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H. H. URMSTON.

MEANS FOR REMOVABLY CONNECTING MOVING PARTS OF MACHINERY.

APPLICATION FILED SEPT. 28, 1905.

Fig. 1.

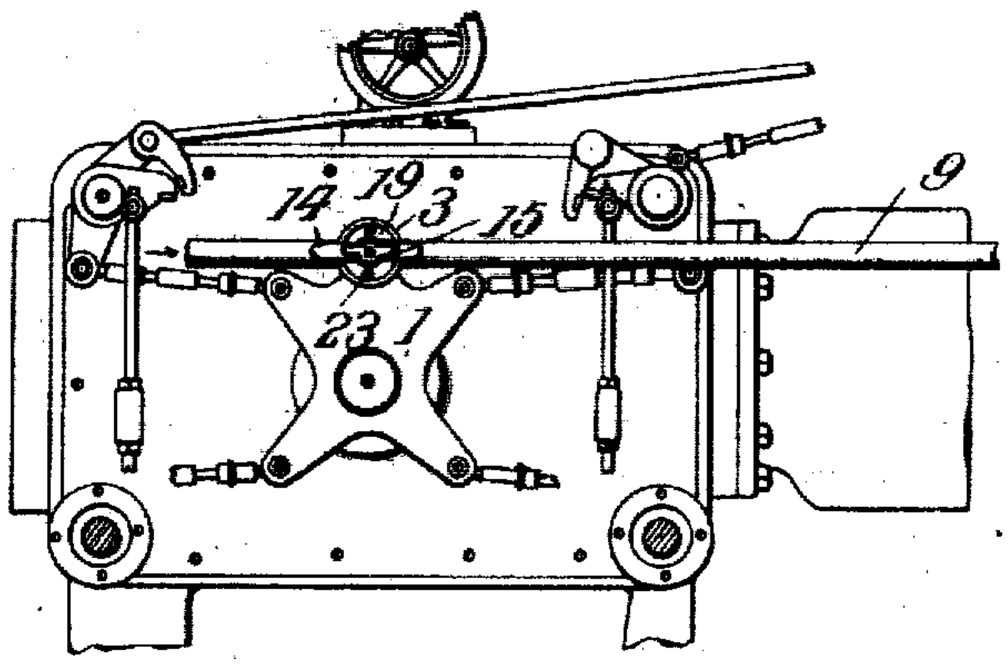


Fig. 2.

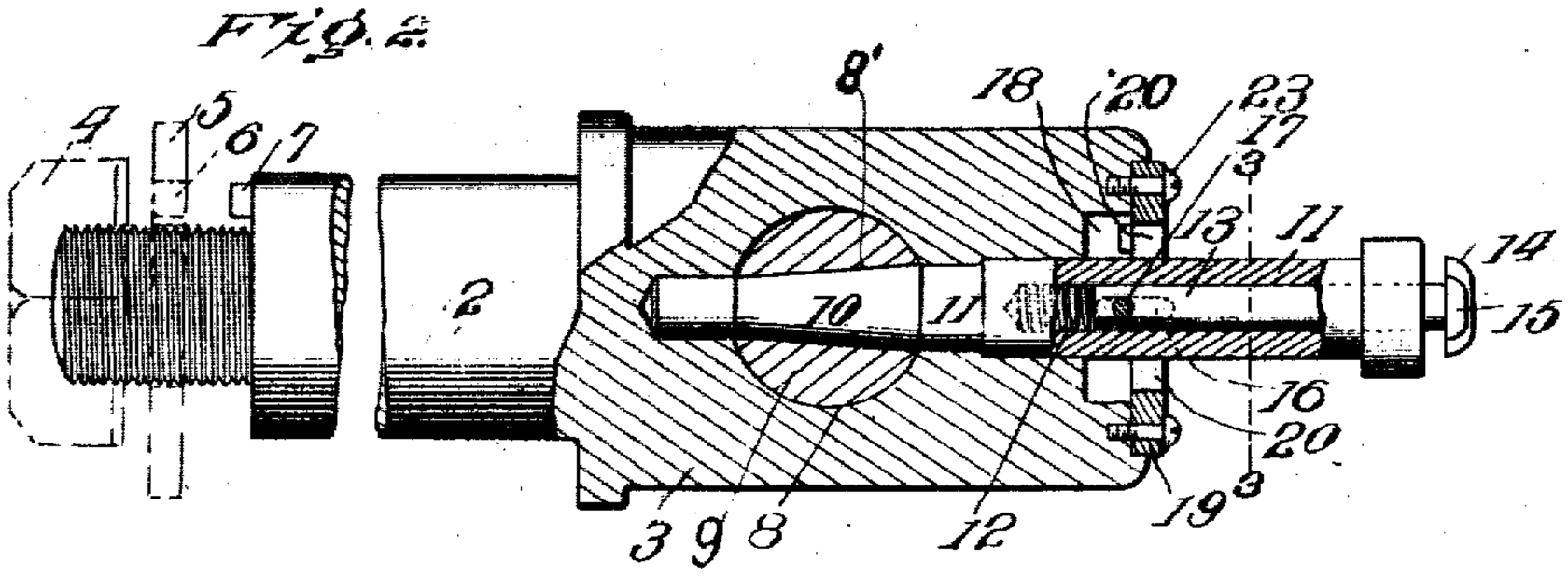


Fig. 3.

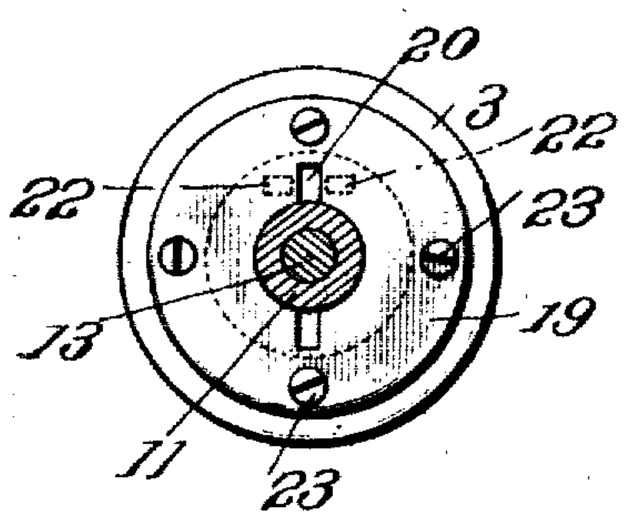
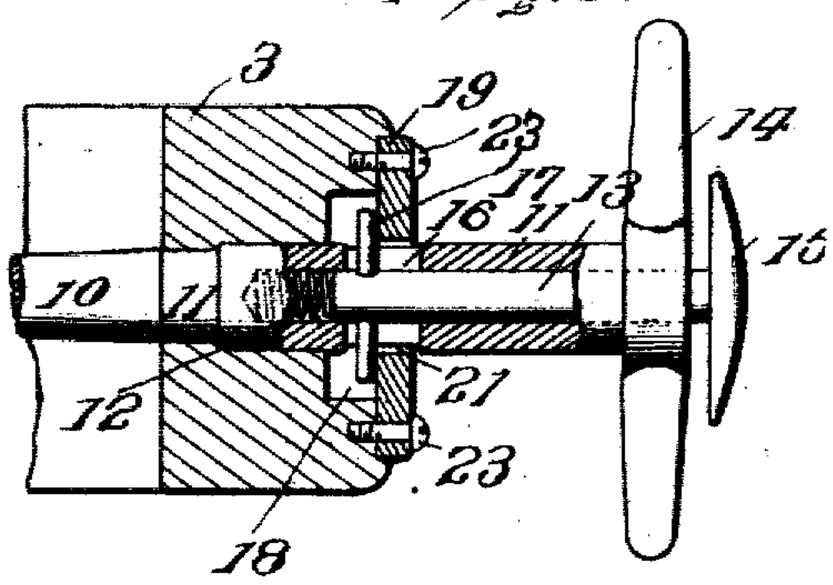


Fig. 4.



Witnesses

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MEANS FOR REMOVABLY CONNECTING MOVING PARTS OF MACHINERY.

No. 822,494. Specification of Letters Patent. Patented June 5, 1906.

Application filed September 28, 1905. Serial No. 280,510.

To all whom it may concern:

Be it known that I, HENRY HOWARD URMSTON, a citizen of the United States, residing at Jackson, in the county of Madison and State of Tennessee, have invented certain new and useful Improvements in Means for Removably Connecting Moving Parts of Machinery, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to means for removably attaching moving parts of machinery, and in particular to pins for connecting the wrist-plate and rocker-arm rod of steam-engines.

In the starting of Corliss engines it is the practice of good engineers to first drain the water from the cylinder by opening the valves manually by means of a suitable lever or the like. To do this, it is necessary to disconnect the rocker-arm reach-rod from the wrist-plate, and in many constructions it is necessary for the engineer to hold the reach-rod with one hand while operating the valves with the other—a manifest disadvantage. To obviate this necessity, means are provided for permitting the rod at such times to slide freely in its bearing in the wrist-plate and at other times to constitute a fixed connection between the two. In such case the difficulty is presented of devising a fastening device or key which can be quickly withdrawn or placed in position and which will provide against wear, at all times insuring a close fit. To overcome these difficulties and attain these important results, I have devised a construction hereinafter to be more fully described and particularly claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a fragment of a Corliss engine showing the wrist-plate and rocker reach-rod. Fig. 2 is an enlarged detail, partly in section, of the wrist-pin. Fig. 3 is a section on the line 3 3 of Fig. 2; and Fig. 4 is a fragmentary view, partly in section, of the key, taken at right angles to Fig. 2.

Referring to the drawings more in detail, the wrist-plate 1 is provided with a suitable bearing-aperture for the reception of the reduced portion 2 of a member 3, which is held securely in place by a nut 4 and a lock-washer 5, the latter engaging by a suitable hole 6 the stud 7 on the member 3. This member is perforated, as shown at 8, to form an opening adapted to receive a second member 9. At the point 8′ on this second member, where it in operation normally rests within the member 3, there is formed a taper hole adapted to receive the taper portion 10 of a key 11, serving to detachably connect the rod to said member 3. This key has a peculiar construction which adapts it to the exigencies of the position it is designed to fill. One end is tapered at 10, as stated, to engage a corresponding hole in the reach-rod, and at the opposite end it is chambered or bored out to receive the coil-spring 12 and the plunger 13, the key 11 terminating in the cross-handle 14 and the plunger 13 in the handle 15. Intermediate its length the key is slotted transversely at 16, such slot intersecting the interior bore of the key and serving to accommodate the cross-pin 17, fixed transversely in said plunger.

The member 3 is bored axially from its outer end beyond and intersecting the opening 8, such bore being adapted to receive the key and direct the taper end 10 of the same through the second member. The outer end of said member 3 is recessed, as shown at 18, and such recess is closed by the plate 19, provided with a slot 20, a central hole 21, inner lugs 22, and secured in the wrist-plate by screws 23.

The operation of the device is as follows: When the key 11 is not in place, the second member 9 slides freely in the opening 8 in the member 3. If it is desired to connect the two, the engineer takes the key and holds it in such position that the cross-pin 17 coincides with the slot 20 and then inserts the key and cross-pin through the hole 21 and slot 20 into the axial bore of the member 3 and through the hole in the second member 9, whereupon he gives it a half-turn and releases it. The spring 12 pushes the plunger 13 outward, with the pin 17 against the inner face of the plate 19, and by reaction holds the taper 10 of the key 11 securely in place, leaving no lost motion of the second member even after long-continued use. When it is desired to disconnect the reach-rod and wrist-plate, the engineer grasps the handles 14 and 15, thus pressing them together and pushing the pin 17 inward against the tension of the spring 12 and freeing it

from the lugs 22. He gives it a half-turn, bringing the pin 17 in line with the seat 20, and pulls it out. Thus it will be seen that the second member and wrist-plate can be instantly disconnected and again connected, insuring a tight connection at all times by compensating for wear.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent of the United States—

1. In a connecting device, the combination, with a member having an interior bore and a transverse intersecting opening, and a perforated plate closing one end of the bore, of a second member lying in the intersecting opening and perforated transversely at a point corresponding with the bore, a key adapted to enter the bore in the first-mentioned member through the perforated plate and to engage in the transverse perforation of the second member, a plunger movable within the key, and means carried by the plunger for engaging the plate.

2. In a connecting device, the combination, with a member having an interior bore and a transverse intersecting opening, and a perforated plate closing one end of the bore, of a second member lying in the intersecting opening and provided with a transverse tapering perforation at a point corresponding with the bore, a tapering key adapted to enter the bore in the first-mentioned member through the perforated plate and to engage in the transverse perforation of the second member, a plunger movable within the key, and means carried by the plunger for engaging the plate.

3. In a connecting device, the combination, with a member having an interior bore and a transverse intersecting opening, and a perforated plate closing one end of the bore, of a second member lying in the intersecting opening and provided with a transverse tapering perforation at a point corresponding with the bore, a tapering key adapted to enter the bore in the first-mentioned member through the perforated plate and to engage in the transverse perforation of the second member, a spring-actuated plunger longitudinally movable within the key, and means projecting laterally from the plunger to engage the plate.

4. In a connecting device, the combination, with a member having an interior bore and a transverse intersecting opening, and a perforated slotted plate closing one end of the bore, of a second member lying in the intersecting opening and provided with a transverse tapering perforation at a point corresponding with the bore, a tapering key adapted to enter the bore in the first-mentioned member through the slotted plate and to engage in the transverse perforation of the second member, a plunger movable within the key, a pin extending transversely of the plunger beyond the key, and a spring bearing upon the plunger.

5. In a connecting device, the combination, with a member having an interior bore and a transverse intersecting opening, and a perforated slotted plate closing one end of the bore, of a second member lying in the intersecting opening and provided with a transvere tapering perforation at a point corresponding with the bore, a slotted tapering key adapted to enter the bore in the first-mentioned member through the slotted plate and to engage in the transverse perforation of the second member, a plunger movable within the key, a pin extending transversely of the plunger beyond the key through the slot, and a spring bearing upon the plunger.

6. In a device of the character described, the combination, with the wrist-plate, a wrist-pin secured thereto and provided with an interior chamber, a perforated slotted plate closing one end of the chamber, and a reach-rod intersecting the chamber and provided with a transverse tapering perforation at a point corresponding thereto, of a tapering key adapted to enter the chamber through the perforated plate and to engage with its end in the perforation of the reach-rod, a plunger arranged within the key, a pin extending transversely of the plunger beyond the key, and a spring within the key bearing upon the plunger.

7. In a device of the character described, the combination, with the wrist-plate, a wrist-pin secured thereto and provided with an interior chamber and a transverse opening, a perforated radially-slotted plate closing one end of the chamber, and a reach-rod lying in the opening and intersecting the chamber and provided with a transverse tapering perforation at a point corresponding thereto, of a slotted tapering key adapted to enter the chamber through the perforated plate and to engage with its end in the perforation of the reach-rod, a plunger arranged within the key, a pin extending transversely of the plunger beyond the key through the slot, and a spring within the key bearing upon the plunger.

8. In a device of the character described, the combination, with the wrist-plate, a wrist-pin secured thereto and provided with an interior chamber and a transverse intersecting opening, a centrally-perforated and radially-slotted plate closing one end of the chamber with lugs arranged on the inner side of the plate at the side of the slot, and a reach-rod slidable in the transverse opening of the wrist-pin and provided at a point corresponding to the longitudinal chamber with a taper perforation, of a transversely-slotted tapering key longitudinally bored and adapted to enter the

chamber through the perforated plate and to engage with its end in the perforation in the reach-rod, a plunger slidably arranged within the key, a pin fixed in the plunger and extending transversely beyond the walls of the key through the slot therein, said pin being capable of passing through the slot in the plate but engaging the plate when turned on the axis of the key, and a coiled spring in the key-bore bearing against the plunger.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

HENRY HOWARD URMSTON.

Witnesses:

A. R. TEAGUE,

A. L. JENKINS.