No. 700,359. Patented May 20, 1902.

J. D. McFARLAND, Jr.

WRENCH.

(Application filed Oct. 28, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

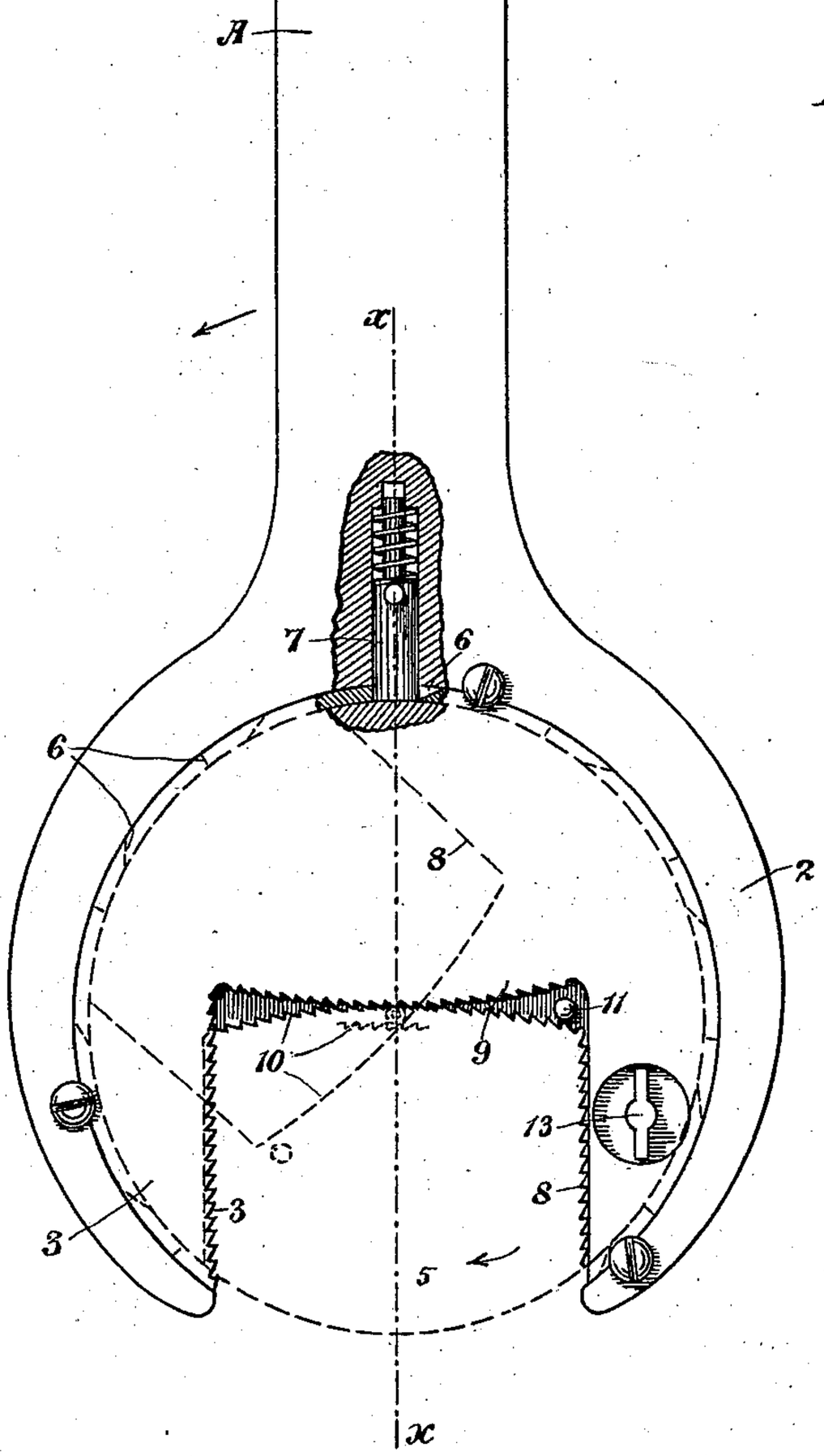
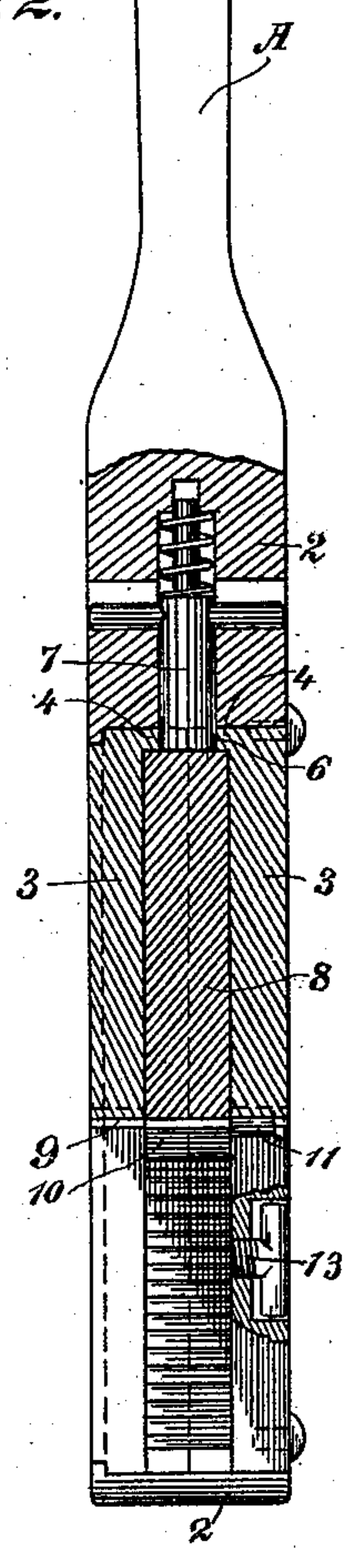


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 4.

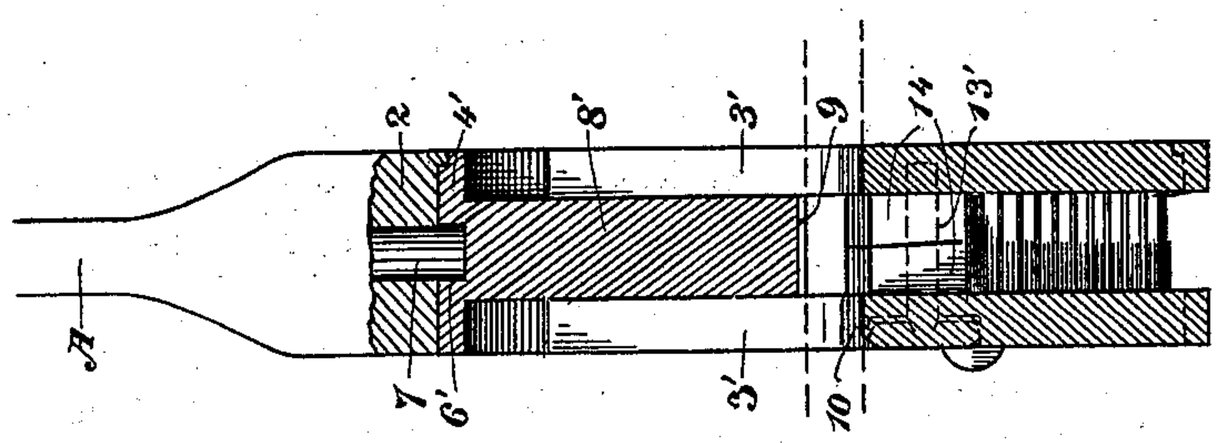


Fig. 5.

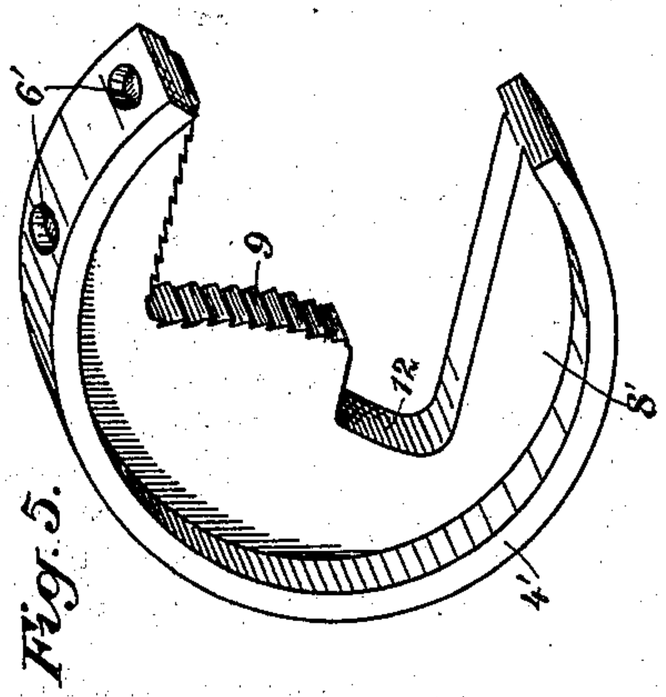


Fig. 6.

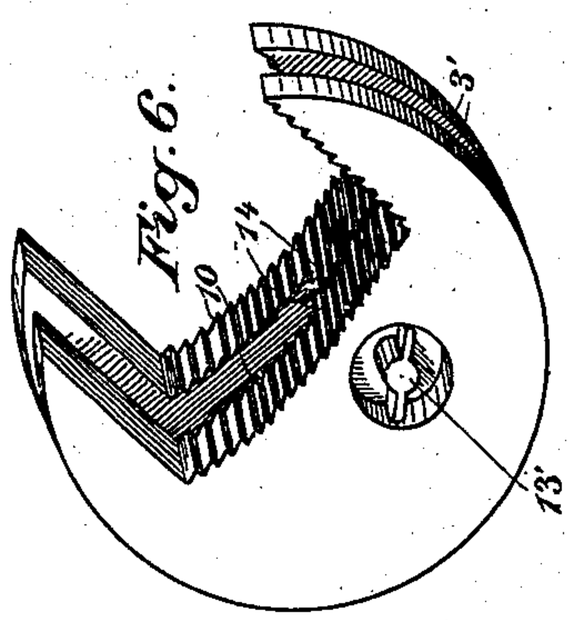
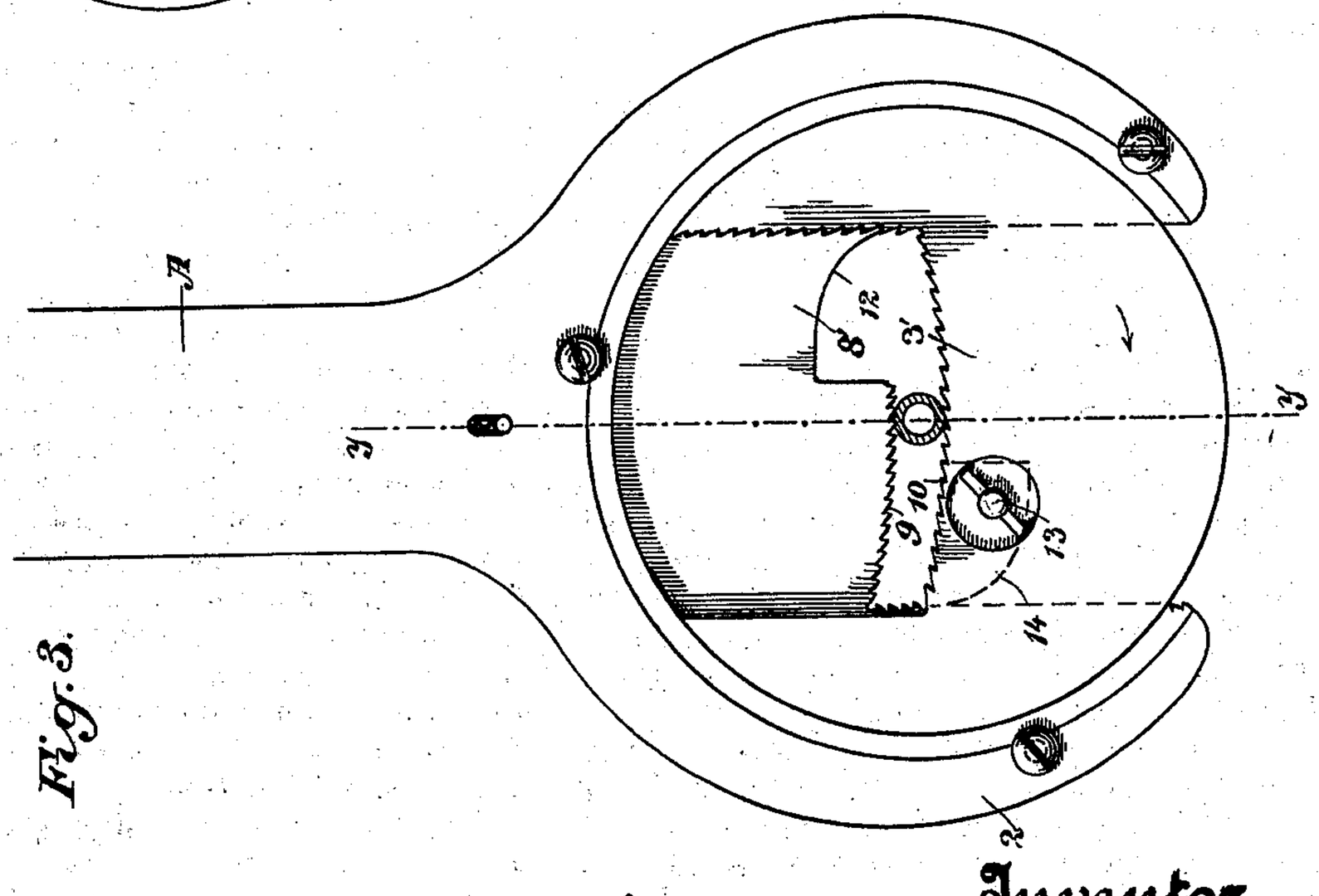


Fig. 3.



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UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 700,359, dated May 20, 1902.

Application filed October 28, 1901. Serial No. 80,221. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. MCFARLAND, Jr., a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Wrenches; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in wrenches such as may be used for nuts, pipes, and the like. Its purpose is to provide a device that can be operated in a small compass, that will have a wide range of different sizes of pipe, and with which wrench it is not necessary to reëngage the object at each actuation of the handle.

It consists of a handle having an enlarged head in which a jaw is revolubly mounted, said jaw composed of independently-revoluble members, jaw-openings in said members which are adapted to coincide, and means for turning the members to engage the pipe.

It also includes details which will be more fully set forth hereinafter, having reference to the accompanying drawings, in which—

Figure 1 is a view of the wrench. Fig. 2 is a section of the same on line *x x* of Fig. 1. Fig. 3 shows a modification. Fig. 4 is a section of the same on line *y y*, Fig. 3. Figs. 5 and 6 are detail views of the respective jaws.

A represents a handle or stock having an enlarged head 2 with a circular opening, in which is contained a circular revoluble jaw. In Figs. 1 and 2 this jaw is shown composed of two outer disks 3, firmly united together, so as to be revoluble in unison. In this case they are integral with an annular flange 4, which is turnable in a corresponding groove or guide in the circular opening of the head 2, by which means the jaw is retained in place. A suitable opening 5 in the disks or "jaw member" 3, as I shall term it, allows of the admission of the pipe or nut to be engaged. The flange 4 is provided with a series of perforations or notches 6, while the handle carries a spring-pressed pawl 7, adapted to engage the notches and revolve the jaw when the handle is actuated. In the space between the disks 3 another disk or complementary jaw member 8 is revoluble, the outer jaws forming a housing, as it were, for the disk. This disk has an opening coinciding when the jaws are opened with the opening 5. The depth of the opening 5 depends on the diameter of the largest pipe to be engaged and contained within the periphery of the jaw. The bottom of the jaw-opening of the outer disks or jaw member 3 is concaved, as shown at 9, while the bottom of the opening in the member 8 is convexed, as shown at 10. The walls and bottom of the openings are suitably serrated, so as to insure a good grip on the pipe. When the two members 3 and 8 are turned in relation to each other, so as to have their jaw-openings coincide, the serrations upon the two members will all be pitched in the same direction relatively; but when the members are in engagement with a pipe, as shown in Fig. 3, the serrations will pitch oppositely to each, other and so tend to grasp the pipe more tightly.

In operation a pipe of any diameter less than the depth of the opening 5 is inserted into the jaw-opening. The member 8 is then revolved to inclose the pipe sufficiently to insure engagement. The turning of the member 8 is effected by means of a pin 11. When both jaws are bearing as firmly upon the pipe as they can be made to bear by the fingers of the operator, they are clamped together to prevent their reopening by means of a screw 13, threaded in one of the disks 3 and pressing against the jaw 8. The handle is then oscillated to revolve the jaws. As power is applied the members engage the pipe more tightly, because the serrations or teeth on the two members act oppositely upon the pipe and tend to contract the jaw-opening more and more. The pipe is released by loosening the clamp-screw 13 to allow the jaw 8 to turn in the other direction.

With this wrench a pipe is engaged by the teeth but once, for the jaws do not release their grip with each oscillation of the handle, and in consequence a pipe will not be marred, as it would be by the ordinary wrenches.

In Figs. 3, 4, 5, and 6 I have shown another form of revoluble jaw. In this case I use independently-revoluble members; but the central one 8′ is now the driving member and

carries the outer disks or member 3′. This central member has a peripheral guide-flange 4′, with perforations 6′, which engage the pawl carried by the handle or stock. The bottom of the jaw-opening of the member 8′ has a depression or notch 12, which is adapted to receive the lugs 14 on the adjacent faces of the disks 3′. The latter are provided with jaw-openings, which are adapted to coincide with the opening in the member 8′. A set-screw 13′, threaded in the lug portion of the disks 3′, holds the latter together. A small space is left between the adjacent ends of the lugs 14 when the disks 3′ are in place against the jaw 8′, so that by tightening the set-screw 13′ the two members are firmly bound together and are prevented from turning in relation to each other. The head of the screw is recessed, as shown in Fig. 6, so that it is flush with the surface of the outer jaw. As limited by the pin 11, as in Fig. 1, or by the lugs 14, as in Fig. 3, the movement of one jaw member upon the other is practically that of a half-revolution, which is sufficient to engage any size of pipe that can enter the jaw-opening. Ordinarily the width of the opening 5 is such that the idle member 8 or 3′, as the case may be, will not fall out; but, if desired, one or the other of the adjacent faces of the two members could be provided with a suitable annular tongue and the opposite face with a corresponding groove, so as to insure the proper rotation of one member within the other when the idle member is moving across the opening of the driving member.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination in a wrench of a handle having an enlarged head, and a jaw consisting of two independently-revoluble jaw members mounted in said head.

2. The combination in a wrench of a handle, and a revoluble jaw carried thereby, said jaw consisting of a plurality of slotted disk jaws independently revoluble in relation to each other.

3. The combination in a wrench of a handle, a revoluble jaw mounted therein, an opening in said jaw for the admission of the pipe or other article to be engaged, and an independently-revoluble jaw for contracting said opening to engage articles of various sizes.

4. The combination in a wrench of a handle, a revoluble jaw mounted thereon and adapted to be actuated by the oscillation of the handle, said jaw consisting of independently-rotatable members and jaw-openings in these members which are adapted to coincide to admit an article to be engaged.

5. The combination in a wrench of a handle having an enlarged head, a circular opening in said head, a circular jaw mounted in said opening, said jaw consisting of two members, one carried by and rotatable independently of the other, and means by which said members may be revolved in unison.

6. The combination in a wrench of a handle having an enlarged head, a circular revoluble jaw set into said head, said jaw consisting of members rotatable independently of each other, jaw-openings in said members adapted to coincide, and means for rotating one of said members to contract said jaw-opening.

7. The combination in a wrench of a handle having a circular opening, revoluble jaw members mounted in said opening, one of said members adapted to be driven by the oscillation of the handle, the other of said members carried by but turnable independently of the other member, and means for locking said members so that such independent movement is prevented.

In witness whereof I have hereunto set my hand.

JAMES D. MCFARLAND, JR.

Witnesses:
S. H. NOURSE,
JESSIE C. BRODIE.