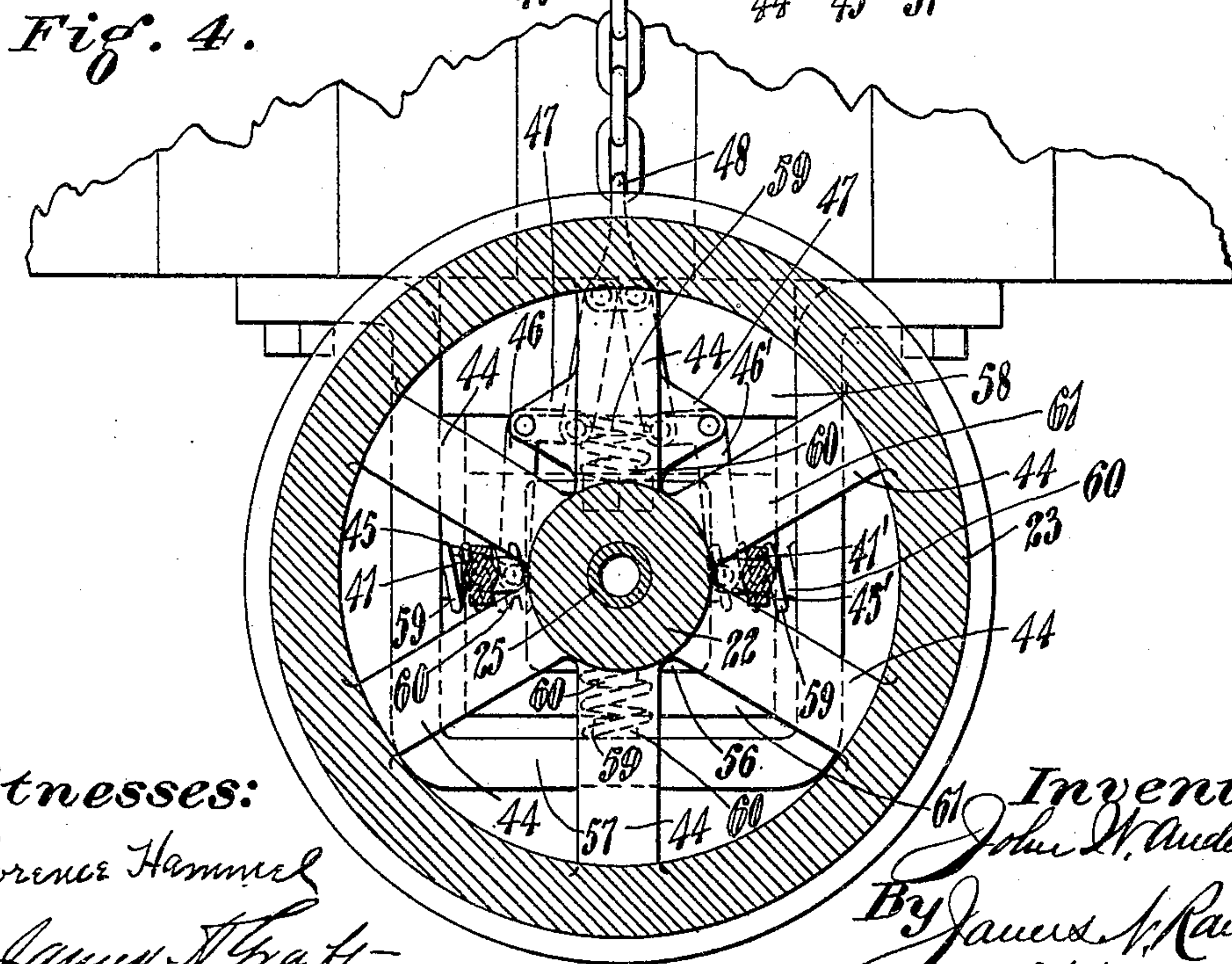
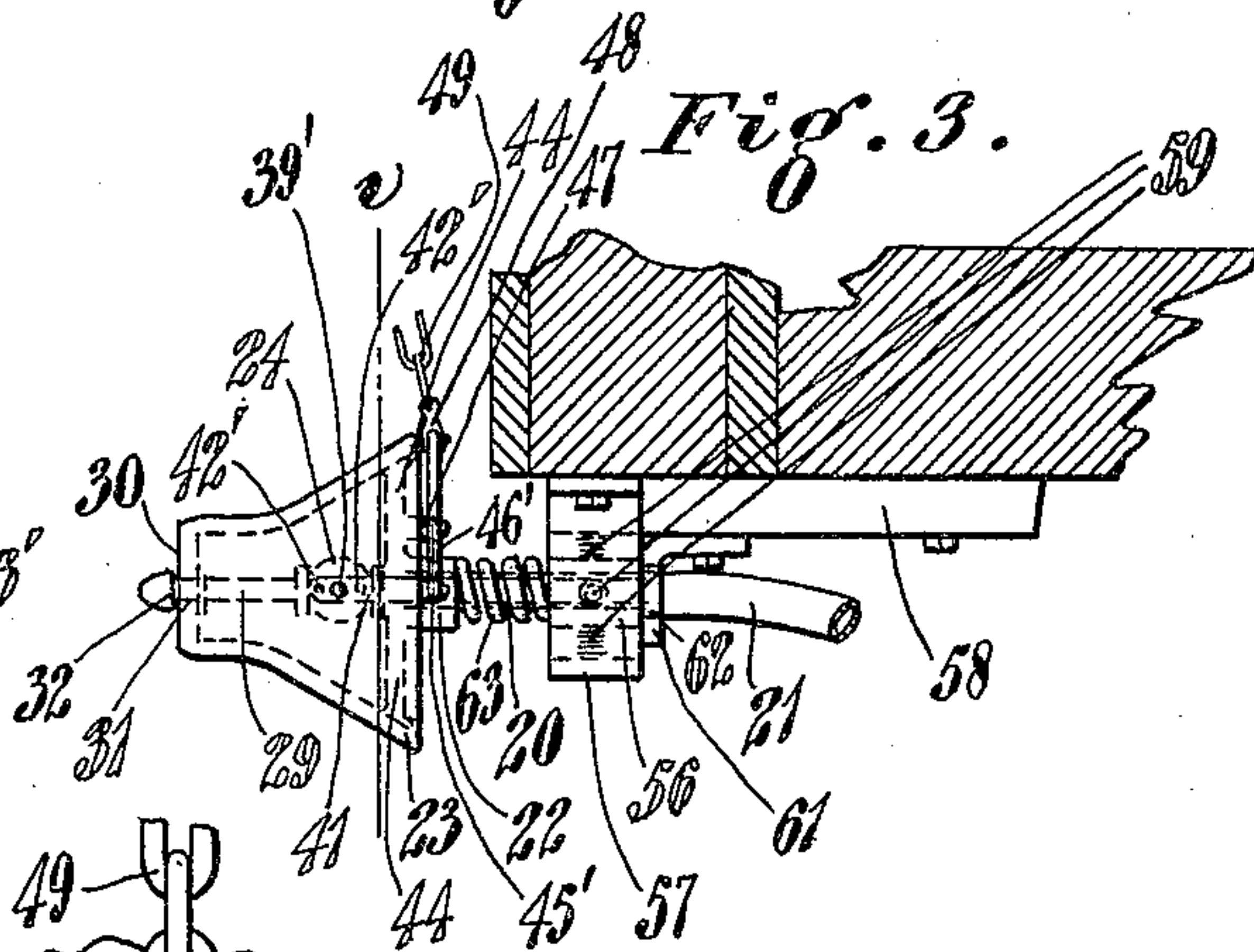
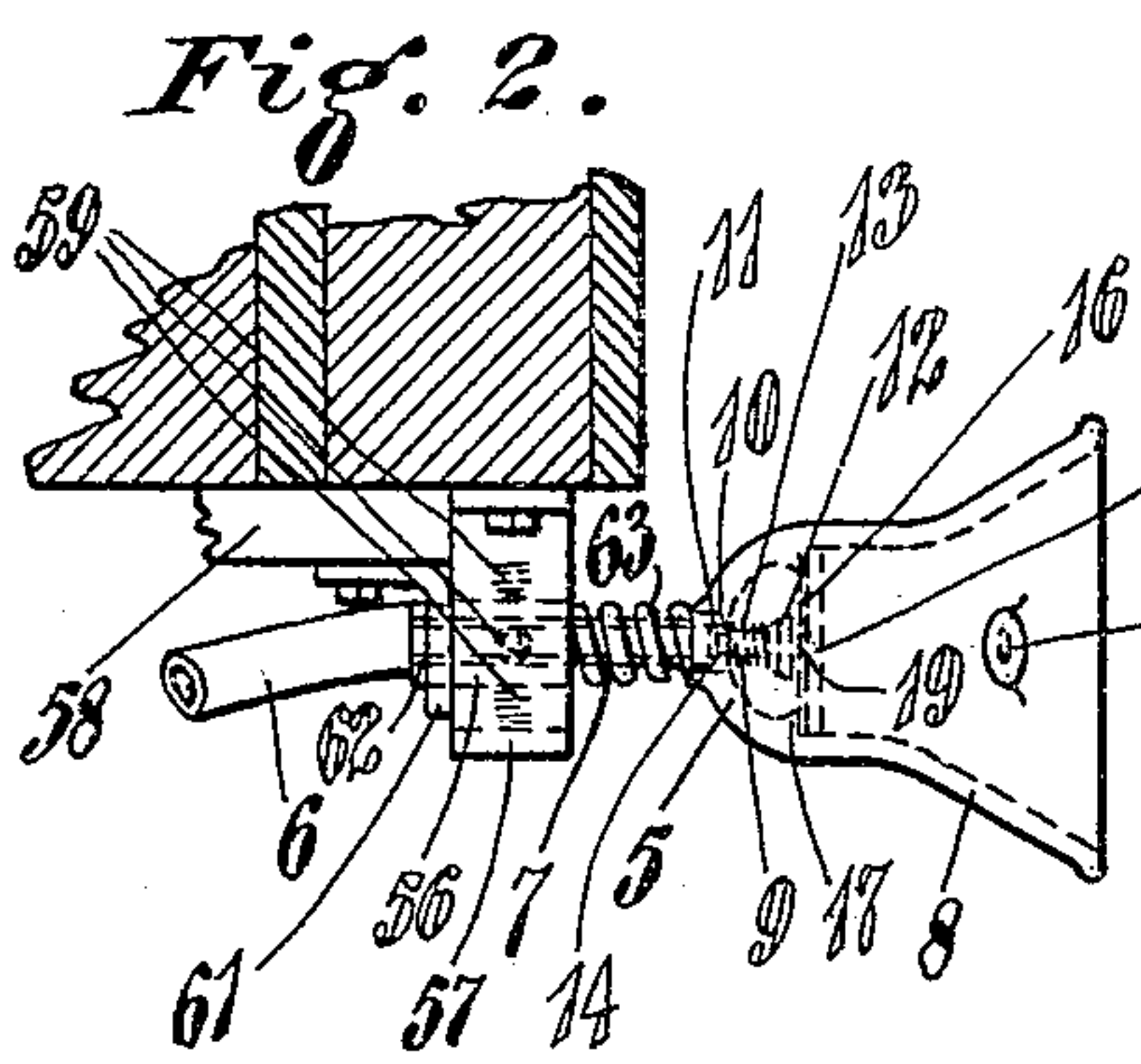
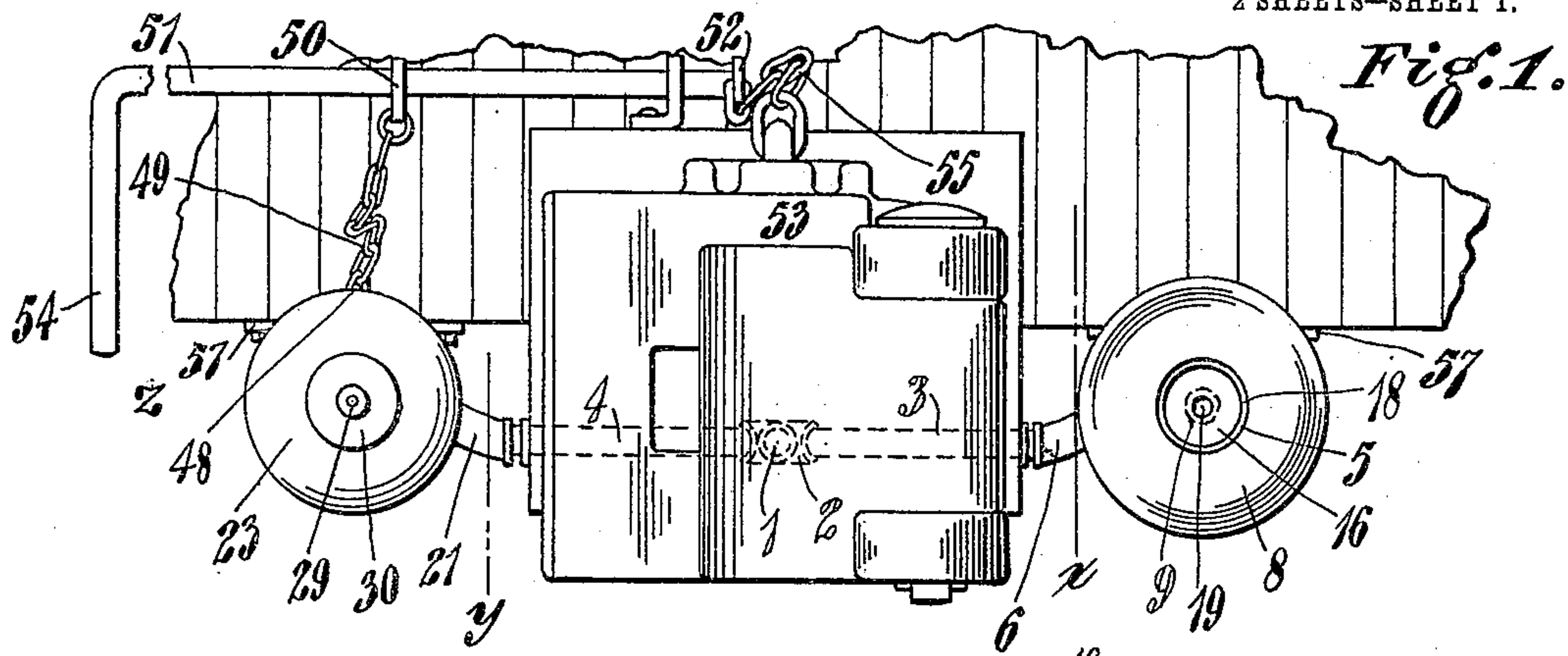


J. W. ANDERSON.
PIPE COUPLING.
APPLICATION FILED OCT. 5, 1908.

932,424.

Patented Aug. 31, 1909.

2 SHEETS—SHEET 1.



Witnesses:

Florence Hammel
James N. Craft

Inventor
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By James N. Ramsey
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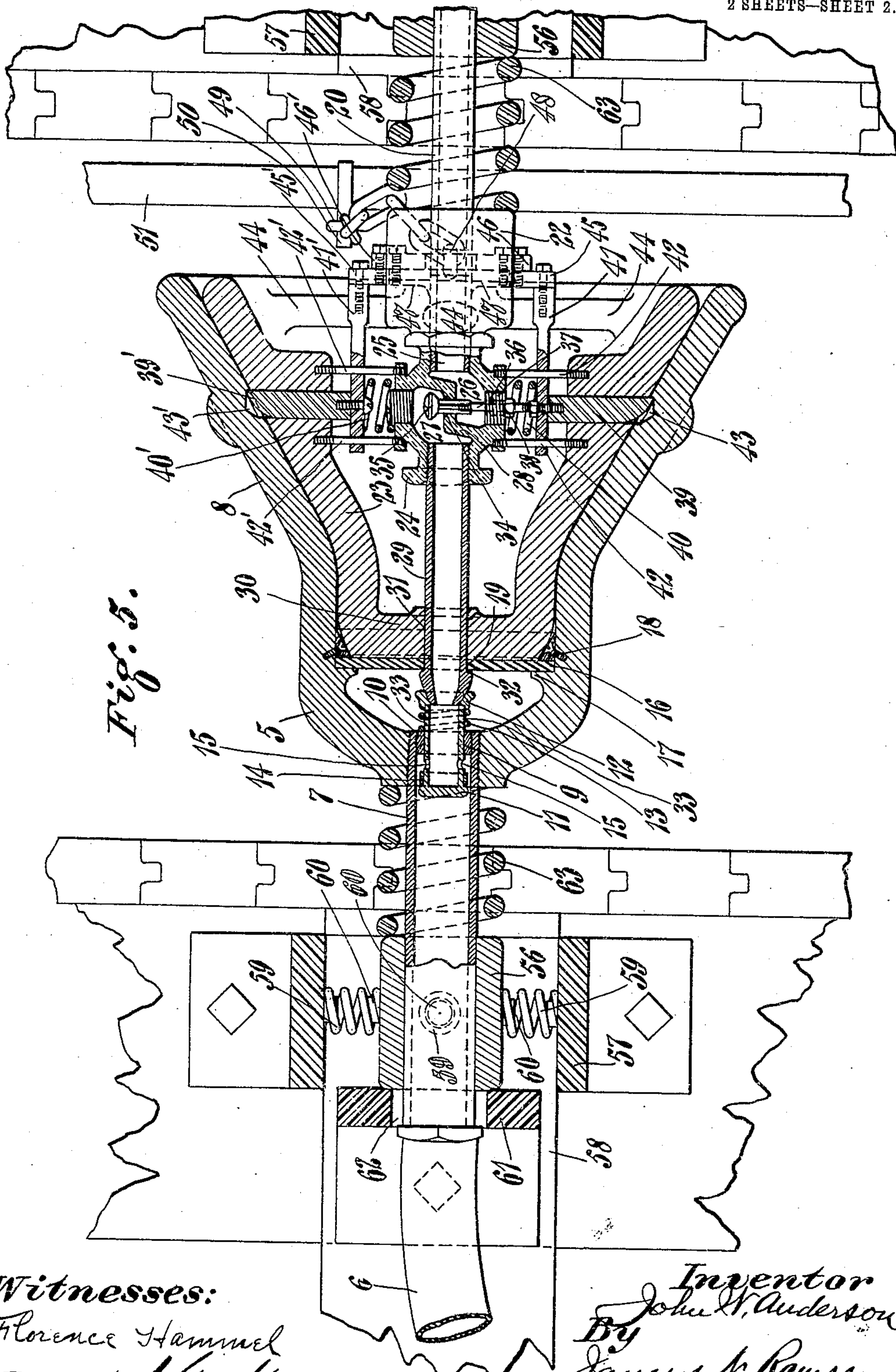


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN W. ANDERSON, OF ROSSMOYNE, OHIO.

PIPE-COUPLING.

932,424.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed October 5, 1908. Serial No. 456,243.

To all whom it may concern:

Be it known that I, JOHN W. ANDERSON, a citizen of the United States, residing at Rossmoyne, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Pipe-Couplings, of which the following is a specification.

My invention relates to pipe couplings intended to make connection automatically, to confine the passage of a fluid from one section of pipe to another when coupled, and to prevent the passage of the fluid from either of the sections when uncoupled, and the object is to provide a device of this character that will be more conveniently operated and of more durable construction, and that will perform such functions in a more efficient manner.

My invention consists in the combination with flanges mounted on pipe sections and provided with extensions adapted to fit together, and nipples adapted to form a junction with each other when the extensions fit together, and provided with means for controlling the flow of fluid between them and the pipe sections, of unlocking and valve operating mechanism, and means for actuating said mechanism.

My invention also consists in the parts and in the details of construction and arrangement of parts as will hereinafter be more fully described and claimed.

In the drawing: Figure 1 is an end elevation of part of a railway car provided with my improved pipe coupling. Fig. 2 is a longitudinal vertical section on a line corresponding to the line *x* of Fig. 1, looking to the right. Fig. 3 is a similar section on a line corresponding to the line *y* of Fig. 1, looking to the left. Fig. 4 is a vertical cross section, enlarged, on a line corresponding to the line *v* of Fig. 3. Fig. 5 is a longitudinal horizontal section on a line corresponding to the line *z* of Fig. 1, illustrating the device in coupled position.

My invention is particularly adapted for use in making connection between the separate divisions of pipe on different cars in a railway train, whether such pipe be part of the system of air brakes, or of the heating system, or of the steam or air signaling system, all of which are in general use upon railways.

As illustrated in Fig. 1 of the drawing, the pipe 1 may be a part of any of the above mentioned systems on a railway car, and is

provided near the end of the car with a three-way connection 2 by means of which it branches into two diverging pipes 3 and 4. The pipe 3 communicates with the flange 5 through a flexible tube 6 and a pipe section 7, upon the end of which the flange is rigidly mounted, by screwing the pipe section into the flange. This flange 5 has an extension 8, past the end of the pipe section 7, of such shape that its inner walls diverge outwardly from the end of the pipe section so that the flange 5 with its extension 8 has the form of a bell. A nipple 9 is mounted in a hollow plug 10 in such a manner that it may slide longitudinally of the pipe section 7, the hollow plug 10 fitting into the end of the pipe section 7 and closing the space surrounding the nipple 9 between it and the inner walls of the pipe section. The end of the nipple 9 which extends inside of the pipe section 7 is closed and has a bead 11 entirely surrounding it and projecting out toward the inner walls of the pipe section 7. However, the diameter of this bead 11 is sufficiently less than the diameter of the pipe section 7 to leave an annular space around it for the passage of the air, steam or other fluid. The end of the nipple 9 outside the pipe section 7 is provided with a flaring end piece 12, which leaves this end of the nipple open and between the end piece 12 and the outside of the end of the pipe section 7 a helical spring 13 is confined, which is adapted to press the nipple 9 outwardly of the end of the pipe section 7 and bring the bead 11 toward the inner side of the plug 10. A gasket 14 closely surrounds the nipple 9 immediately adjacent to the bead 11 so that when the bead 11 is drawn toward the plug 10 by the pressure of the spring 13, a tight joint will be formed between the gasket 14 and the inner side of the plug 10, preventing the passage of fluid from within the pipe section 7 around the nipple 9. This nipple 9 is provided with perforations 15 in its convex walls, these perforations being located in such positions in the nipple that, when the nipple 9 is pressed inwardly of the end of the pipe section 7, the perforations will be adapted to form means of communication between the interior of the pipe section and the interior of the nipple, which is open at its outer end.

Past the outer end of the nipple 9 a circular elastic diaphragm 16 is mounted in the extensions 8 of the flange 5, at right angles

to the direction of movement of the nipple 9, being held in place between an annular rib 17, integral with the interior wall of the extension, and a ring 18, fitting closely against and screwed to said inner wall. Centrally in the elastic diaphragm 16, and in alignment with the nipple 9, is a circular opening 19. Thus constructed, a space is inclosed around the outer end of the nipple 9 in the interior of the extension 8 of the flange 5, communicating with the exterior only through the circular opening 19 in the center of the diaphragm. The pipe 4, which leads from the other flange of the three-way connection 2, communicates with the pipe section 20 through a flexible tube 21, and this pipe section 20 is provided with a flange 22, rigidly mounted thereon by screwing the end of the pipe section into the flange. This flange 22 is provided with an extension 23, which extends past the end of the pipe section 20 with its outer walls converging therefrom. The outer walls of this extension 23 of the flange 22 are so shaped that they conform to the inner walls of the extension 8 of the flange 5 on the pipe section 7.

A valve 24 is attached to the flange 22 by means of a nipple 25 and has a body of formation similar to that of the familiar globe valve, the interior being divided into two compartments 26 and 27 by a partition 28. The compartment 26 communicates with the interior of the pipe section 20 through the nipple 25 and flange 22. A nipple 29 is rigidly secured to the valve 24 and extends outward past the termination of the extension 23 of the flange 22, this extension having its termination closed by an end wall 30, integral with its converging sides and having an opening 31 through which the nipple 29 extends and into which the nipple closely fits. Outside the end wall 30, the outer diameter of the nipple is of the same, or preferably of a little larger, diameter than the diameter of the opening 19 in the elastic diaphragm 16 which is held in place in the extension 8 of the flange 5. The nipple continues of this diameter from the outside of the end wall 30 of the extension 23 for a distance about equal to the thickness of the elastic diaphragm 16, at which point the outer diameter of the nipple is somewhat enlarged, as at 32, and then is tapered to the end of the nipple, which is open, and through which there is communication between the interior of the nipple and the exterior. The taper of the end of the nipple from the enlargement at 32 to its end corresponds in shape to the interior flaring of the end piece 12 on the nipple 9, so that the end of the nipple 29 may fit accurately into the end piece 12 and form a tight joint therewith, the nipple first passing through the circular opening 19 in the elastic diaphragm 16. The diaphragm 16, being elas-

tic, will stretch to the extent required for the passage of the enlarged part of the nipple 9, at 32, therethrough, and then will contract so that it fits tightly around the outside of the nipple between the enlargement at 32 and the outside of the end wall 30 of the extension 23. This elastic diaphragm 16 thus forms a tight joint with the nipple 29 and completes the connection between the pipe section 7 and the pipe section 20. The tightness of the joint at this point is further increased by allowing some of the fluid under pressure to escape into the space inclosed by the diaphragm 16, around the outer end of the nipple 9, which will have the effect of pressing the elastic diaphragm 16 tightly against the outer side of the end wall 30 of the extension 23. To facilitate the escape of the fluid into this space the nipple 9 is preferably provided with openings 33 in its convex wall near its end piece 12, where it is surrounded by the helical spring 13.

The partition 28 of the valve 24 is provided with an opening which is surrounded by a circular valve seat 34, upon which a plug 35 is adapted to seat. This plug 35 is of cross shaped cross section where it passes through the opening in the partition 28, so that it is adapted to allow the passage of fluid around it, and has a stem 36 rigidly secured into it, which stem 36 passes outside the body of the valve through a plug 37 provided with a suitable stuffing box 38. Its other end is rigidly secured into one end of a plunger 39, which extends transversely through the wall of the extension 23 and projects some distance outside the converging surface of the wall. The other end of this plunger 39, thus projecting outside the outer surface of the wall, is inclined so that when the extension 23 enters the extension 8 it will be engaged and pressed inwardly, thus raising the plug 35 from its seat 34 in the valve 24, opening the valve 24. For normally pressing this plunger outward, a helical spring 40 is confined between the body of the valve 24, and a bar 41 is rigidly mounted on the stem 36, adjacent to the plunger 39.

The bar 41 is guided by two rods 42, each of which is on the opposite side of the stem 36 from the other, and the ends of which are rigidly secured into lugs on the body of the valve 24 and into a boss, on the interior of the extension 23, surrounding the opening through which the plunger 39 passes. Rods 42' are also provided, extending from the opposite sides of the body of the valve 24, and rigidly secured into lugs on the body of the valve, and into a boss on the opposite side of the interior of the wall of the extension 23, which boss surrounds another opening in said wall through which another plunger 39' extends and projects outside the con-

verging surface of the wall. The inner end of this other plunger 39' is rigidly secured to another bar 41', which is guided by the rods 42'. Another helical spring 40' is also provided on this side, and is confined between the bar 41' and the body of the valve 24 to normally press the plunger 39' outward. Recesses 43 and 43' are provided in the interior converging walls of the extension 8, at points where the ends of the plungers 39 and 39', respectively, are adapted to come when the nipple 29 has passed through the elastic diaphragm 16 and completed the connection between the two pipe sections. These recesses 43 and 43', thus positioned, receive the ends of the plungers 39 and 39', respectively, so that the plungers, with their actuating mechanisms, form latches to lock the extensions of the flanges together and maintain them in their proper positions for forming the complete connection between the pipe sections. When the extensions of the flanges come together and the ends of the plungers 39 and 39' enter the recesses 43 and 43' to thus act as latches, the plug 35 of the valve 24 being rigidly secured to the plunger 39 by means of the stem 36 will be held up from its seat 34 by the engagement of the outer end of the plunger 39 with the termination of the recess 43. Thus the opening of the valve is accomplished automatically by bringing the flanges together, and the valve is maintained open by the plunger 39, while the plunger is also performing its function as a latch for coupling. Then, when the parts are uncoupled, this valve will be closed by the action of the spring 40, as above described, so that the opening and the closing of the valve 24 is effected automatically and simultaneously with the coupling and uncoupling of the pipe sections.

The extension 23 of the flange 22 is open at its largest end, and its connection with the flange 22 is in the form of radial arms 44, formed integral with the flange and with the extensions. For unlocking the extensions of the flanges from each other, the bars 41 and 41' are continued toward the large end of the extension 23, and they have links 45 and 45', respectively, pivotally connected to their ends and lying at right angles to their length. A bell crank 46 has the link 45 pivoted to one of its ends, and another bell crank 46' has the link 45' pivoted to one of its ends. These bell cranks 46 and 46' are fulcrumed on lugs 47, formed on one of the arms 44, and their other ends are separately and loosely pivoted to a clevis 48, to which clevis 48 one end of a chain 49 is attached. The other end of the chain 49 is attached to one end of a lever 50, rigidly mounted on the shaft 51 which extends transversely of the end of the car body and carries another lever 52, near its end adjacent to the coupler 53, and which shaft has a handle 54 at its outer

end, convenient of access for the trainman without making it necessary for him to step over the rail between the cars. A chain 55 has one end attached to the free end of the lever 52 and the other end attached to the locking pin of the coupler 53, and thus the locking mechanism of the coupler and of my improved pipe coupling may be operated in a similar manner and simultaneously. It will also be seen that the locking of the coupler and the locking of my improved pipe coupling take place simultaneously, and that the locking of both of them is accomplished automatically, when two of the cars come together.

The relative positions of the pipe sections 7 and 20 with their accompanying flanges and mechanisms with respect to the opposite end of the car upon which they are located being maintained, it will be readily understood that all cars equipped with the device, when brought together, will present mechanisms adapted to interlock on both sides, regardless of which ends of the cars are brought together. To compensate for the relative movement of the separate cars during the process of coupling them, as well as after they are coupled, the pipe sections 7 and 20 are longitudinally slidably mounted in heads 56 which are movably mounted in U-shaped hangers 57, rigidly secured to the under side of the car body near its end. As illustrated, a block 58 is also secured to the lower side of the car body and extends between the members of the hanger 57. The movable mounting of the head 56 within the hanger 57 consists in four helical springs 59, one of which is placed on each of the four sides of the head 56 and held from displacement by means of lugs 60 on the head. Thus, the head, and consequently the pipe section passing through it, is allowed to yield in either direction sidewise, or upward, or downward. This head bears rearwardly against a bracket 61, rigidly mounted on the block 58 to the rear of the hanger 57, this bracket 61 being provided with an opening 62 of sufficiently larger diameter than that of the pipe section mounted in the head 56 to permit of the lateral or vertical movement of the head, as above referred to. Forwardly of the head 56, surrounding the pipe section 7 or 20 mounted therein, and between the head and the flange 5 or 22, respectively, mounted on the pipe section, is a helical spring 63 which allows the flange and the pipe section to yield longitudinally. By being thus mounted so as to yield longitudinally, laterally, or vertically, the two separate parts of the coupling are adapted to always aline with each other automatically, the degree of divergence of the inner walls of the extension 8 of the flange 5 being such that the small end of the extension 23 of the flange 22 will come within it when the cars

are out of alinement to the greatest extent allowed by their construction and by the construction of the track.

In order that the separate parts of the coupling may be brought into alinement before the projecting part of the rigidly mounted nipple 29 reaches the elastic diaphragm 16 the walls of the extension 8 of the flange 5 are continued parallel to the length of the coupling for a distance somewhat greater than the length of the projecting part of the nipple 29, so that this part of the extension has a cylindrical shape. The divergence of the walls of the extension commences at the termination of this cylindrical part, and the inner surface of the extension is preferably so formed that it passes by a gradual curve from the cylindrical part to the diverging or conical part. The outer surface of the extension 23 of the flange 22 is correspondingly shaped, having a substantially cylindrical part in the region of its small end, with the conical part beginning at the termination of the cylindrical part, and a gradual curved surface passing from the cylindrical part to the conical part. In the immediate region of the end of the cylindrical part, which forms the end of the extension, the surface is made to again converge toward the end somewhat, to allow space for the ring 18, which holds the elastic diaphragm 16 in place in the extension on the other flange, when the coupling is in coupled position. This converging surface at the end of the extension is also useful in that it corresponds in shape, approximately, to the inner surface of the conical part of the extension 8, and when making contact with any part of this surface will pass over it freely.

It will be seen that the device herein described and illustrated, being adapted to couple automatically, and to form an efficient connection for conducting a fluid without leakage when coupled, being flexibly mounted, thereby taking the strain off the coupling mechanism, and being adapted to be released from its effective coupled position by a simple motion, is particularly suitable for use on railway trains as hereinbefore set forth. However, it will also be understood that all or some of these advantages will render it adaptable for use in other installations where a convenient means of coupling pipes together is required. In such instances, the shape and proportions of some of the parts may be varied as the requirements dictate, or some of the features may be omitted such, for instance, as the flexible mountings, or the bell crank and lever mechanism for uncoupling. In view of this, I do not wish to be understood as limiting myself to the precise description and illustration contained herein, but

What I claim as new and desire to secure by Letters Patent is:

1. In pipe couplings, the combination with flanges mounted on the ends of pipe sections and being provided with extensions adapted to fit together, and nipples adapted to form a junction with each other when the extensions on the flanges fit together, the nipples being provided with means for controlling the flow of a fluid from the pipe sections to them, of a plunger mounted in the extension on one of the flanges and adapted to engage with the extension on the other flange to lock the extensions together, and a flexible connection between the plunger and the unlocking mechanism of a car coupler, whereby the plunger may be disengaged from the extension, for separating the extensions, the pipe sections being provided with flexible mountings, substantially as and for the purposes set forth.

2. In pipe couplings, the combination with flanges mounted on pipe sections and being provided with extensions adapted to fit together, and nipples adapted to form a junction with each other when the extensions on the flanges fit together, the nipples being provided with means for controlling the flow of a fluid from the pipe sections to them, of a plunger mounted in the extension on one of the flanges and adapted to engage with the extension on the other flange to hold the flanges together, the plunger being operatively connected with the locking mechanism of a car coupler, substantially as and for the purposes set forth.

3. In pipe couplings, the combination with flanges mounted on pipe sections and provided with extensions adapted to fit together and nipples adapted to form a junction with each other when the extensions fit together, one of the nipples being slidably mounted with respect to one of the pipe sections, and provided with means for controlling the flow of a fluid from the pipe section, and the other nipple being provided with a valve adapted to control the flow of the fluid from the other pipe section, of a plunger mounted in one of the extensions, and adapted to engage with the other extension to hold the extensions together, the plunger being operatively connected to said valve and also operatively connected to the unlocking mechanism of a car coupler, substantially as and for the purposes set forth.

4. In pipe couplings, the combination with a flange on one pipe section, provided with an extension past the end of the pipe section, having an inner wall divergent from the end of the pipe section, and a flange on the end of another pipe section provided with an extension past the end of said other pipe section, adapted to fit closely against the divergent wall of the flange on the first pipe

section, of a nipple in the end of the first pipe section, an elastic diaphragm mounted in the flange on the first pipe section having an opening in alinement with the nipple, a nipple mounted in the flange on the other pipe section adapted to pass through the opening in the elastic diaphragm to form a junction with the nipple in the flange on the first pipe section, and a valve controlling the passage of fluid from said other pipe section to the nipple mounted in the flange on said pipe section, substantially as and for the purposes set forth.

5. In pipe couplings, the combination with a flange on the end of one pipe section, provided with an extension past the end of the pipe section, and a flange on the end of another pipe section, of a nipple in the end of the first pipe section, an elastic diaphragm mounted in the extension on the flange of the first pipe section having an opening in alinement with the nipple, and a nipple in the flange on the other pipe section adapted to pass through the opening in the elastic diaphragm and form a junction with the nipple in the end of the first pipe section, the extension on the flange on the first pipe section having a cylindrical part near its beginning at the flange and a conical part past the cylindrical part with its inner wall divergent from the end of the pipe section, and the extension on the flange on the other pipe section having a substantially cylindrical part adjacent to its end which is adapted to make contact with the inner wall of the extension on the flange on the first pipe section, and a conical part adapted to conform to the inner surface of the conical part of the extension on the flange on the first pipe section, substantially as and for the purposes set forth.

6. In pipe couplings, the combination with a flange on the end of one pipe section provided with an extension past the end of the pipe section having an inner wall divergent from the end of the pipe section, and a flange on the end of another pipe section provided with an extension past the end of said other pipe section, having an outer wall convergent from the end of the pipe section and adapted to fit closely against the divergent wall of the flange on the first pipe section, of an elastic diaphragm mounted in the extension on the flange on the first pipe section, having an opening, and a nipple mounted in the flange on the other pipe section adapted to pass through the opening in the elastic diaphragm, the inner wall of the extension on the flange adjacent to the diaphragm being parallel to the direction of movement of the nipple when it passes through the opening in the diaphragm, and the outer wall of the extension on the flange on the other pipe section adjacent to the

nipple being also parallel to said direction of movement, substantially as and for the purposes set forth.

7. In pipe couplings, the combination with a flange on the end of one pipe section provided with an extension, past the end of the pipe section, having an inner wall divergent from the end of the pipe section, and a flange on the end of another pipe section provided with an extension past the end of said other pipe section, having an outer wall convergent from the end of the pipe section and adapted to fit closely against the divergent wall of the flange on the first pipe section, of an elastic diaphragm mounted in the extension on the flange on the first pipe section, having an opening, and a nipple in the flange on the other pipe section adapted to pass through the opening in the elastic diaphragm, the inner wall of the extension on the flange adjacent to the diaphragm being parallel to the direction of movement of the nipple when it passes through the opening in the diaphragm and the outer wall of the extension on the flange on the other pipe section adjacent to the nipple being also parallel to said direction of movement, and flexible mountings for the pipe sections whereby they may yield to allow the nipple to enter the opening in the diaphragm, substantially as and for the purposes set forth.

8. In pipe couplings, the combination with a flange on the end of one of the pipe sections, provided with an extension past the end of the pipe section, having an inner wall divergent from the end of the pipe section, and a flange on the end of another pipe section, provided with an extension past the end of said other pipe section, having an outer wall convergent from the end of the pipe section and adapted to fit closely against the divergent wall of the flange on the first pipe section, of a spring pressed nipple in the end of the first pipe section adapted to control the passage of fluid from the pipe section, an elastic diaphragm mounted in the extension on the flange on the first pipe section having an opening in alinement with the spring pressed nipple, a rigidly mounted nipple in the flange on the other pipe section adapted to pass through the opening in the elastic diaphragm and form a junction with the spring pressed nipple, a valve controlling the passage of fluid to the rigidly mounted nipple on the other pipe section, a plunger adapted to engage with the flange on the first pipe section to open said valve, a spring to actuate the plunger to close the valve, the flange on the first pipe section being provided with a recess to receive the end of the plunger whereby the plunger forms a latch to hold the two flanges together, and means for withdrawing the plunger from the recess simultaneously with the releasing of a

car coupler, substantially as and for the purposes set forth.

9. In pipe couplings, the combination with a flange on the end of one of the pipe sections provided with an extension, past the end of the pipe section, having an inner wall divergent from the end of the pipe section, and a flange on the end of another pipe section provided with an extension past the end of said other pipe section, having an outer wall convergent from the end of the pipe section and adapted to fit closely against the divergent wall of the flange on the first pipe section, of a spring pressed nipple in the end of the first pipe section adapted to control the passage of fluid from the pipe section, an elastic diaphragm mounted in the extension on the flange on the first pipe section, having an opening in alinement with the spring pressed nipple, a rigidly mounted nipple mounted in the flange on the other pipe section, adapted to pass through the opening in the elastic diaphragm and form a junction with the spring pressed nipple, a valve controlling the passage of fluid from said other pipe section to the nipple rigidly mounted in the flange on said other pipe section, a plunger adapted to engage with the flange on the first pipe section to open said valve, a spring to actuate the plunger to close the valve, the flange on the first pipe section being provided with a recess to receive the end of the plunger whereby the plunger forms a latch to hold the two flanges together, means for withdrawing the plunger from the recess simultaneously with the releasing of a car coupler, and flexible mountings for the pipe sections, whereby they may yield to allow the nipple to enter the opening in the diaphragm, substantially as and for the purposes set forth.

10. In pipe couplings, the combination with a flange on the end of one of the pipe sections, provided with an extension past the end of the pipe section having an inner wall divergent from the end of the pipe section, and a flange on the end of another pipe section provided with an extension past the end of said other pipe section, having an outer wall convergent from the end of the pipe section and adapted to fit closely against the divergent wall of the flange on the first pipe section, of a spring pressed nipple in the end of the first pipe section adapted to control the passage of fluid from the pipe section, an elastic diaphragm mounted in the extension on the flange on the first pipe section, having an opening in alinement with the spring pressed nipple, a rigidly mounted nipple in the flange on the other pipe section, adapted to pass through the opening in the elastic diaphragm and form a junction with the spring pressed nipple, a valve controlling the passage of fluid from said other pipe section to the

nipple rigidly mounted in the flange on said other pipe section, a plunger adapted to engage with the flange on the first pipe section to open said valve, a spring to actuate the plunger to close the valve, the flange on the first pipe section being provided with a recess to receive the end of the plunger whereby the plunger forms a latch to hold the two flanges together, a bar rigidly attached to the plunger, a link pivoted to the bar, a bell crank fulcrumed on the extension on the flange, the link being pivoted to the bell crank, and means for connecting the bell crank to the unlocking mechanism of a car coupler, substantially as and for the purposes set forth.

11. In pipe couplings, the combination with a flange on the end of one of the pipe sections provided with an extension past the end of the pipe section having an inner wall divergent from the end of the pipe section, and a flange on the end of another pipe section provided with an extension past the end of said other pipe section, having an outer wall convergent from the end of the pipe section and adapted to fit closely against the divergent wall of the flange on the first pipe section, of a spring pressed nipple in the end of the first pipe section adapted to control the passage of fluid from the pipe section, an elastic diaphragm mounted in the extension on the flange on the first pipe section having an opening in alinement with the spring pressed nipple, a rigidly mounted nipple in the flange on the other pipe section adapted to pass through the opening in the elastic diaphragm and form a junction with the spring pressed nipple, a valve controlling the passage of fluid from said other pipe section to the nipple rigidly mounted in the flange on said other pipe section, a plunger adapted to engage with the flange on the first pipe section to open said valve, a spring to actuate the plunger to close the valve, the flange on the first pipe section being provided with a recess to receive the end of the plunger whereby the plunger forms a latch to hold the extensions of the two flanges together, a bar rigidly attached to the plunger, a link pivoted to the bar, a bell crank fulcrumed on the extension on the flange, the link being pivoted to the bell crank, a flexible connection between the bell crank and the unlocking mechanism of a car coupler, and flexible mountings for the pipe sections, whereby they may yield to allow the rigidly mounted nipple to enter the opening in the elastic diaphragm and form a junction with the spring pressed nipple, substantially as and for the purposes set forth.

JOHN W. ANDERSON.

Witnesses:

JAMES N. RAMSEY,
CLARENCE PERDEW.