Aug. 15, 1933. D. F. HASTY 1,922,680

COMBINATION WRENCH

Filed Aug. 7, 1931

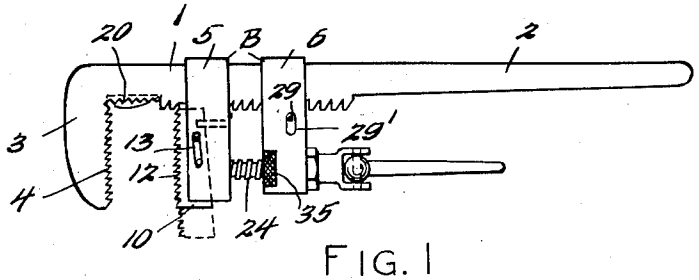


FIG. 1

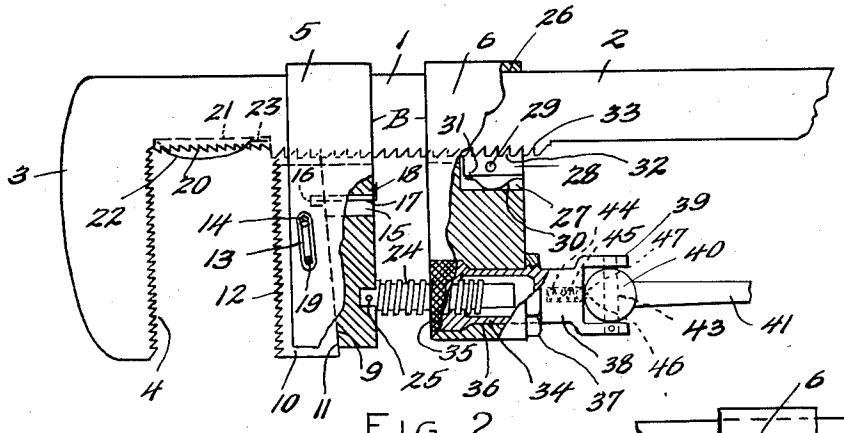


FIG. 2

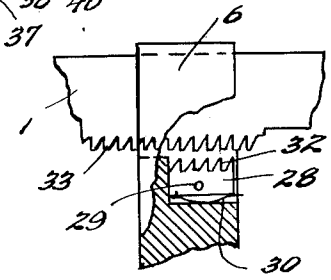


FIG. 4

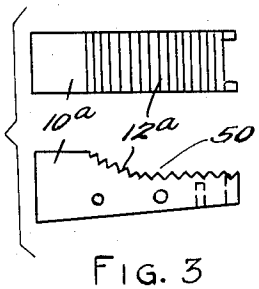


FIG. 3

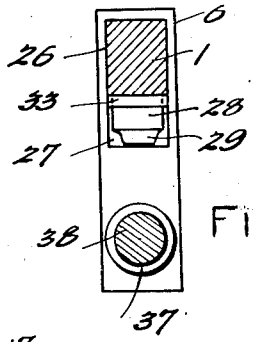


FIG. 5

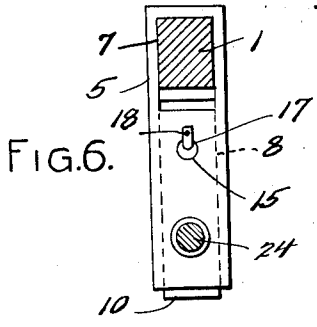


FIG. 6.

INVENTOR.

BY Dozier F. Hasty

Shrewr, Crowe & Gordon

ATTORNEYS.

Patented Aug. 15, 1933 1,922,680

UNITED STATES PATENT OFFICE

1,922,680

COMBINATION WRENCH

Dozier F. Hasty, Atlanta, Ga.

Application August 7, 1931. Serial No. 555,826

1 Claim. (Cl. 81—136)

Generically this invention relates to wrenches, but it more especially is directed to a combination vice, pipe, and monkey wrench of improved design.

An important object of this invention is the provision of a wrench of this character comprising an integral jaw and body portion, a jaw holder member and anchor member movable as a unit with respect to the body portion, said anchor member having a ratchet connection with said body, and means interconnecting said members operable to effect relative movement of said holder with respect to said anchor member.

A further important object of this invention is the provision of a device of this character including a movable unit comprising a holder member having a movable jaw member mounted therein and an anchor member having a ratchet member for anchoring said member at any desired point with respect to said body portion, screw means for effecting movement of said jaw holder with respect to said anchor holder, and additional means coacting with said screw for exerting a leverage force on said holder and jaw member in clamping direction.

Another object of this invention is the provision of a wrench of this character having a jaw member movable in its holder when employed as a pipe wrench and means for rigidly securing said jaw in said holder when employed as a monkey wrench or vice, said wrench having three point contact with the object to be gripped, and means for preventing the third point contact during initial tightening of the wrench on said object.

With these and other objects in view, which will become apparent as the description proceeds, the invention resides in the construction, combination and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawing, in which like characters of reference indicate like parts throughout the several figures, of which:

Fig. 1 is a side elevation of my improved combination wrench.

Fig. 2 is a similar fragmentary view with parts broken away.

Fig. 3 is a face and side view of a modified form of movable jaw member.

Fig. 4 is an enlarged detail view of ratchet dog, part of holder and body portion.

Fig. 5 is edge view of anchor member with body portion in section, and

Fig. 6 is a similar view of the movable jaw holder.

The wrenches of this general type with which I am familiar have proven deficient, in that, in their practical application they can be used only as a monkey wrench or pipe wrench, respectively, requiring adjustment for the slightest variation in the size of the nut or the pipe, and are incapable of being operated to grip or clamp a nut, pipe or other object under great vice-like pressure, and it was to overcome such deficiencies and to provide a wrench simple in construction, including a movable jaw unit expeditiously movable into and out of contact with the object to be gripped, such as a nut or pipe, having means to compensate for slight variations in the size of such object without necessitating further adjustment, adjustable means carried by said unit for further tightening the jaws of said object, and additional leverage means coacting with said adjustable means for effecting an added vice like pressure of said jaws on said object, that I designed the device forming the subject matter of this invention.

In the illustrated embodiment characterizing this invention there is shown a wrench comprising a body portion 1 terminating at one end in handle 2 and the other in, what may be termed, upper or fixed jaw 3 extending at right angles thereto, and formed on its clamping edge with a roughened surface or teeth 4.

Movable jaw unit B is adapted to be slidably mounted on body portion 1 and comprises jaw holder 5 and ratchet anchor member 6. Jaw holder 5 is formed adjacent its upper end with a rectangular opening 7 through which is adapted to extend body portion 1, said holder extending in parallelism with jaw 3. Holder 5 has one edge formed with a longitudinal slot 8 having a downwardly inclined bottom wall or seat 9. A movable jaw member 10 formed with a correspondingly inclined surface 11 is adapted to slidably engage seat 9 with its clamping edge adapted to extend slightly beyond the edge of holder 5 and formed with a roughened surface or teeth 12. The side walls of slot 8 are formed substantially central of their length with aligned slots 13 extending parallel with bottom wall 9. Jaw member 10 is formed with an aperture adapted to register with the upper ends of slots 13 when said jaw is in retracted position and is adapted to receive a pin 14 threadedly or otherwise suitably secured therein with its ends extending through said slots 13. Holder 5 is also formed spaced from its upper end with an aperture 15

communicating with slot 8 and registering with countersunk opening 16 formed in jaw member 10, and mounted in said aperture 15 and extending within opening 16, is leaf spring 17 secured to holder 5 by screw 18 or in any suitable manner. Spring 17 tends to aid in operation of jaw 10 and hold the same against the object being held or operated upon at all times.

Owing to its construction, jaw 10 is adapted to move upward and also in clamping direction when handle 2 is moved in one direction and downward and away from the object being clamped when said handle is moved in the opposite direction, rendering said device especially effective as a pipe wrench.

Jaw 10 is also formed with an aperture 19 adapted to register with the lower end of slots 13 when the same is in retracted position, and by transferring pin 14 to aperture 19, jaw 10 is rigidly locked in holder 5, thereby permitting the use of the device as a monkey wrench or vice.

In order to provide a third gripping surface, body portion 1 intermediate jaws 3 and 10 is formed with serrations or teeth 20 and with a longitudinal slot 21 adapted to receive curved leaf spring 22 having one end suitably secured as at 23, and normally extending beyond the teeth 20 so as to hold the object to be clamped away from said teeth during the initial tightening of jaw 10 against said object. A threaded or screw shaft 24 has one end secured in holder 5 by pin 25, or in any suitable manner, and for a purpose hereinafter more fully appearing.

Anchor member 6 is formed adjacent its upper end with a rectangular opening 26 to receive portion 1 on which said member is slidably mounted, and is adapted to extend in parallel alignment with holder 5. The bottom wall of opening 26 is formed with slot 27 in which is mounted ratchet dog 28 on screw or pin 29 suitably secured therein and with its ends extending through aligned slots 29' formed in member 6 and projecting beyond the side surface thereof to constitute catch elements by means of which said ratchet dog may be manually moved to inoperative position with respect to teeth 33. Leaf spring 30 is secured at one end to the under surface of said dog by screw 31. The upper face of dog 28 is formed with teeth 32 pitched rearwardly corresponding to teeth 33 formed on the under surface of body portion 1 which are pitched forwardly, so that the teeth 32 of dog 28 will easily slide over said teeth 33 when anchor member 6 is moved in clamping direction, but mesh therewith under action of spring 30 and normally prevent movement of said member in the opposite direction except when manually released, as above described.

An internally threaded sleeve member 34 with an enlarged knurled portion 35 is rotatably mounted in opening 36 formed in the lower end of member 6, said opening corresponding to the configuration of said sleeve. Sleeve 34 is adapted to receive screw shaft 24, and extends beyond member 6, and is maintained therein by nut 37 threadedly or otherwise secured thereon, and terminates at its free end in socket member 38 formed with jaws 39 having their inner walls concaved to correspond to the complemental surface of ball portion of member 40 formed on one end of lever 41. Said ball portion 40 is loosely connected to socket 38 by a pin extending through the centrally disposed slot 43 formed therein and riveted or otherwise secured to said jaws 39.

Sleeve 34 is formed with a central countersunk bore 44 connecting with socket member 38 adapted to receive coil spring 45, on the free end of which is mounted ball 46 adapted to normally extend slightly within socket 38 and seat in indentation 47 formed in the surface of ball portion 40 at a point opposite to lever 41, whereby said lever is normally maintained in inoperative position and in longitudinal alignment with sleeve 34.

It will be observed that the above structure effects a ball and socket connection between the sleeve 34 and lever 41, and constitutes a unit normally rotatable by knurled portion 35. However, movement of lever 41 out of alignment with sleeve 34 effects depression of ball 46, and permits said lever to be brought into engagement with jaws 39, to rotate said sleeve, as desired.

In instances where it is necessary to use the wrench overhead or where to drop the wrench would be more or less disastrous, it has been found expedient to employ a slightly modified form of jaw 10*a*, interchangeable with jaw 10, and which tends to hold and prevent complete disengagement of the wrench from the object being clamped or turned. Jaw 10*a* is similar to jaw 10 except that the clamping face on which is formed teeth 12*a* is curved as at 50. It is apparent that jaws similar to 10 and 10*a* constructed in accordance with the particular requirements may be employed without departing from the spirit of my invention.

While the operation of the device would seem to be clear from the above description it might be well to further state that to grip a nut, pipe or other object it is but necessary to place the same intermediate jaws 3 and 10 and slidably move unit B to effect contact of teeth 12 therewith, which is ordinarily sufficient, however, further adjustment is effected by rotation of sleeve 34 on screw 24 increasing the pressure of jaw 10 on said object, and if still further pressure is desired, it is but necessary to move lever 41 to a position at right angles to its normal position, effecting its binding engagement with jaws 39 and actuation thereof exerting a leverage force on pressure screw 24 through sleeve 34 to advance jaw 10 in clamping direction, as will be clear without further discussion.

Further, when gripping a pipe, for instance, the wrench is placed over same and unit B moved to contact teeth 12 therewith, with jaw 10 in lowered position, and as handle 2 is forced downwardly, said jaw will move toward body portion 1 advancing toothed edge 12 in clamping and gripping direction and as said handle 2 is raised, jaw 10 will drop causing releasement of the clamping action and permitting easy change of the wrench to another clamping position, as will be apparent.

From the above, it is apparent that I have designed a combination wrench capable of being employed as a pipe wrench, monkey wrench or portable vice, as desired, adaptable to a variety of uses, including means for exerting slight or great clamping force according to the particular requirements, simple in construction, manufacturable at a reasonable cost, and efficient for the purposes intended.

Although in practice I have found the form of my invention illustrated in the accompanying drawing and referred to in the above description to be the preferred embodiment and to be the most practical and efficient, yet realizing that conditions concurrent with the adop-

tion of my invention will necessarily vary, I desire to emphasize that various minor changes in details of construction, proportion and arrangement of parts, may be resorted to within the scope of the appended claim without departing from or sacrificing any of the principles of this invention.

Having thus described my invention, what I desire protected by Letters Patent is as set forth in the following claim:

A wrench adapted to clampingly engage a nut, pipe or the like, including an integral handle, body portion and fixed toothed jaw, a slidable unit mounted on said body portion comprising a jaw holder member and an anchor member, means interconnecting said members for effecting their relative adjustment, a toothed jaw member slidably mounted in said holder, said body portion formed adjacent said fixed jaw with teeth, a depressible spring connected to said body portion normally extending beyond said teeth, whereby said object to be clamped is held out of contact with said teeth until pressure is exerted thereon by said slidable jaw.

DOZIER F. HASTY.