

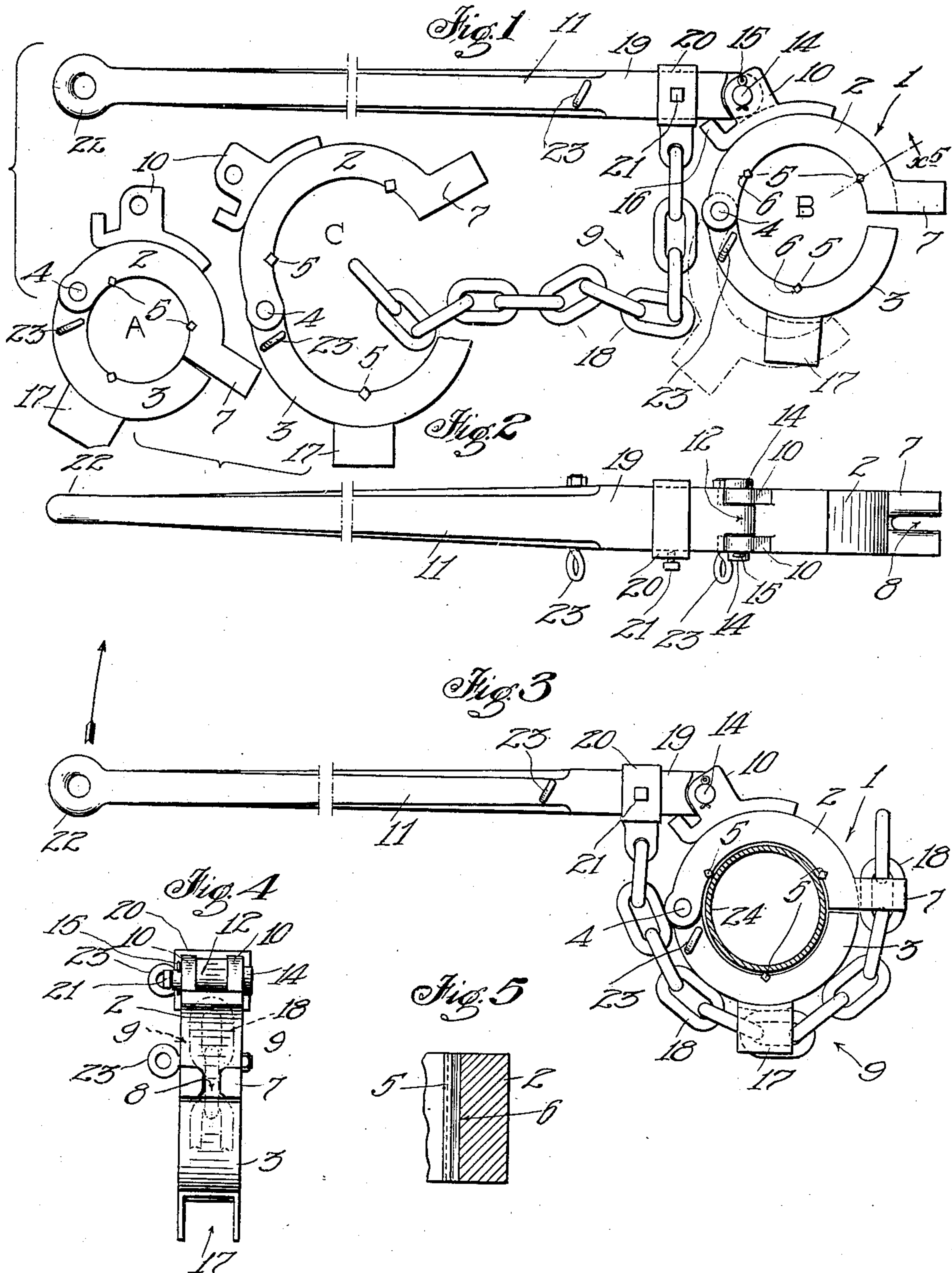
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W. R. RITCHIE & T. N. KELLETT.

CHAIN PIPE TONGS.

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# UNITED STATES PATENT OFFICE.

WILLIAM R. RITCHIE AND THOMAS N. KELLETT, OF LOS ANGELES, CALIFORNIA.

## CHAIN PIPE-TONGS.

No. 862,512.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed July 23, 1906. Serial No. 327,444.

*To all whom it may concern:*

Be it known that we, WILLIAM R. RITCHIE and THOMAS N. KELLETT, both citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Chain Pipe-Tongs, of which the following is a specification.

The object of this invention is to provide a chain pipe or casing tongs which is simple in construction, with few wearing parts, and that is effective in operation, and void of liability to injure the pipe or casing, the same being more particularly adapted for screwing or unscrewing pipes of large diameter, such as well-casings, and being of such construction as to grip the casing with great power without danger of denting or crushing the same. These newly-invented tongs comprise a pair of hinged jaws to surround the pipe, a lever pivoted to one of said jaws and flexible means connected with the lever and adapted to extend around one of the jaws to engage the jaw to which the lever is pivoted.

In order to use the tongs on a well-casing to the best advantage the hinged jaws should approximately fit the casing to be turned. We therefore provide a set of jaws of different sizes, and a lever to be pivoted to the jaws interchangeably so that the outfit will include a lever with a flexible connection thereon, a plurality of pairs of hinged jaws, and a pivot for pivoting the lever to the hinged jaws respectively. Provision is made for adjusting the flexible connection, which is preferably a chain adjustable on the lever to adapt the same to the various sets of jaws.

The tongs may be provided with one or more sets of jaws for well-drillers' use, a set of jaws being provided for each sized casing to be handled.

In the accompanying drawings we will show a tongs comprising three sets of jaws, but it is to be understood that a larger number of sets of jaws will usually be provided for each lever.

The accompanying drawings illustrate the invention:—

Figure 1 is a plan of a tongs comprising three sets of jaws and one interchangeable lever with flexible connection. Dotted lines show the jaws partly open. Fig. 2 is a side elevation of the tongs inverted. Fig. 3 is a plan of the tongs in use on a well-casing. Fig. 4 is an end view of the tongs viewed from the right of Fig. 1. Dotted lines indicate a portion of the chain caught in the retainer for the flexible connection. Fig. 5 is an enlarged sectional view on line x<sup>5</sup> of Fig. 1, of the upper jaw, showing the bit in place.

In Fig. 1, A. B. C, designate three hinged pairs of semicircular jaws. For convenience of description we will term a pair of jaws with its adjuncts, a jaw-head.

1 is the jaw-head comprising jaws 2, 3, hinged together at 4.

5 designates a plurality of ribs or bits substantially rectangular in cross-section, seated in grooves 6 and capable of being slid into and out of place for reversal or renewal as the wear on the same requires.

7 is a retainer in the form of a slotted tang on one of the jaws provided with a slot 8 to accommodate a link of the chain 9 carried by lever 11 pivoted to a fulcrum-piece 10 on the same jaw with the retainer 7. The lever may have a hinge portion 12 inserted between the ears of the fulcrum-piece 10 and fastened by a pivot pin 14 removably held in place by a cotter pin 15.

16 is a stop on the fulcrum-piece 10 to prevent the hinge 4 of the jaw from swinging too far toward the lever 11, so that when the chain 9 is caught in the retainer 7 it will bind upon the loose jaw 3 to tighten the same against the pipe or casing.

17 is a guide on the loose jaw 3 to prevent displacement of the flexible connection, as chain 9; same is shown in Fig. 4 and is made large enough to allow the links 18 of the flexible connection 9 to play there-through.

19 is a smooth portion or slide-way on the lever 11 on which a clevis or collar 20 is mounted, said collar having a smooth interior and being freely slidable along said lever, and provided with a set screw 21 by which it may be fixed at different places along the way 19. The chain or other flexible connection 9 is carried by the clevis or collar 20 and is thereby adjustable on the lever 11 in order to bring the connection into more advantageous gripping position for the various sizes of jaw-head to which the lever may be from time to time attached for handling different sizes of pipe or well-casing.

22 designates the usual eye in which tackle may be hooked for operating the lever.

23 designates eyes for attaching tackle to lift the tongs from place to place.

24 designates the well-casing.

The fulcrum portion 10 is preferably located with its pivot 14 between the middle of the main jaw 2 and its hinge, so that when the jaw-head is brought into the position shown in Fig. 3, and the flexible connection is brought around the jaw 3, the appropriate leverage for drawing the chain taut to clamp the jaw 3 against the well-casing 24 will be most effective.

By arranging the bits 5, as shown, with one of the same at the middle of the loose jaw 3 and the other two bits symmetrically disposed on opposite sides of the concave face of the main jaw, so that the three bits are at the angles of an isosceles triangle when the jaws are closed, a superior gripping effect is secured,



all of the bits acting equally on the periphery of the casing or pipe.

I do not limit my invention to the specific construction shown, as various changes of form may be made without departing from the spirit of the invention.

In practical operation the workmen will apply the tongs to the pipe or well-casing, and use the tongs in the usual way. On the forward movement of the lever indicated by the arrow in Fig. 3, the loose jaw is drawn tight against the casing, and the bits take hold. On the reverse movement, the chain slackens and the lever engages the stop 16, whereby the jaw-head is moved backward. Since the chain is slackened, the bits release the casing and allow the tongs to turn on the casing to take another hold. The purpose of the shiftable clevis or collar 20 is to shift the fulcrum point of the lever to adjust the lever to different sized jaw-heads.

What we claim is:—

1. A plurality of hinged pairs of semicircular jaws of different diameters, one member of each pair being provided with a fulcrum-piece and a retainer for a flexible connection; a lever, means for pivoting the lever to the fulcrum-pieces interchangeably, and a flexible connection adjustably mounted on the lever and adapted to catch on the retainers of the pairs of jaws respectively when the same are in place.

2. A pair of semicircular hinged jaws, one of said jaws being provided with a fulcrum-piece and a retainer for a flexible connection; a lever pivoted to the fulcrum-piece, and a flexible connection on the lever, the same being adapted to be held by said retainer.

3. A pair of semicircular jaws hinged together, one of said jaws being provided with a fulcrum-piece and a retaining device, a lever pivoted to the fulcrum-piece, a clevis slidably mounted on the lever, and a flexible connection adapted to surround the other jaw and engage the retaining device.

4. A pair of hinged jaws, one being provided with a fulcrum-piece and a retaining device; a lever pivoted to the fulcrum-piece, a clevis slidably mounted on the lever, a flexible connection carried by the clevis, adapted to extend around the other jaw and engage the retaining device, and a set-screw for fixing the clevis on the lever.

5. A pair of semicircular hinged jaws, one of said jaws being provided with a retaining device, a lever hinged to said jaw, a chain fastened to the lever and adapted to extend around the other jaw and engage the retaining device.

6. A pair of hinged semicircular jaws, one of said jaws being provided with a guide and the other jaw being provided with a retaining device; a lever pivoted to the last-named jaw, a flexible connection on the lever adapted to extend around the first-named jaw and through the guide thereof and adapted to engage said retaining device.

7. A pair of semicircular hinged jaws, one of said jaws

being provided with a retaining device at the free end thereof and a fulcrum-piece between the center and the hinged end of said jaw, a lever pivoted to the fulcrum-piece, and a flexible connection on the lever adapted to go around the other jaw and to engage the retaining device.

8. A pair of semicircular jaws hinged together, one of said jaws being provided with a retaining device and with a pair of internally-arranged seats for bits, bits in said seats, a lever pivoted on said jaw between the center and the hinge thereof, a flexible connection on said lever adapted to extend around the other jaw and engage said retaining device, said other jaw being provided with a centrally-arranged seat for a bit, and a bit in said seat, the several bits being disposed on the two jaws substantially at the angle of an isosceles triangle when the jaws are closed.

9. A pipe wrench consisting of a separable jaw-head, a lever attached thereto, chain links surrounding said jaw-head, a collar having a smooth interior and freely slidable on said lever arranged to tauten and relax said links, means to hold the collar in its adjusted position and means for locking said links.

10. A pipe wrench having jaws pivoted to each other, a lever pivoted to one of said jaws, a collar on said lever, means to hold the collar in its adjusted position and chain links attached to said collar and adapted to encircle one of said jaws and clamp said jaw against a pipe.

11. A pipe wrench comprising jaws having internal bits, a lever secured to one of said jaws, a collar having a smooth interior and freely slidable on said lever, chain links attached to said collar, means to hold the collar in its adjusted position and means for locking one end of said chain links upon the jaw to which the lever is secured.

12. A wrench comprising circular jaws pivotally secured together having internal gripping means; a lever carried by one of said jaws, chain links carried by said lever and arranged to encircle the other jaw, means for locking said chain links upon the jaw to which the lever is attached, and means for shifting said chain links with respect to said lever.

13. A wrench comprising circular members hingedly connected, one of said members having a slotted tang; a lever pivotally attached to said member, and a collar slidable on said lever; a chain carried by said collar surrounding one of said members and arranged to be secured in said slotted tang.

14. A wrench consisting of circular jaws pivoted together, one of said jaws having a slotted tang; a lever, a chain carried by said lever arranged to encircle one of said jaws and to engage said slotted tang, and means for shifting the fulcrum point of said lever.

In testimony whereof, we have hereunto set our hands at Los Angeles, California, this 16th day of July, 1906.

WILLIAM R. RITCHIE.  
THOMAS N. KELLETT.

In presence of—

JAMES R. TOWNSEND,  
JULIA TOWNSEND.