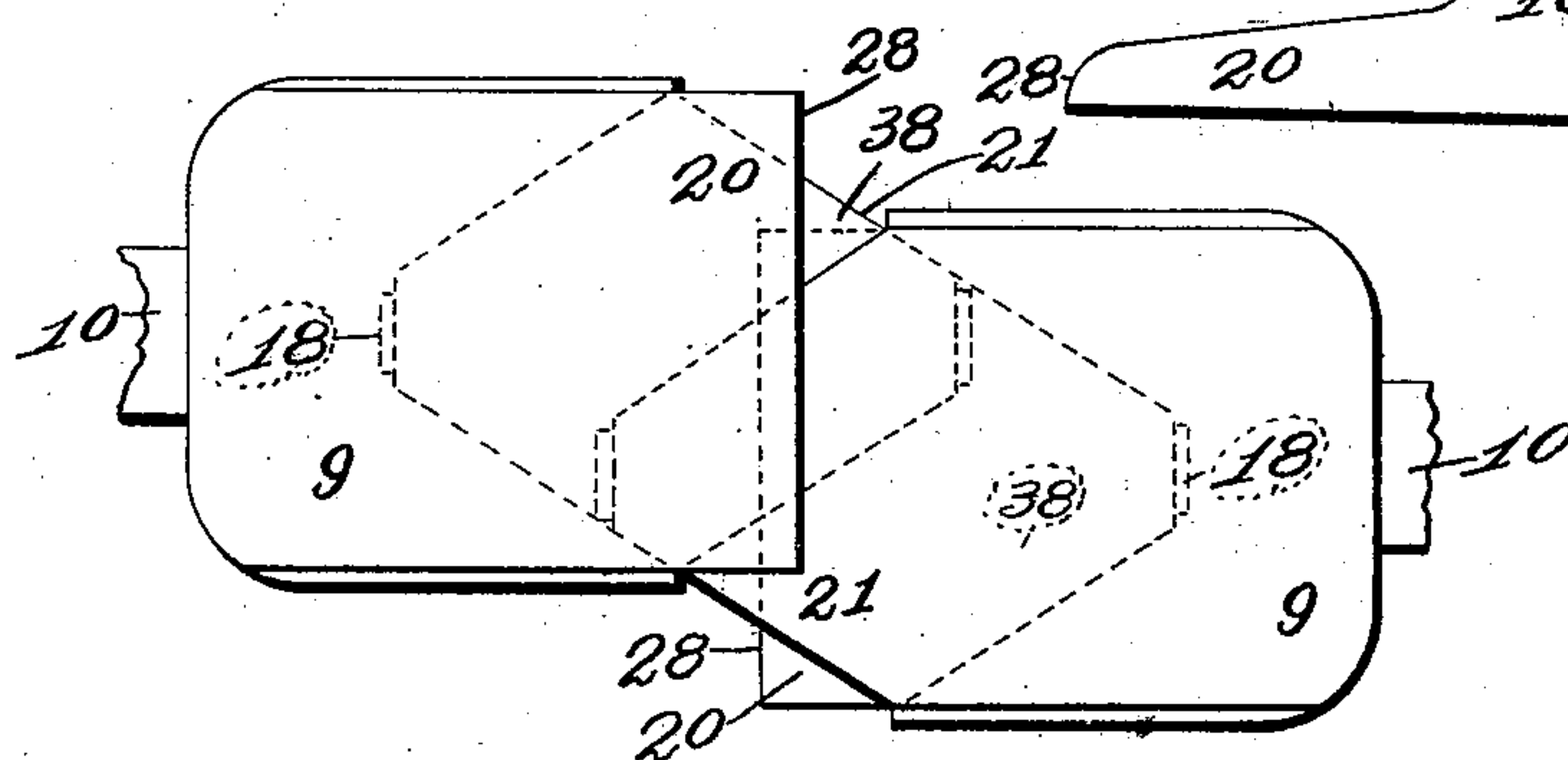
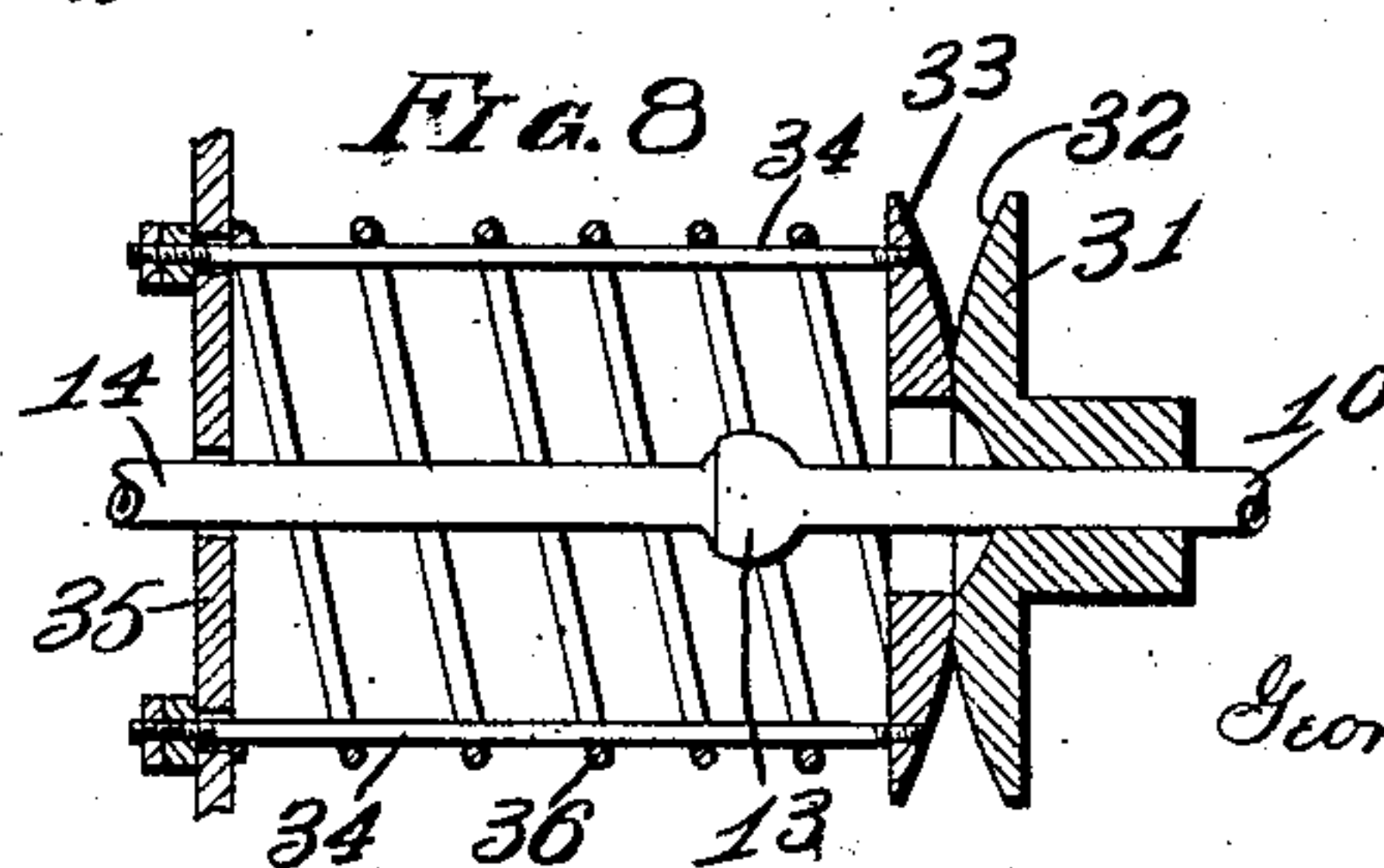


Fig. 8



Witnesses  
H. C. Stein  
L. A. L. McIntyre

Inventor  
George N. Knapp  
by Hopkins & Eick's Attys.



# UNITED STATES PATENT OFFICE.

GEORGE N. KNAPP, OF ST. LOUIS, MISSOURI.

AIR, STEAM, OR HOT-WATER COUPLING.

969,637.

Specification of Letters Patent.

Patented Sept. 6, 1910.

Application filed February 21, 1910. Serial No. 545,128.

*To all whom it may concern:*

Be it known that I, GEORGE N. KNAPP, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Air, Steam, or Hot-Water Couplers, of which the following is a specification.

This invention relates to improvements in an air, steam or hot water coupling adaptable for use on railway cars and coaches, and is suspended beneath the car coupling and arranged to automatically couple itself and remain in coupled position during the irregular and varying movement of the coupled coaches.

A further object of my invention is to provide a coupler which is adaptable for use in conveying air, steam or hot water from one car to the other, each coupling on the car being provided with a movable joint whereby the coupler heads when joined together will remain in contact during the various irregular movements and vibrations of the moving cars.

In the drawings—Figure 1 is a side elevation of my device showing the same in coupled position. Fig. 2 is a sectional view taken on line 2—2 of Fig. 1. Fig. 3 is a view of a portion of a car, showing a car coupler and train pipes, with my invention in its operative position. Fig. 4 is a detail sectional view of a universal joint used in the train pipe connection to which my improved coupler is attached. Fig. 5 is a top plan view of two of the coupler heads, showing the same in their relative position when in the act of coupling while on a curve. Fig. 6 is a similar view showing two of the coupler heads in the act of coupling when each is out of alinement. Fig. 7 is a side view of two of the couplers, showing the same in the act of coupling when one of the couplers is somewhat elevated above the plane of the other. Fig. 8 is a detail sectional view of the spring connection used in connection with my improved coupler.

In describing my invention I will refer to the construction of one of the couplers, as each is identical and one an exact duplicate of the other.

In the construction of my invention I provide a head 9 having a shank 10. In said shank is located a valve 11. To the rear of the valve and on the end of the shank is formed a socket 12 which acts as a knuckle-joint when applied over the knuckle 13

formed on the end of the pipe 14. By this construction of knuckle and socket, the head, together with its valve and shank will be permitted to assume various positions, both horizontally and vertically so as to accommodate the irregular and varying movement of the running train. The shank is provided with a port 15 which corresponds with the opening in the pipe 14 and in the head 9 is formed ports 16 and 17, each connecting with the port 15 and arranged to correspond with like ports formed in the adjacent head. The port 16 terminates at the point indicated by the numeral 18 into a cavity 19. The outer wall of the cavity is formed into a guide projection 20 which will permit the projecting end or nose 21 of the adjacent coupler to guide its way into the cavity 19 and around the port 16. In the cavity is located a gasket 21' of resilient material, such, for example, as rubber, to act as a leak-proof connection between the contacting surfaces of the coupler heads.

On the coupler head is pivotally connected a lever 22 so arranged as to permit its free end 23 to assume the position as shown by dotted lines in Fig. 1, when the head is out of contact, and the lever 22 is placed in its position by means of the spring 24. The opposite end 25 of the lever 22 is connected to a connecting link 26 and said link is pivotally attached to a valve handle 27 by which the valve is operated so as to open the port connection when the said heads are brought together. The contacting edge 28 of the adjacent coupler when contacting with the end 23 of the lever 22 will place the valve operating mechanism in the position as shown by solid lines in Fig. 1, automatically opening the port connection and permitting the air, steam or hot water to pass freely from one train pipe connection to the other.

Each head is held in horizontal position by a spring 29 attached to the under side of the ordinary car coupler 30, and upon the shaft 10 between the valve and the knuckle-joint is located a shoulder washer 31 having a curved contacting surface 32; this surface contacting with a similar washer 33 supported by a frame which consists of a plurality of bolts 34 extending rearwardly through a bracket 35, which is suspended beneath the car-body (see Fig. 3) and around the bolts 34 and contacting with the bracket 35 and the washer 33 is a spring 36



of such tension as to at all times keep the heads 9 in contact during the vibratory action of the moving cars, the said heads 9, as will be observed in Fig. 3, being so arranged  
5 as to project a slight distance in advance of the car coupler 30 so that when the cars are coupled the heads 9 when brought in contact will compress the springs 36 on each car so  
10 as to provide sufficient tension upon each of the couplers, keeping the contacting points of each coupler in a tight position.

During the backward and forward movement of the couplers, a sufficient amount of movement is exerted on the pipe 14 and to  
15 provide for this movement I place on the end of said pipe a swivel joint, as shown in Fig. 4 and indicated by the numeral 37, the detail of construction of this joint being immaterial.

20 By referring to Figs. 5, 6 and 7, I show various positions assumed by the heads preparatory to coupling the same, and by these illustrations the guides are shown to contact and automatically slide each head in its  
25 proper position so as to bring the port connections in direct and operative communication. Fig. 5 represents the couplers in position while on a curve. Should the coupler assume the position as shown in Fig. 6, the  
30 angular surfaces 38 will contact and while the couplers are brought together they guide each nose into its proper cavity. The same feature of guiding each coupler in position is illustrated in Fig. 7 where one coupler

assumes a position higher than the other, 35 and while being driven together will automatically lock themselves in the cavities.

I may, if desired, arrange the heads with a plurality of ports so that the same coupler can be utilized for the admission of com- 40 pressed air, steam or hot water, such as is necessary on a passenger coach.

Having thus fully described my invention, what I claim as new and desire to have secured to me by the grant of Letters 45 Patent, is:

An air, steam or hot water coupler comprising a coupler head having an inclined face, a guide extending partially over the inclined face, a supply pipe connected to the 50 coupler head, a valve mounted in the supply pipe, a lever mounted on the coupler head for opening the valve when the coupler head engages with another coupler head, a spring for closing the valve when the head is dis- 55 engaged, a ball and socket joint in the supply pipe, a spring for holding the head in close contact with another head, a spring for supporting the head and passages formed in the coupler head, substantially as 60 specified.

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

GEORGE N. KNAPP.

Witnesses:

ALFRED A. EICKS,  
WALTER C. STEIN.