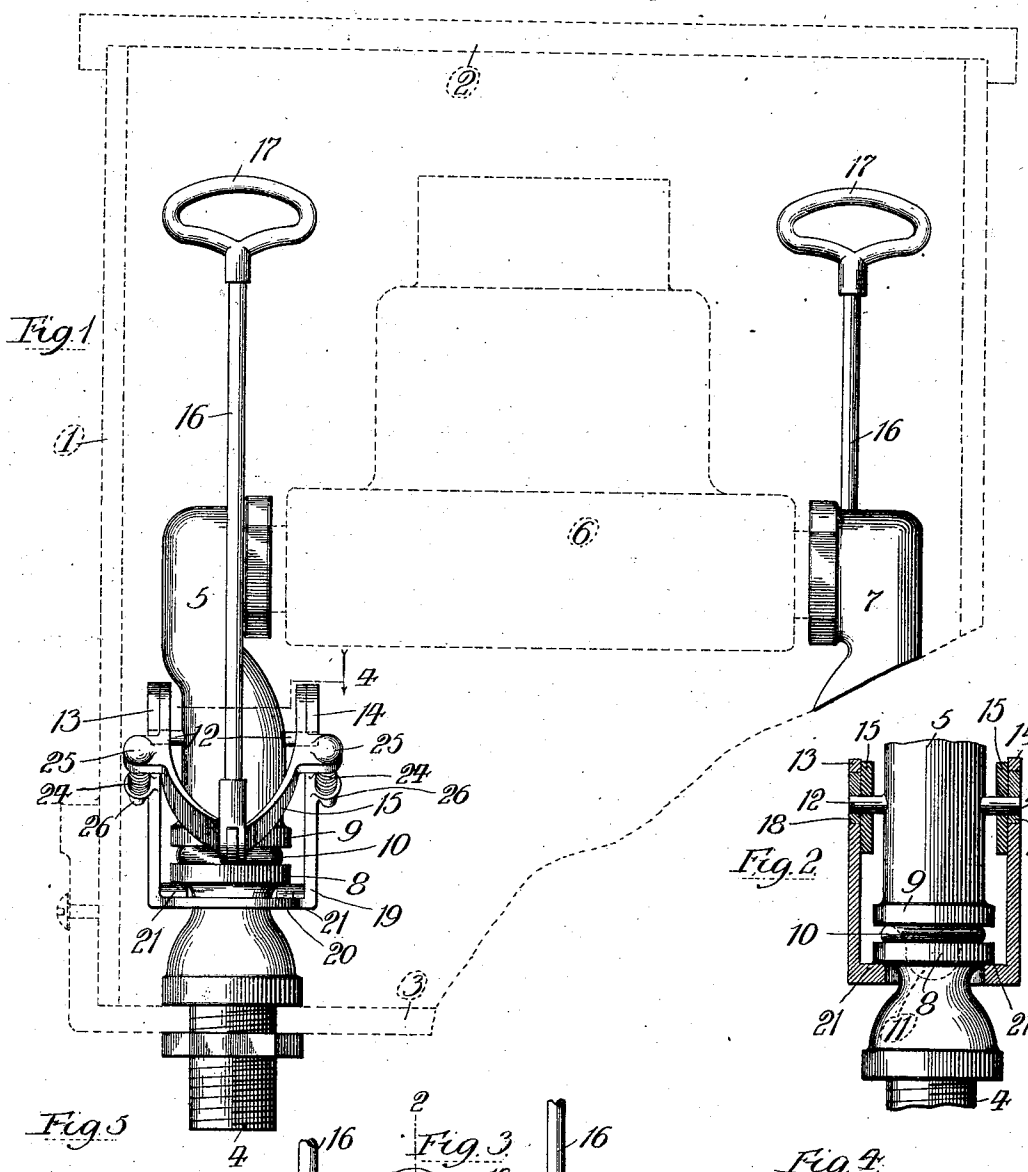
No. 694,422. Patented Mar. 4, 1902.

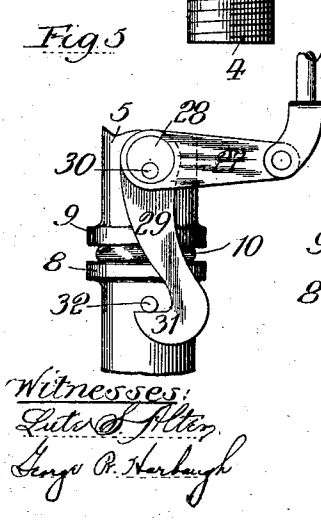
A. Y. ROBERTSON.

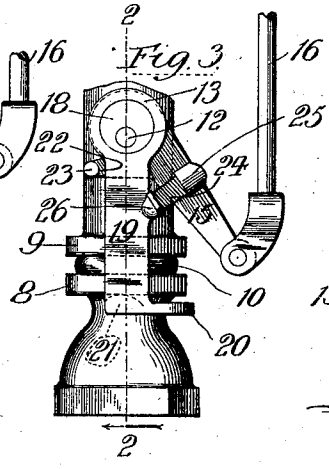
PIPE COUPLING.

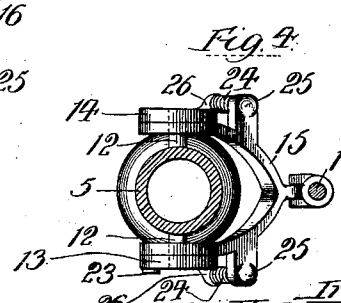
(Application filed Oct. 15, 1900.)

(No Model.)









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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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PIPE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 694,422, dated March 4, 1902.

Application filed October 15, 1900. Serial No. 33,070. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER Y. ROBERTSON, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pipe-Couplings, of which the following is a specification.

My invention relates to pipe-couplings, more especially to those couplings which are difficult of access and where it is impossible to use a wrench or other ordinary means for coupling or uncoupling the pipes or connections. One instance of such couplings to which my invention is particularly applicable is a water-meter coupling, where the usual coupling cannot be adopted, because the water-meter is generally set below the surface and within an outer casing. For the sake of brevity and clearness, therefore, my invention will be shown and described in connection with a water-meter, without intention, however, of limiting myself to such particular employment thereof.

In the drawing, Figure 1 is an elevation of my coupling applied to one side of a water-meter and showing the water-meter and its casing in dotted outline; Fig. 2, a sectional elevation on line 2 2 of Fig. 3; Fig. 3, a side elevation of my improved coupling; Fig. 4, a sectional plan on line 4 4 of Fig. 1, and Fig. 5 a side elevation of a modified form.

The water-meter may be of the usual and well-known construction and, as shown, comprises an outer casing 1, a removable cap or cover 2, a bottom 3, having the water-inlet connection 4, communicating with the water-main, and a connection 5, which communicates with the meter proper, (marked 6.) Water passes through the meter and flows out through pipe 7 and the other usual connections on the right-hand side of the meter, Fig. 1, similar to those on the other side, finally entering the service-pipe of the building or other place of consumption. The entire casing is set into the ground in the well-known way and remains there practically permanently, while the meter and its pipe connections are removable therefrom. The water-meter connects in the usual way on one side with the water-service pipe and on the other side with the pipe leading to the building or other place of use.

It is to be observed that the couplings being located within the case near the bottom thereof and also below the meter it is impossible to use the ordinary wrench or similar tool, hence the necessity for my invention, whereby a tight efficient coupling may be made without tools and one which can be readily uncoupled when occasion requires.

It is to be understood that the coupling on both sides of the meter may be identically the same in construction and operation. The meeting or adjacent ends of the service-pipes and the meter-pipes within the case have ordinary circular flanges 8 and 9, respectively, between which may be introduced a suitable gasket 10. Either the connection 4 or the meter-pipe 5 may be provided with a tapered tube or continuation 11, adapted to fit into the flaring end of the opposing connection in order that the connections may readily find each other when the coupling is being made. This construction is clearly shown in Fig. 2.

Upon pins or axes 12, preferably on both sides of the pipe 5 and diametrically opposite each other, are pivoted the arms or bifurcations 13 and 14 of an operating-yoke 15, on whose outer end is connected an operating-rod 16, extending upward toward the top of the water-meter case, where it has a suitable handle 17. Upon the outer faces of the arms 13 and 14 are arranged cams 18, which are received in circular openings in the free ends of the arms 19 of a clutch device or yoke, which has a connecting-piece 20 at the end of the arms 19 and extending below the flange 8 and at right angles to the connection 4 to partially encompass such connection. This yoke has inner upwardly-projecting lugs 21 to engage the flange, which lugs are provided so that the clutch-yoke will center itself with respect to the flange. These lugs may be rounded at the corners for the purpose of allowing them to slide underneath the flange without catching thereon.

The operating-yoke has a projecting portion 22 on one of its arms, extending beneath one of the arms 19 and having a right-angled pin or lug 23, which is adapted to contact arm

19 to swing yoke 20 clear of the connection 4 and its flange when the operating-handle is pulled to cause uncoupling.

A yielding or elastic connection between the operating-yoke and the clutch device is preferably employed, and to this end any suitable provision may be made. The construction shown is well adapted for the purpose and consists of a coiled spring 24, arranged at one end in a spring-barrel 25 on the yoke 15 and abutting at the other end against a spring-seat 26 on the arm 19. As shown, this spring forms a yielding connection between the operating-yoke and the clutch-yoke intermediate of their lengths. When the rod 16 is depressed, this yielding connection will cause the arm 19 to have a double movement—that is, a downward movement, due to the cam, and a swinging movement toward the pipe, due to the pressure of the yoke 15, communicated through the yielding connection.

The operation of my device is as follows: Assuming that the casing is set in the ground, the entire meter is lifted and placed therein by means of the two handles. Owing to the beveled and flared ends, the meeting connections readily find each other. The handles are then depressed, thereby forcing the yoke 15 downward. The yielding connection, which is here the spring 24, throws the clutch-yoke 20 inward toward the pipe 4 and under its flange. The cam 18 of the operating-yoke 15 then draws the arms 19 upward, whereby the lugs 21 will engage underneath the flange 8 at or substantially at the center line of the pipes or connections. Inasmuch as the rod 16 can be depressed sufficiently to throw the cam beyond the center, the coupling becomes locked. To uncouple, the rods 16 are simply pulled upward, whereupon the reverse action will occur. The yoke-arms 19 will be forced downward to disengage the yoke 20 from under the flange, and the pin 23 will contact one of the arms 19 and swing such yoke outward. After the connections are uncoupled the handles serve as means for lifting the meter out of the box or case.

In Fig. 5 is shown a modification working on the same principle, but differing somewhat in construction. In this modification the operating-yoke 27 has cams 28, received by circular openings on the end of arms 29. In Fig. 5 only one arm 29 is shown; but it is understood that similar arms are used on both sides of the pipes. The yoke 27 is pivoted on pins 30 on one of the pipe connections, as shown. The ends of the arms 29 have a hook 31, adapted to engage over a pin 32 on the other pipe connection. To disengage or uncouple the connections from the coupled position shown, the rod 16 is pulled upward, and the hook 31 will thereupon be disengaged and cleared from the pin 32, so that the meter and its connections can be lifted bodily out of the casing. It will be understood that the yoke 27 may have the cams either on the inner face, as shown in Fig. 5, or on the outer face, if desired, the arm 29 being on the outer side in such latter case.

It is obvious that my invention is applicable to other forms or kinds of couplings and is not to be restricted to the special form herein shown, which is one embodiment thereof selected for purposes of disclosure of this invention. Furthermore, my coupling may be used as a quick connection, although the coupling be easily accessible.

I claim—

1. A pipe-coupling comprising, in combination with the meeting ends of two pipes or connections, an operating-yoke pivoted on either side of one of said pipes and having cams at such pivotal points, and arms having circular openings at one end to receive the cams and engaging the other pipe with their other ends, said yoke and arms swinging on the same center.

2. A pipe-coupling for a water-meter or the like comprising in combination with the meter and its inlet and outlet pipes and also the service-pipe from the water-main and the service-pipe of the building, yokes mounted on the inlet and outlet pipes and adapted to engage said service-pipes and handles for operating each yoke and also for lifting the meter and its connections.

3. A pipe-coupling comprising, in combination with the meeting ends of two pipes or connections, a yoke pivoted to one pipe and adapted to engage the other pipe, an operating member to actuate such yoke and a yielding connection between such yoke and member.

4. A pipe-coupling comprising, in combination with the meeting ends of two pipes or connections, an operating-yoke pivoted on one pipe and provided on the ends of its arms at its pivotal points with cams, a clutch-yoke whose arms receive such cams and a yielding connection between the yokes intermediate of their lengths.

5. A pipe-coupling comprising, in combination with the meeting ends of two pipes or connections, an operating-yoke pivoted on one pipe, a clutch-yoke separated from but actuated by such operating-yoke to cause such clutch-yoke to engage the other pipe and means on the operating-yoke for swinging the clutch-yoke clear of such latter pipe when the pipes are being uncoupled.

6. A pipe-coupling comprising, in combination with the meeting ends of two pipes or connections, an operating member pivoted on one pipe, a clutch member separated from but actuated by the operating member to move substantially longitudinal of the pipes and means for swinging the clutch member clear of the engaged pipe when uncoupling, both of said members swinging on the same center.

7. A pipe-coupling comprising in combination with the meeting ends of two pipes or connections, an operating-yoke pivoted on one

pipe, a clutch-yoke actuated by such operating-yoke to cause such clutch-yoke to engage the other pipe and a projection on the operating-yoke to contact the clutch-yoke only when uncoupling to swing the latter yoke clear of the engaged pipe.

8. A pipe-coupling comprising in combination with the meeting ends of two pipes or connections, an operating-yoke pivoted on one pipe, a clutch-yoke actuated by such operating-yoke to cause such clutch-yoke to engage the other pipe, and a spring 24 bearing at its ends against the yokes, respectively.

9. A pipe-coupling comprising in combination with the meeting ends of two pipes or connections, an operating-yoke pivoted at 12 on one of the pipes and having cams 18 on the outer faces of its arms, a clutch-yoke having arms 19 whose upper ends have an opening to receive the cams and whose lower ends engage the other of said pipes and an operating-rod 16 connected to the operating-yoke, said yoke and arms swinging on the same center.

10. A pipe-coupling comprising in combination with the meeting ends of two pipes or connections, an operating-yoke having arms 13 and 14 pivoted on either side of one pipe on pins 12, cams 18 on said arms, and a clutch-yoke consisting of arms 19 and cross-piece 20, such arms having a circular opening to receive the cams, such clutch-yoke being adapted to engage the other of said pipes, said yoke and arms swinging on the same center.

11. A pipe-coupling comprising in combination with the meeting ends of two pipes or connections, an operating-yoke 15 having arms 13 and 14 pivoted on either side of one pipe on pins 12, cams 18 on said arms, a clutch-yoke consisting of arms 19 and cross-piece 20 engaging the other of said pipes, such arms having a circular opening at one end to receive the cams and a projection 23 on one of the arms of the yoke 15 to contact and swing the clutch-yoke.

12. A pipe-coupling comprising in combination with the pipes 4 and 5, a yoke 15 having arms 13 and 14 pivoted on pins 12 on pipe 5, cams 18 on such arms, a lug 23 on one of such arms, a clutch-yoke having arms 19 and a cross-piece 20 engaging pipe 4, spiral springs 24 abutting at one end against the arms 13 and 14 and at the other end against the arms 19 and a handle 16 pivotally and operatively connected to yoke 15.

13. A pipe-coupling comprising, in combination with the meeting ends of two pipes or connections, an operating-yoke pivoted on either side of one of said pipes and having a cam at such pivotal points, swinging arms having circular openings at one end to receive the cams and engaging the other pipe with their other ends, said yoke and arms swinging on the same center, and means whereby the operating-yoke positively swings the said arms to both engagement and disengagement position.

14. A pipe-coupling comprising, in combination with the meeting ends of two pipes or connections, an operating-yoke pivoted on either side of one of said pipes and having a cam at such pivotal points, swinging arms having circular openings at one end to receive the cams and engaging the other pipe with their other ends, said yoke and arms swinging on the same center, and means whereby the operating-yoke swings the said arms to engagement position by yielding, connection, and for swinging such arms to disengagement position with a rigid connection.

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