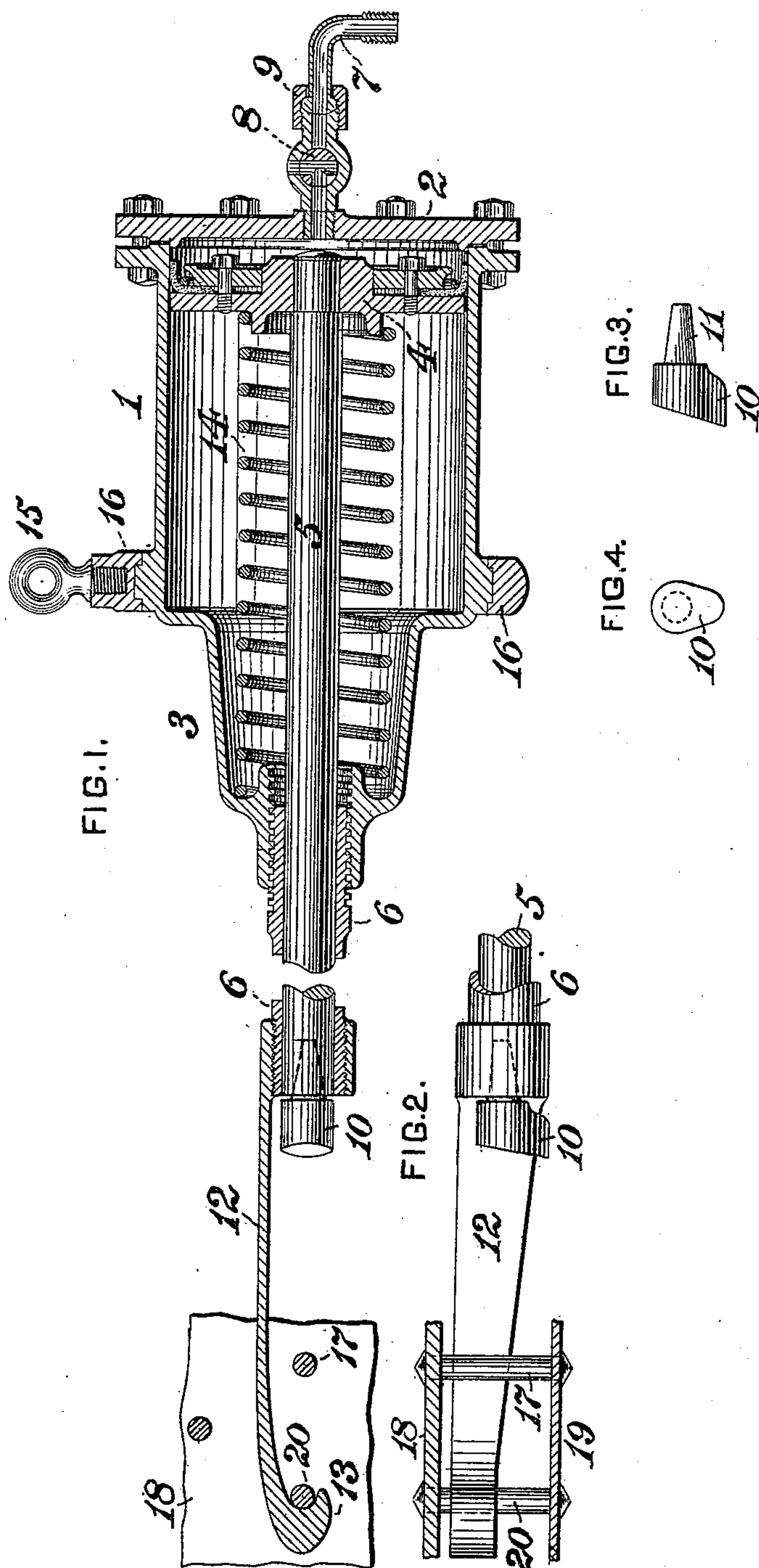


(No Model.)

R. W. BAYLEY.
MACHINE FOR SEVERING STAY BOLTS.

No. 438,793.

Patented Oct. 21, 1890.



WITNESSES:

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RICHARD W. BAYLEY, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR SEVERING STAY-BOLTS.

SPECIFICATION forming part of Letters Patent No. 438,793, dated October 21, 1890.

Application filed May 19, 1890. Serial No. 352,279. (No model.)

To all whom it may concern:

Be it known that I, RICHARD W. BAYLEY, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a certain new and useful Improvement in Machines for Severing Stay-Bolts, of which improvement the following is a specification.

The object of my invention is to provide means whereby the severing of stay-bolts to effect their removal from the water-legs of steam-boilers and other confined spaces between plates connected by such bolts may be conveniently and expeditiously effected.

To this end my invention, generally stated, consists in the combination of a fluid-pressure cylinder, a piston working therein, a hook-connection for coupling said cylinder to a fixed abutment, and a severing-tool connected to the piston-rod of said cylinder.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a longitudinal central section through a machine embodying my invention as applied in the removal of stay-bolts from one of the water-legs of a locomotive fire-box; Fig. 2, a plan or top view of the connecting-bar and tool, with a portion of the water-leg in section; and Figs. 3 and 4, side and end views in elevation of the tool detached.

In the practice of my invention I provide a fluid-pressure cylinder 1, which is closed at one end by a removable head 2 and at its opposite end by a head 3, which is preferably, as shown, integral with the cylinder, and is projected outwardly therefrom for the reception of a retracting-spring, to be presently described. A properly-packed piston 4 is fitted in the cylinder, and is provided with a piston-rod 5, which passes freely through a sleeve or tubular extension 6, secured by an external screw-thread in a central opening in the head 3. A supply-pipe 7, controlled by a regulating-valve 8, which is preferably a three-way cock, is connected to the removable head 2 of the cylinder, and is provided with a swiveling or universal joint 9 to admit of variation of position of the cylinder without affecting the supply of motive fluid thereto. The screw-threaded connection of the sleeve 6 and

cylinder-head provides for longitudinal adjustment of the sleeve to compensate for wear of the severing-tool as may from time to time be required.

The outer end of the piston-rod 5 is suitably socketed to receive the shank 11 of a breaking or cutting tool 10, which is inserted in the socket of the piston-rod, and a connecting-bar 12 is secured to the outer end of the sleeve 6, the opposite end of the bar being provided with a hooked or recessed projection 13, the center of the recess of which is substantially in line with the axis of the piston-rod 5. The hooked projection of the connecting-bar serves to connect the apparatus to a stay-bolt, which is located adjacent to that which is to be operated on, and which acts as an abutment in one direction of the strain exerted in the application of pressure to the piston 4. A helical retracting-spring 14 surrounds the piston-rod 5 and bears at its ends against the fixed cylinder-head 3 and the adjacent face of the piston 4, the tension of said spring acting when unopposed by fluid-pressure on the opposite side of the piston to force the same to and maintain it at the limit of its rearward traverse or that in the direction of the head 2.

The cylinder 1 is adapted to be suspended through a flexible connection, from a fixed overhead support by an eye-bolt 15, secured in a ring 16, which is fitted truly around the cylinder, so that the same may be turned freely therein, the bearing-face of the cylinder on which it fits being located at such point in the length of the cylinder that the apparatus when suspended by a rope or chain from its overhead support may be balanced longitudinally as nearly as may be. The piston-rod 5 and sleeve 6 are made of sufficient length for the tool to reach stay-bolts near the extremity of the longest sheets connected by such bolts on which the apparatus is desired to operate.

In the operation of the apparatus it is suspended by a rope or chain attached to the eye-bolt 15 in such position that the axis of the piston-rod 5 shall be as nearly as possible in the horizontal plane of the stay-bolt 17 which is to be severed and removed from the sheets 18 and 19, to which its ends are connected, and the projection 13 of the connecting-bar

12 is hooked upon a stay-bolt 20 in line with the stay-bolt 17. Fluid under pressure being then admitted behind the piston 4 by means of the regulating cock or valve 8, a stroke of the piston to the opposite limit of its traverse is thereby effected, and the stay-bolt 17 is broken or severed by the resultant pressure or blow of the tool 10 thereon. The regulating-cock 8 is then turned into the position shown in Fig. 1, exhausting the motive fluid from the cylinder, and the retracting-spring 14 returns the piston to initial position. The connecting-bar 12 being then hooked upon another stay-bolt, the machine is in readiness for another operation. The flexible suspension of the apparatus and the capability of adjustment of the cylinder about its axial line enable the severing-tool to be presented in proper direction to and distance from the several stay-bolts which are successively acted upon. The heads of the stay-bolts are subsequently cut off and the severed portions removed in the usual manner, the necessary preliminary rupture of the stay-bolts being effected with materially greater facility and rapidity than is practicable under the ordinary method of hand-work.

I claim as my invention and desire to secure by Letters Patent—

1. The combination of a fluid-pressure cylinder, a piston working therein, a connecting-bar attached to the cylinder and having a hook-connection for coupling the cylinder detachably to a fixed abutment, and a severing-tool connected to the piston-rod of the cylinder, substantially as set forth.

2. The combination of a fluid-pressure cylinder, a piston working therein, a connecting-bar attached to the cylinder and having a hook-connection for coupling the cylinder detachably to a fixed abutment, a severing-tool connected to the piston-rod of the cylinder, and a support on the cylinder for connection to a flexible suspending member, substantially as set forth.

3. The combination of a fluid-pressure cylinder, a piston working therein, a connecting-bar attached to the cylinder and having a hook-connection for coupling the cylinder detachably to a fixed abutment, a severing-tool connected to the piston-rod of the cylinder, and a support in which the cylinder is suspended with the capacity of movement about its axial line, substantially as set forth.

4. The combination of a fluid-pressure cylinder, a piston working therein, a severing-tool connected to the rod of said piston, and a longitudinally-adjustable connecting-bar coupled to the cylinder and provided with a hooked end projection for connecting the

cylinder detachably to a fixed abutment, substantially as set forth.

5. The combination of a fluid-pressure cylinder, a piston working therein, a connecting-bar attached to the cylinder and having a hook-connection for coupling the cylinder detachably to a fixed abutment, a severing-tool connected to the piston-rod of the cylinder, and a retracting-spring bearing against the cylinder-head adjacent to the severing-tool and against the piston, substantially as set forth.

6. The combination of a fluid-pressure cylinder, a piston working therein, a connecting-bar attached to the cylinder and having a hook-connection for coupling the cylinder detachably to a fixed abutment, a severing-tool connected to the piston-rod of the cylinder, a retracting-spring bearing against the cylinder-head adjacent to the severing-tool and against the piston, and a ring in which the cylinder is suspended at such portion of its length as to effect a substantial longitudinal balance of the apparatus, substantially as set forth.

7. The combination of a fluid-pressure cylinder, a piston working therein, a connecting-bar attached to the cylinder and having a hook-connection for coupling the cylinder detachably to a fixed abutment, a severing-tool connected to the piston-rod of the cylinder, a support in which the cylinder is suspended with the capacity of movement about its axial line, and a fluid-supply pipe leading into the cylinder and provided with a swiveling or universal joint, substantially as set forth.

8. The combination of a fluid-pressure cylinder, a piston working therein, a sleeve connected to one of the cylinder-heads, a piston-rod connected to the piston and passing freely through said sleeve, a severing-tool fixed in the outer end of said piston-rod, a connecting-bar secured to the outer end of the sleeve and provided with an end projection which is hooked or recessed substantially in line with the piston-rod, a retracting-spring bearing against the head to which the sleeve is connected and against the adjacent face of the piston, a fluid-pressure supply-pipe leading into the cylinder on the opposite side of the piston, and a suspending-ring in which the cylinder is fitted to turn freely, substantially as set forth.

In testimony whereof I have hereunto set my hand.

RICHARD W. BAYLEY.

Witnesses:

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W. B. CORWIN.