

2 Sheets—Sheet 1.

COUPLING FOR RAILWAY STEAM HEATING PIPES.

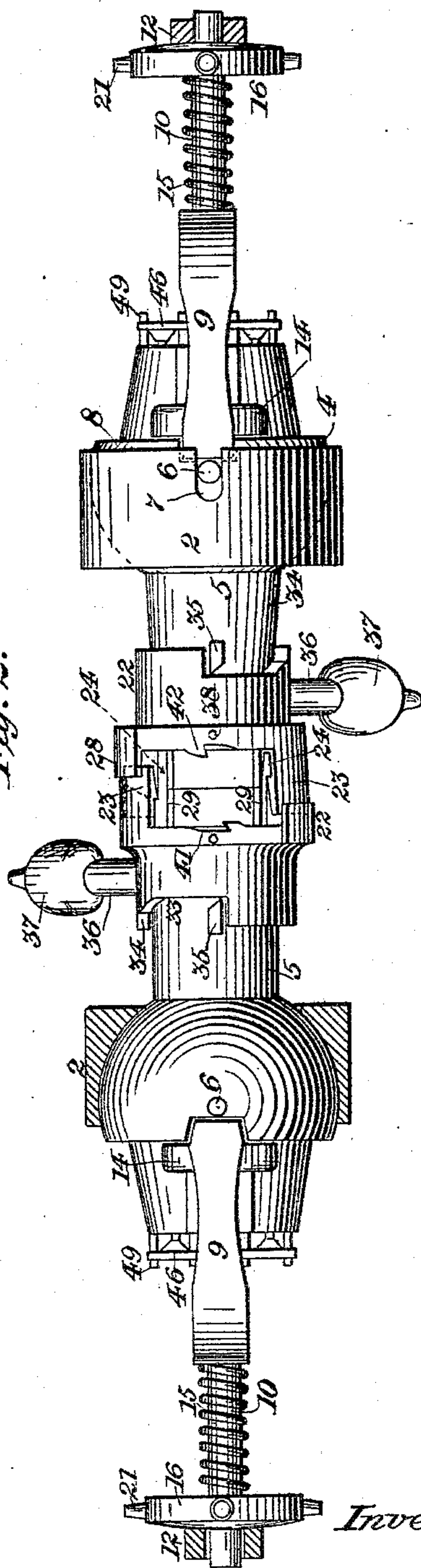
Patented Nov. 5, 1889.



Witnesses:

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Inventor:

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(No Model.)

2 Sheets—Sheet 2.

R. I. HAMPTON.

COUPLING FOR RAILWAY STEAM HEATING PIPES.

No. 414,640.

Patented Nov. 5, 1889.

Fig. 3.

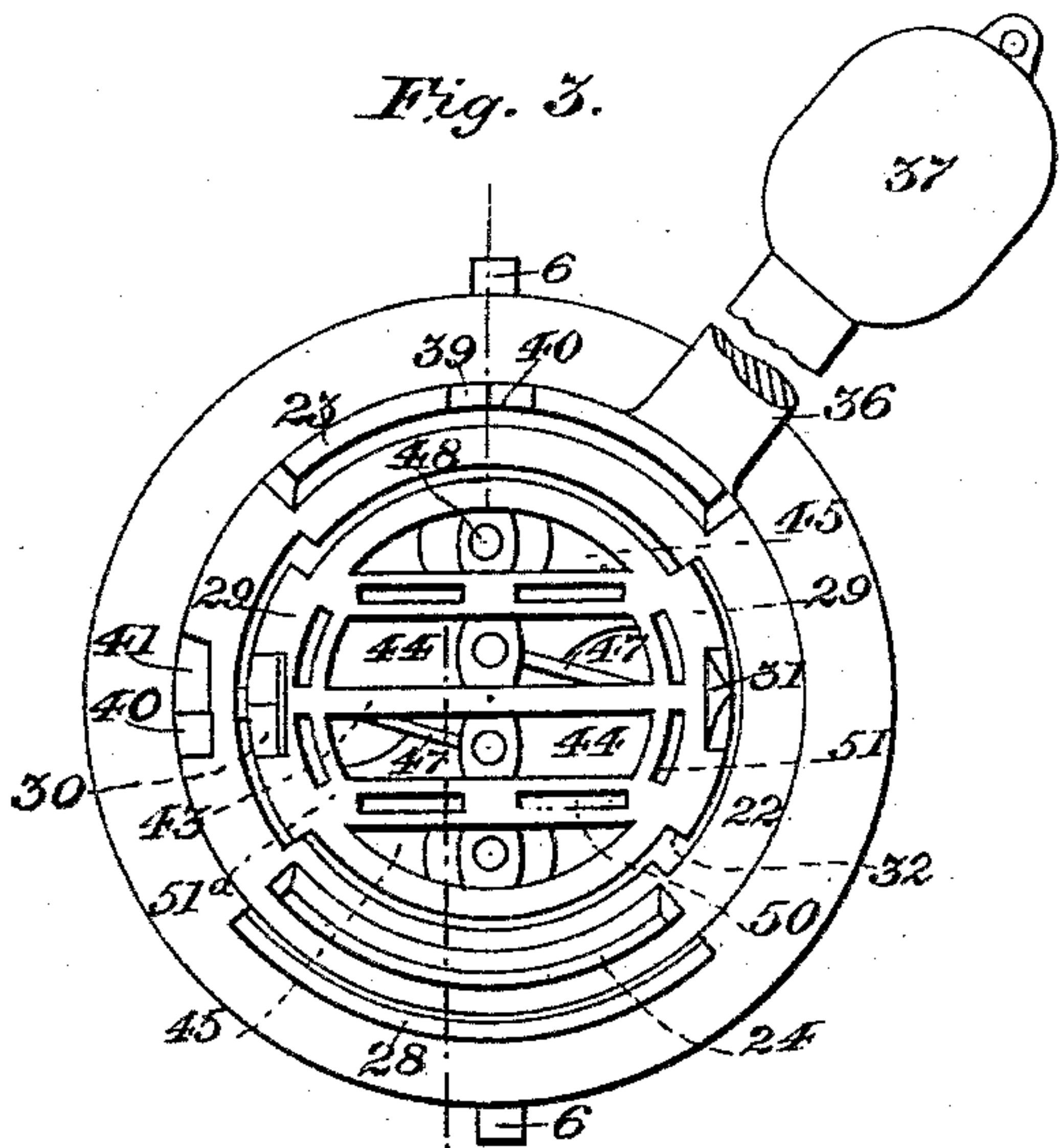


Fig. 4.

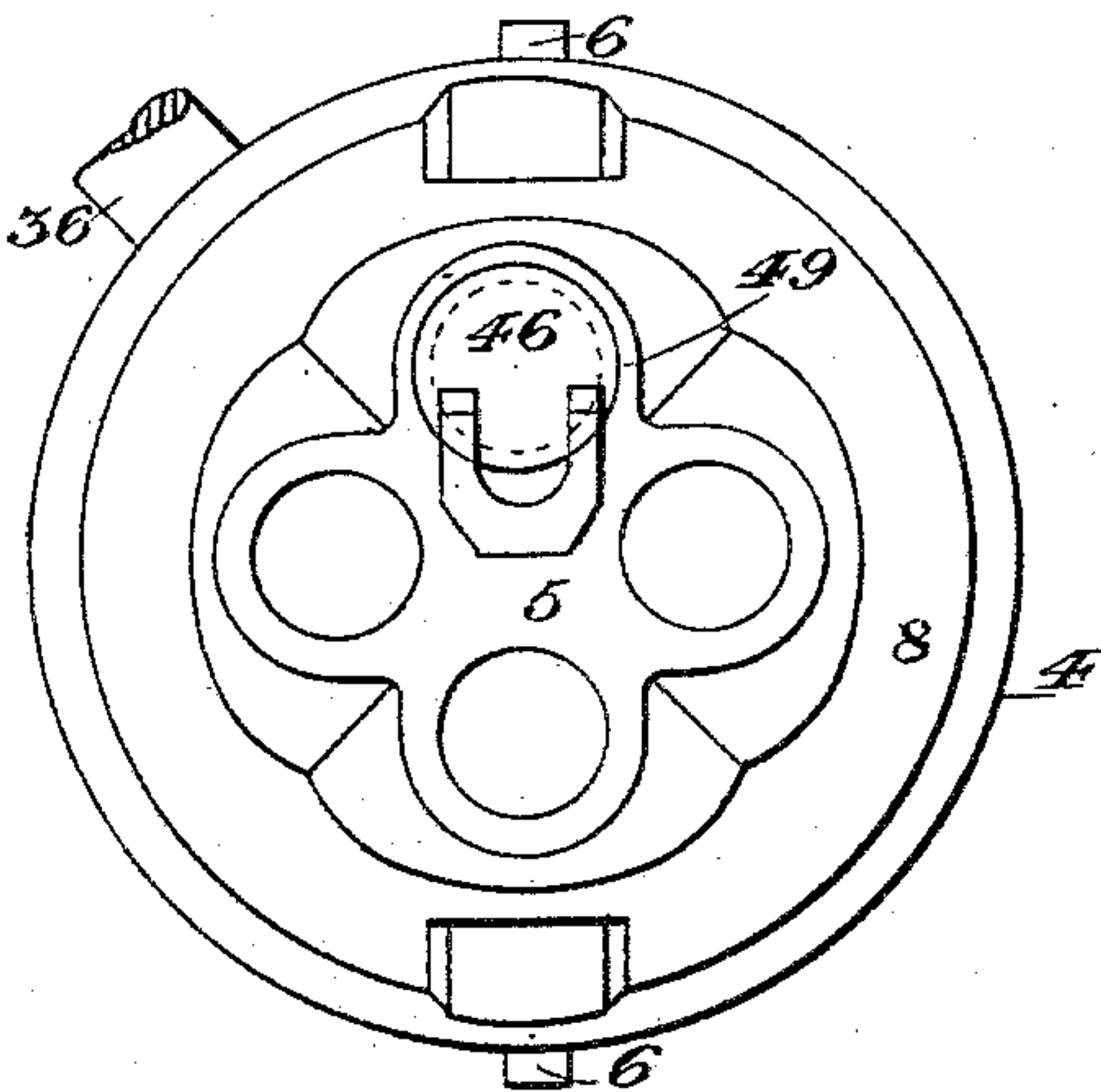


Fig. 5.

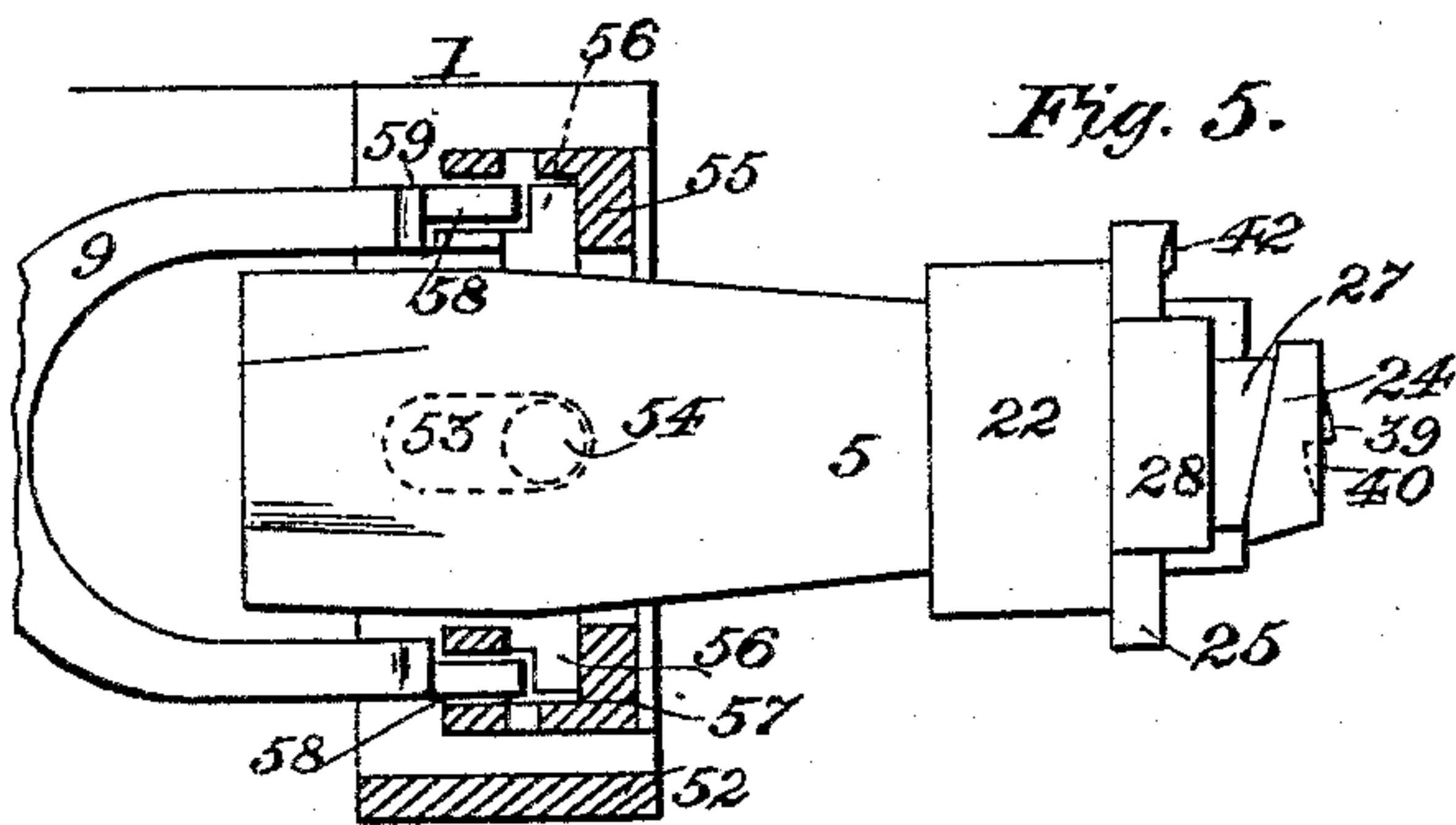


Fig. 6.

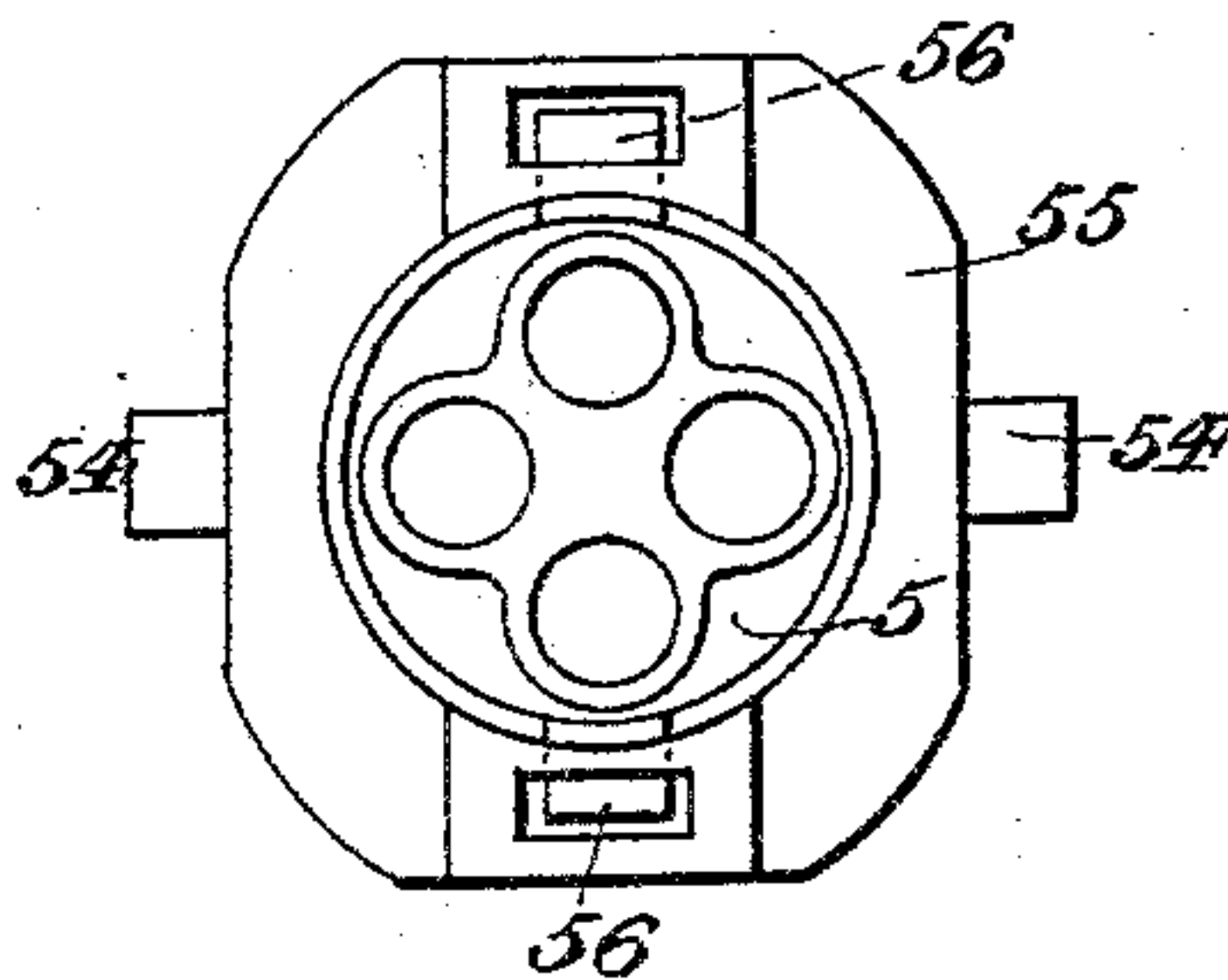


Fig. 7.

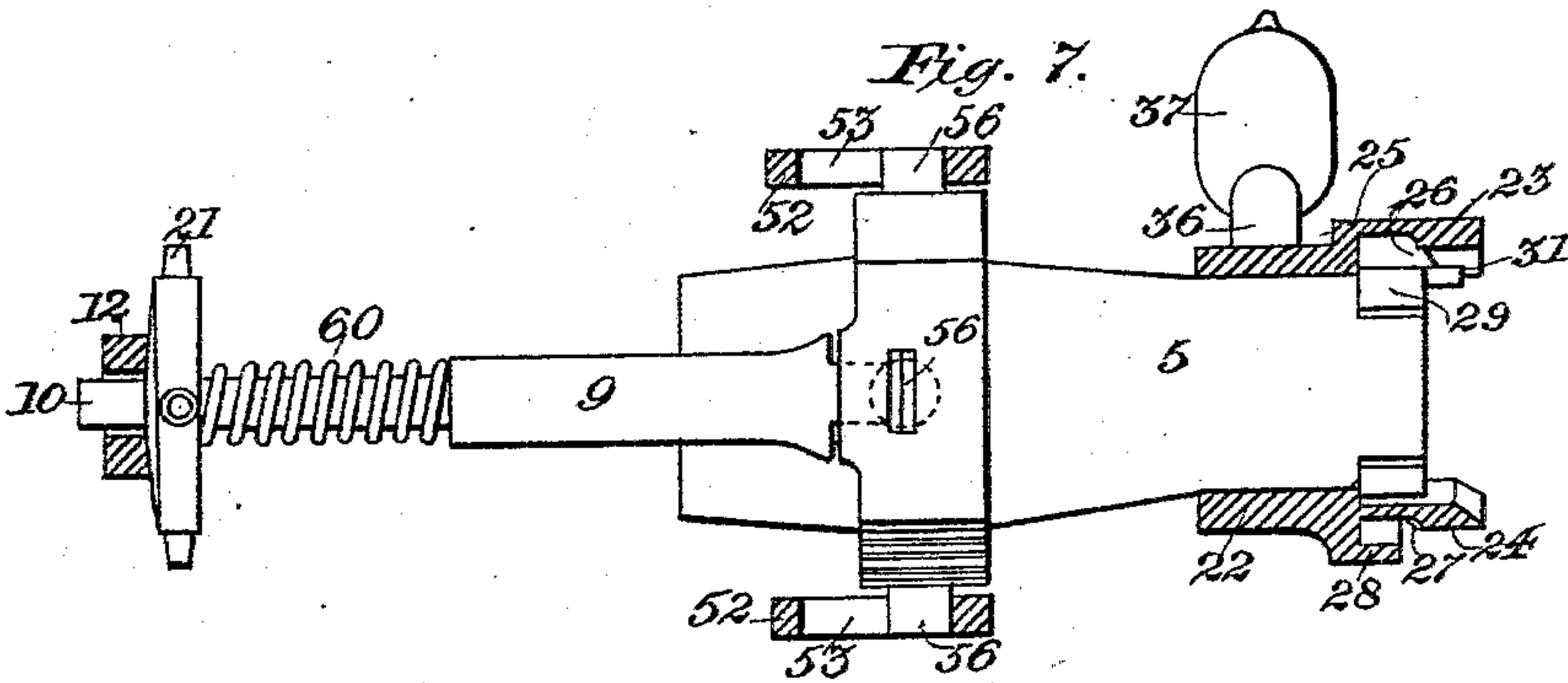
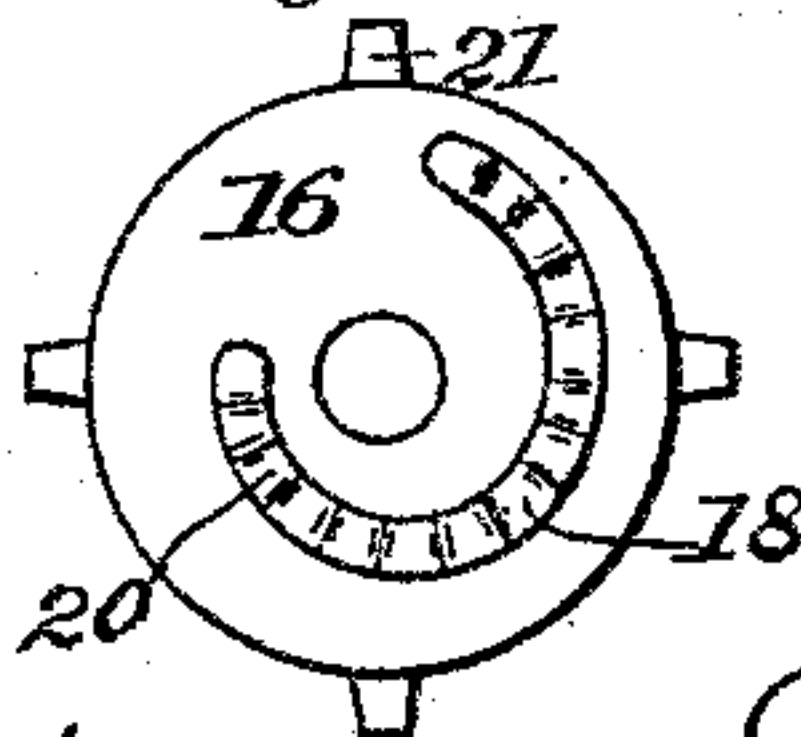


Fig. 8.



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UNITED STATES PATENT OFFICE.

ROBERT I. HAMPTON, OF ATHENS, GEORGIA.

COUPLING FOR RAILWAY STEAM-HEATING PIPES.

SPECIFICATION forming part of Letters Patent No. 414,640, dated November 5, 1889.

Application filed August 21, 1889. Serial No. 321,493. (No model.)

To all whom it may concern:

Be it known that I, ROBERT I. HAMPTON, a citizen of the United States, residing at Athens, in the county of Clarke and State of Georgia, have invented new and useful Improvements in Couplings for Railway Steam-Heating Pipes, of which the following is a specification.

My present invention relates to couplings for the pipes employed upon railway-trains for conveying a heating medium through the interiors and for the brake-hose and the pipes by which the conductor's signals are transmitted to the engineer when the latter are used.

It is the purpose of my invention to provide a coupling section or head in which the separate channels communicating with the train-pipes shall be assembled.

It is also the purpose of my invention to combine with each coupling-section automatic centering devices, whereby the parts are normally held in proper position for engagement, and whereby, also, the parts may readily yield to the lateral and vertical movements of the cars either by irregularities in the road, by curves, or by passing from one grade to another.

It is my purpose, finally, to combine with the centering device an automatically-locked adjusting device, whereby the engaging end of the coupling section or head may be raised or lowered, as circumstances may require, to enable it to engage with the end of a section upon a car standing higher or lower upon its trucks.

Figure 1 is a side elevation with one of the coupling-sections and a fractional part of the other in vertical sections, the section being taken on the plane $x x$, Fig. 3. Fig. 2 is a plan view of the parts shown in Fig. 1, a part thereof being shown in horizontal section. Fig. 3 is an elevation of one of the coupling sections or heads, taken from the forward end. Fig. 4 is an elevation of the same, taken from the rearward end. Fig. 5 is a sectional side elevation showing a modified construction. Fig. 6 is an elevation of the parts shown in Fig. 5, taken from the rear end. Fig. 7 is a plan view of the same, partly in section. Fig. 8 is a detail elevation of one of the adjusting devices, showing the construction

whereby it is automatically locked at any point to which it is adjusted.

In the said drawings I have shown only the coupling sections or heads and their immediate adjuncts, without illustrating any portion of the cars; but it should be understood that the bearings or supports for the coupling-sections may be mounted directly upon the bottom of the car-platform, or they may be attached to the car-coupler when the construction of the latter is such as to permit.

In the drawings, therefore, the reference-numeral 1 designates any part of the car or car-coupler, to which is attached a depending bracket 2, having a circular opening 3, and provided upon its rear face with a concave seat or socket, which receives a hemispherical enlargement 4, formed upon the coupling section or head 5, which projects through the opening 3, the diameter of the latter being such as to permit the coupling-head to turn freely in any direction through an arc of twenty or thirty degrees, or more, without striking the edge of the opening. Upon the hemispherical projection 4, at or near its polar points, are placed two studs 6, which lie in elongated slots 7, formed in the upper and lower parts of the bracket 2. These studs form the pivots upon which the horizontal movements of the coupling-head are made, and they also permit the vertical movements by their play in the slots 7, which limit said movements and prevent the coupling-head from rotating upon its own axis.

The coupling-head projects somewhat in rear of the hemispherical projection 4 and immediately in rear of the studs 6. This projection is cut down to the diameter of the head, thereby forming an annular shoulder 8. Directly in rear of the coupling-head is arranged a fork or yoke 9, mounted upon a spindle 10, supported at its end by a drop-bracket 12 in the manner hereinafter to be described. The branches of the fork or yoke 9 lie in a substantially vertical plane, and their extremities enter notches or recesses 13 in the shoulder 8. Upon each branch near its end is rigidly mounted a cross-head 14, which abuts against the flat face of the shoulder 8, said contact being preserved by an equalizing or centering spring 15, coiled upon the spindle 10 and pushing the fork or yoke 9 to-

ward the bracket 2. Upon the rearward end of the spindle 10 is loosely mounted a disk 16, having a convex rearward face which fits a concave seat on the drop-bracket 12. The end of the spindle is carried through the disk 16 and lies in a vertical slot 17, formed in the drop-bracket. In the rearward convex face of the disk 16 is formed a spiral slot 18, Fig. 8, which receives a stud 19, projecting from the drop-bracket. The bottom of this slot is provided with a series of teeth or corrugations 20, which engage the stud 19, but are enabled to pass over the same by the yield of the spring 15, which bears against the face of the disk 16. Radially-projecting handles 21 may be formed or mounted on the disk 16 to facilitate its revolution.

Upon the forwardly projecting end of each coupling-head is mounted a coupling-sleeve 22, provided with two opposite curved plates 23 and 24, which project beyond the end of the coupling-head. One of these plates 23 is mounted upon a ring 25, and is provided with a cam-groove 26, formed upon its interior curved face, while the other plate is mounted upon said ring at a point nearer the axis of the coupling-head, and is provided upon its outside convex face with a cam-groove 27, cut at an angle corresponding with that of the cam-groove 26. A guard-plate 28 partly overhangs the cam-groove 27, or may extend entirely over the same. The sleeve upon each section or head is so formed as to revolve freely thereon, and is prevented from separating therefrom by segmental lugs or blocks 29, mounted upon opposite sides of each coupling section or head, and provided with alternating seats 30 and guides 31, which engage with a guide and seat of like construction upon the other coupling-head. The ring 25 lies just behind these segmental lugs 29, and is provided at two opposite points with recesses or openings 32 of such size as to admit these lugs when the sleeve is drawn forward. In the rearward edge of each sleeve is formed a recess 33, having at one end an inclined or angular portion 34, these parts being so located that upon revolving the sleeve upon the coupling-head the inclined edge 34 reaches a stud or cam-block 35, rigid upon the coupling just at or about at the moment the recesses or openings 32 register with the segmental lugs 29. The inclined edge 34, riding upon the cam-block 35, projects the sleeve forward sufficiently to cause the lugs 29 to enter or partly enter the recesses 32 in the sleeve or in its ring, and until the sleeve is retracted it cannot rotate upon the coupling-head. A lever-arm 36 may be and preferably is mounted upon each sleeve and provided with a weighted extremity 37, whereby rotation is produced automatically whenever either sleeve is retracted or sufficiently drawn back on its coupling-head to remove the lugs 29 from the recesses 32. In order to prevent the sleeve from slipping off the coupling-head, a pin 38 is passed through the ring 25 to lie

behind the lugs 29 when the latter register with the recesses 32, the pin being set back far enough to allow the said lugs to partly enter the recesses, for a purpose presently to be described.

Each of the sleeves 22 is the counterpart of the sleeve upon the opposite coupling-head, and upon each of the plates 23 is formed or mounted a detent 39, projecting from the edge of the plate adjacent to a notch 40 cut therein. In the ring 25, between the plates 23 and 24, is cut a recess or notch 41, and upon the vertical face of the ring is formed a detent 42, abutting upon one edge of the said notch or recess.

The forward portion of the coupling-head is divided by horizontal partition-walls 43 into two separate channels or passages 44, lying upon each side of the central partition, and two additional channels 45, one above and the other below the passages 44. As these channels pass to the rear of the coupling-head they assume a cylindrical form and emerge at the rear end in four tubular passages, two of which lie in a vertical and two in a horizontal plane. The live steam and dead steam or return-steam from the heating apparatus find passage in the two channels 44, while the air or steam for the brakes and the conductor's signals flows through the channels 45. At the rearward end of each channel I locate a puppet-valve 46, carried by a stem 47, which lies in the channel closed by said valve, and has its end projecting from the front of the coupling-head, where it lies in a keeper or guide-lug 48, in front of which it projects far enough so that when the connecting-head is brought into coupling engagement the stem will be driven back far enough to unseat the valve. Upon the rearward end of each channel are mounted inclined guideways 49, up which the valve rides as it is unseated, and down which it slides by gravity as the coupling-heads separate to close the passage. Any other form of automatic device may be substituted, however—such as a common spiral spring acting upon the stem.

The operation of the coupling is as follows: The disks 16 being operated to raise or lower the spindle 10 and bring the forward ends of the coupling-heads to the same height to enable them to engage, the sleeve on one of said heads is partly rotated until the inclined edge 34 strikes the cam-block 35 and throws the sleeve forward until the segmental lugs 29 enter the recesses 32. The coupling-heads are now brought together, the plate 23 upon one entering the space between the similar plate 23 and the plate 24 upon the other sleeve. When the sleeve is set or adjusted for coupling in the manner described, the extent of the recess 32 permits a slight retrograde revolution upon the coupling-head, whereby the projecting detent 39 on the plate 23 will strike the detent 42 on the ring 25, thereby pushing the sleeve set for coupling backward until it

is entirely disengaged from the blocks or lugs 29, whereupon the weighted lever causes a revolution, which instantly locks the parts together. In uncoupling either sleeve is rotated
 5 in a similar manner, and the action of the inclined edges 34 on the cam-block throws the sleeve forward and causes the detent 42 on the plate 23 to lock or engage with the detent 42 on the ring, where it remains until the
 10 coupling-heads are drawn apart, when the sleeve which has been set drops or turns slightly until checked by the segmental lugs 29, when it is in position for coupling without resetting. Either sleeve may be set in this
 15 manner with the same result. The guides and guide-seats 30 and 31 insure a perfect register of the meeting ends of the coupling-heads, and the arrangement of the channels or passages one above the other renders it un-
 20 necessary that the train-hand effecting the coupling should pay any attention to the proper union of the parts.

In place of the ball-and-socket joint by which the coupling-head is connected with
 25 the bracket supporting it, I may use the gimbal-joint shown in Figs. 5, 6, and 7, in which the numeral 52 denotes the drop-bracket, which is provided upon each side with an elongated slot 53, receiving lateral studs or
 30 pivots 54 upon a ring 55, which surrounds a coupling-head. The coupling-head is also provided with similar pivots 56 upon its top and bottom, entering slots 57 in the upper and lower parts of the ring, thereby forming
 35 substantially what is ordinarily known as a "gimbal-joint." An equalizing or centering fork 57, the ends of which enter notches 58 in the top and bottom of the ring 55, and which are provided with lateral shoulders 59, similar
 40 to the cross-heads of the fork shown in Fig. 2, serves to enter the ring, and the square extremities of the fork bear against the square rearward faces of the upper and lower pivots of the coupling-head lying in the notches or
 45 slots 57 of the ring. The fork has a spindle and adjusting-disk similar in all respects to those already described, and is actuated by a coiled spring 60 in the manner already set forth.

50 I make no claim in this case to a two-part hose-coupling composed of like halves or portions, each half having a steam-passage through it and an air-space surrounding the steam-passage. Neither do I claim a two-part
 55 hose-coupling composed of like halves, each having a continuous unobstructed steam-passage through it and locking devices to connect the two for service, and each having in and as part of itself an air-space surrounding
 60 the steam-passage, as distinguished from a jacket applied externally to the coupling, as these features form the subject-matter of an application for Letters Patent filed by me upon the 25th day of June, 1889, Serial No.
 65 315,483.

I make no claim in this application to a pipe-coupling consisting of a sleeve having

recesses admitting segmental shoulders on the pipe, said sleeve being provided with a slot terminating in a bayonet-recess and receiving
 70 a pin on the pipe, said sleeve having also an outer and inner flange with interior and exterior channels having forward walls cut to the same pitch.

I make no claim, also, to these parts when
 75 the shoulders on the pipe are provided one with a guide-lug and the other with a seat, and when a catch-lug is placed upon the flat face of the sleeve between the flanges to engage a notch on the exterior flange. The sub-
 80 ject-matter specified in this disclaimer is covered by Letters Patent No. 410,889, dated September 10, 1889, issued upon an application filed by me upon the 4th day of May, 1889, Serial No. 309,650.

85 I also make no claim in this application to a coupling for steam and other pipes having, in combination with a suitable support, a coupling-head connected thereto by a universal joint and provided with separate in-
 90 terior channels for the steam, said channels being arranged one above the other at the forward end of the coupling-head and separated by horizontal partitions, and at the rearward end opening at the top and bottom
 95 and two sides of the coupling-head. This subject-matter is shown, described, and claimed in an application filed by me upon the 25th day of June, 1889, Serial No. 315,483.

What I claim is—

100 1. In a coupling for railway steam-heating and other pipes, the combination, with a suitable supporting-bracket having a concave seat and provided with an opening therein, of a coupling-head projecting through said
 105 opening and having a hemispherical enlargement lying in the concave seat of the bracket, and provided with an upper and lower pivot or stud lying in elongated slots in the top and bottom of the bracket, and a spring-actuated
 110 equalizing or centering fork, the extremities whereof enter notches in the enlargement of the head directly behind the pivots and are provided with cross-heads resting against the
 115 square rearward shoulder or face of the hemispherical enlargement, substantially as described.

120 2. In a coupling for railway steam-heating and other pipes, the combination, with a suitable bracket, of a coupling-head connected therewith by a universal joint and a spring-actuated centering or equalizing fork, by which the coupling-head is normally retained in longitudinal alignment with the car, sub-
 125 stantially as described.

130 3. In a coupling for railway steam-heating and other pipes, the combination, with a suitable bracket, of a coupling-head containing separate channels which communicate at their rear ends with the train-pipes, said head being connected with the bracket by a univer-
 135 sal joint, a centering or equalizing fork engaging said coupling-head and provided with a spindle passing through a vertical slot in a

drop-bracket in rear of the head, a disk loosely mounted on the spindle and having a spiral slot engaging a stud on the drop-bracket, and a spring coiled on the spindle and bearing against the fork and the disk, substantially as described.

4. In a coupling for railway steam-heating and other pipes, the combination, with a bracket, of a coupling-head connected to said bracket by a universal joint, an equalizing or centering fork engaging the coupling-head and having a spindle lying in a vertical slot in a drop-bracket behind the fork, a disk loosely mounted on the spindle and having a spiral slot or channel provided upon its bottom with corrugations or notches engaging a stud on the drop-bracket, and a spiral spring coiled on the spindle and bearing against the disk and the fork, substantially as described.

5. In a coupling for railway steam-heating and other pipes, the combination, with two separate and similar coupling-heads having segmental lugs mounted upon their opposite sides at the end and provided with guide-lugs and seats, respectively, of locking-sleeves rotatably mounted upon the engaging ends of the coupling-heads, each sleeve having an inner and outer projecting plate provided with cam-grooves upon their outer and inner faces, respectively, a recess in the rear edge of each sleeve having an inclined edge at one end, a detent and notch upon the outer projecting plate, adapted to engage a detent and notch in the ring carrying said outer plate, and interior recesses adapted to receive the segmental lugs on the coupling-heads and of slightly greater extent than said lugs, each

sleeve being also provided with a hand-lever and each coupling-head having a cam-block lying in the recess in its rear edge, substantially as described.

6. In a coupling for railway steam-heating and other pipes, the combination, with a suitable supporting-bracket, of a coupling-head connected therewith by a ball-and-socket joint and containing a plurality of channels communicating with the train-pipes, an equalizing or centering fork having its ends lying in notches in rear of pivotal studs on the hemispherical part of the coupling-head, said studs lying in slots in the top and bottom of the bracket, the branches of the fork being provided with cross-heads lying against the flat rear face or shoulder of the hemispherical part, a disk loosely mounted on a spindle projecting from the fork and lying in a vertical slot in a drop-bracket, a coiled spring bearing against said disk and fork and holding a stud on the drop-bracket in engagement with a spiral slot in the disk having corrugations or notches, puppet-valves closing the rear ends of the channel in the coupling-head and having stems projecting through the forward end of the head, and means for automatically seating said valves when the coupling-heads separate, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

ROBERT I. HAMPTON.

Witnesses:

G. A. MELL,
A. L. HULL.