

C. ABRAMS.

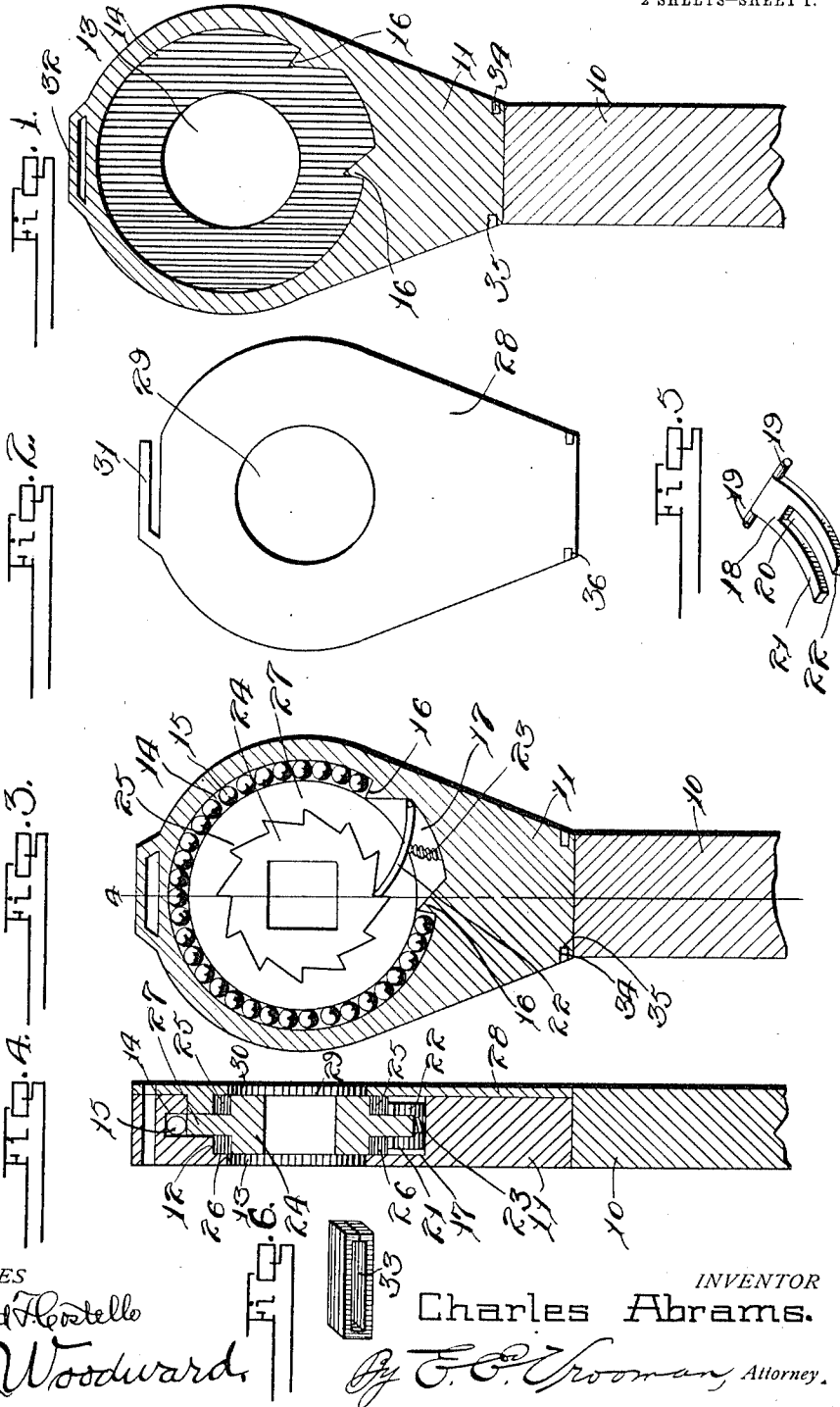
WRENCH.

APPLICATION FILED NOV. 13, 1911.

1,040,835.

Patented Oct. 8, 1912.

2 SHEETS—SHEET 1.



WITNESSES

Howard Hostelle

Ross Woodward

INVENTOR

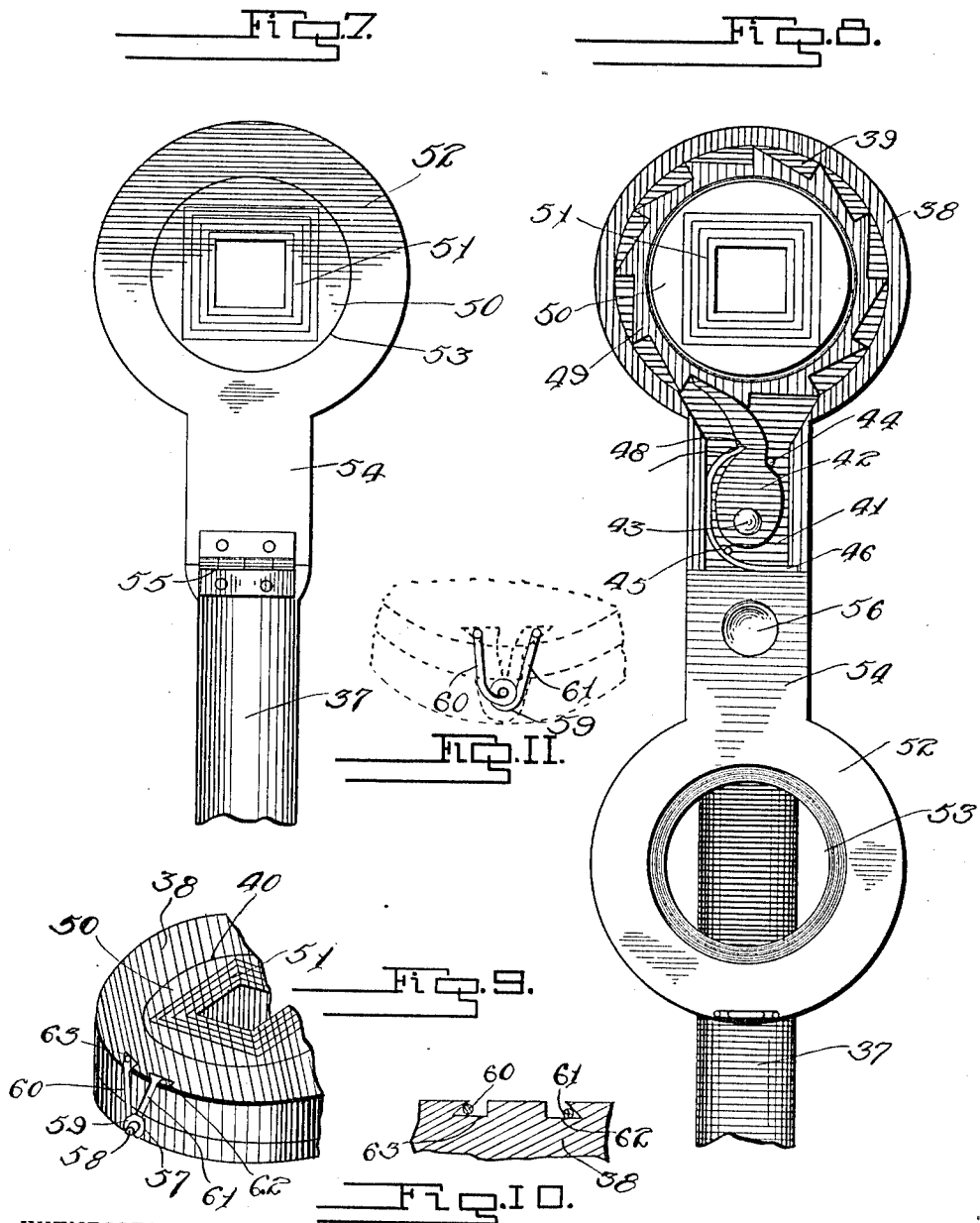
Charles Abrams.

By F. C. Vrooman, Attorney.

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Ross Woodward.

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UNITED STATES PATENT OFFICE.

CHARLES ABRAMS, OF SUFFERN, NEW YORK.

WRENCH.

1,040,835.

Specification of Letters Patent.

Patented Oct. 8, 1912.

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To all whom it may concern:

Be it known that I, CHARLES ABRAMS, a citizen of the United States, residing at Suffern, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Wrenches, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to wrenches of the ratchet type and the principal object of the same is to provide the wrench with a novel type of nut engaging member which is mounted in ball bearing race so that the wrench will work easily.

It is also desired to provide a novel type of tooth which engages the ratchet carried by the nut engaging member.

This invention is illustrated in the accompanying drawing, wherein—

Figure 1 is a section through the wrench with the inner portions removed. Fig. 2 is a view of the plate which fits upon the wrench and holds the inner portions in place. Fig. 3 is a view similar to Fig. 1 with the inner portions in place. Fig. 4 is a section along the line 4—4 of Fig. 3. Fig. 5 is a perspective view of the tooth which engages the ratchet. Fig. 6 is a view of the clamp which holds the plate in position upon the wrench. Fig. 7 is a top plan view of a modified form of the wrench. Fig. 8 is a view similar to Fig. 7 with the hinged plate turned back upon the handle. Fig. 9 is a fragmentary view of the outer end of the wrench head. Fig. 10 is a sectional view through the end of the wrench. Fig. 11 is a perspective view of the latch member with the wrench head indicated by dotted lines.

Referring to the accompanying drawings by numerals it will be seen that this invention comprises a handle 10 which has an enlarged head 11 at one end, the head 11 being provided with a transversely extending opening 12 which has a reduced end portion 13. An annular groove 14 leads from the opening 12 and forms a race for the ball bearings 15. The ball bearing race 14 extends only partially around the opening 12 and is provided with stops 16 at each end. The remainder of the groove 14 forms a socket 17 in which the latching tooth is mounted. The latching tooth comprises a curved plate 18 which has pivot ears 19 at one end and is provided with a longitudinally extending slot 20, thus forming the

two arms 21 and 22. A spring 23 fits in the socket 17 and bears against the tooth 18 so that it will normally be held in an operative position.

The nut engaging piece 24 is mounted in the opening 12 and is provided with teeth 25 and 26 which are engaged by the arms 21 and 22 of the tooth 18. An annular rim 27 is formed midway the thickness of the nut engaging piece 24 and holds the ball bearings 15 in the race 14. It should also be noted that this rim bears against the ball bearings when the wrench is in use thus causing the wrench to work easily.

A plate 28 is fitted upon the head 11 and is provided with an opening 29 of the same dimensions as the inner end portion 13 of the opening 12. This plate is provided with an inwardly extending annular shoulder 30 which fits against one face of the rim 27 thus holding the nut engaging piece in position. Tongue 31 and eye 32 are formed upon the plate 28 and head 11 respectively and are connected by the collar 33 which fits upon the eye 32 and has the tongue 31 pass through it. This collar 33 is formed of spring metal so that the arms will be tightly gripped and thus holds the plate securely upon the head. A second collar 34 is positioned upon the head 11 near the arm 10 and fits in the seats 35 and 36, which are formed in the head and plate thus assisting in holding the plate in position.

When using this device, the plate is removed and the nut engaging piece of the proper size is inserted and the plate then secured in position by the prescribed means. The nut is then engaged by the piece 24, and by turning the wrench in the proper direction, the nut will be screwed upon the bolt. If it is desired to unscrew the nut, the nut is inserted through the opposite end of the nut engaging piece and the wrench then turned in the opposite direction. These wrenches are sold with a number of nut engaging pieces of different sizes so that nuts of different size may be easily removed. It should be noted that this piece can be easily inserted as the plate can be very easily and quickly removed and it should also be noted that the wrench will operate very easily as it is provided with a ball bearing race. It should also be noted that the type of ratchet engaging tooth which is mounted in the head prevents any danger of the wrench slipping as there is provided two arms which engage

separate sets of teeth so that in case one of the teeth in one set becomes broken or one of the arms of the latch becomes broken, the wrench will still work properly.

5 In Figs. 7 through 11, I have shown a modified form of wrench in which there is provided a handle 37 and an enlarged head 38. The head 38 has its central portion reduced to form the seat 39 and is provided with an opening 40. The handle 37 has its end near the head 38 provided with a cut out central portion forming a housing 41 in which the locking tooth 42 is mounted by means of the pin 43. Studs 44 and 45 are mounted in the housing upon opposite sides of the tooth 42, the stud 44 limiting the movement of the tooth in one direction and the stud 45 holding the spring 46 in spaced relation to the tooth. The end 47 of the spring is seated in the notch formed in the tooth so that the tooth will be normally held in a position to engage the ratchet teeth 49 which are formed upon the nut engaging sleeve 50. A plurality of nut engaging members 51 are positioned in the sleeve 50 so that the sleeve may be used to engage nuts of various sizes. The sleeve passes through the opening 40 and has the ratchet 49 resting upon the seat 39. It will thus be evident that after the nut is engaged that the handle and head may be turned in one direction without moving the sleeve, whereas when turning it in the opposite direction, the tooth 42 will engage the teeth 50 and turn the sleeve, thus turning the nut in the desired direction.

A cap 52 which is provided with an opening 53 has its shank 54 hinged to the handle 37 by means of the hinge 55 and is provided with a socket 56 in which the pin 43 fits. The end of the cap 52 is provided with a seat 57 in which the latching tooth is mounted by means of the pin 58. The latching tooth is formed from a piece of resilient wire which is coiled intermediate its length to form the spring eye 59 through which the pin passes. The arms 60 and 61 extend from the eye 59 and are adapted to fit in the

grooves 62 and 63 which are formed in the head 38. These grooves extend divergently from the seat 57 and are provided with undercut sides so that when the latching tooth is mounted in the grooves the cap will be securely held to the head. When the cap is in place one end of the sleeve 50 extends through the opening 53 so that the nut may be engaged by either end of the sleeve thus making it possible to use this wrench either for screwing a nut on or off of a bolt.

What I claim is:—

1. In a wrench, a handle, a head at the end of said handle, nut engaging means mounted in said head, an eye carried by said head, a plate fitting upon said head and holding said nut engaging means in place, a tongue extending from said plate parallel to said eye, a band connecting the tongue and eye, and a second band surrounding the inner end of said head and plate.

2. A wrench provided with a head having a transversely extending opening formed therethrough, a nut engaging piece rotatably mounted in said opening, an eye formed upon one end of said head, a side plate for said head, a tongue formed upon one end of said plate, a collar connecting the tongue and eye, and a second collar surrounding the opposite end portions of said head and plate.

3. A wrench provided with a head having a transversely extending opening, a nut engaging piece rotatably mounted in said opening, a side plate for said head holding said nut engaging piece in position, a tongue extending from said plate, an eye carried by said head, a collar connecting said tongue and eye, and a band at the opposite end portion of said head and plate holding said plate in position.

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

CHARLES ABRAMS.

Witnesses:

JOHN ZABRISKIE,
CHARLES CURRY.