D. P. KAHLE.

WRENCH.

APPLICATION FILED MAR. 8, 1912.

1,048,542.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 1.

FIG. 1

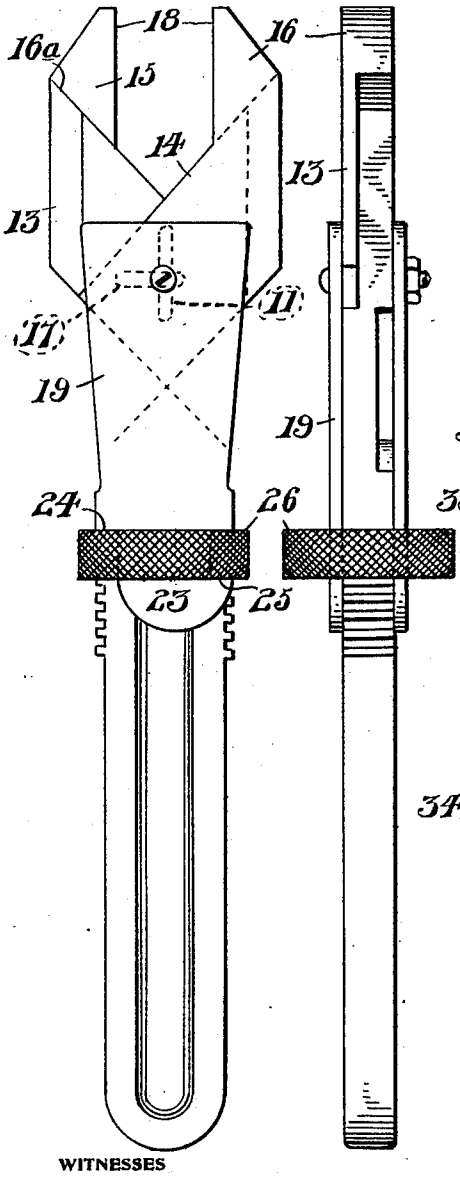


FIG. 2

FIG. 3

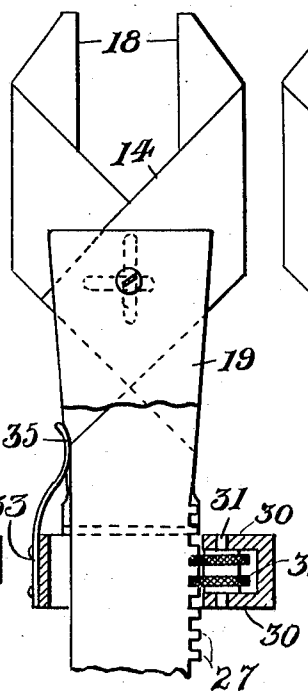


FIG. 5

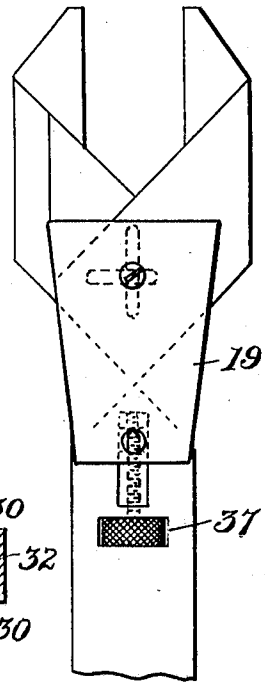


FIG. 4

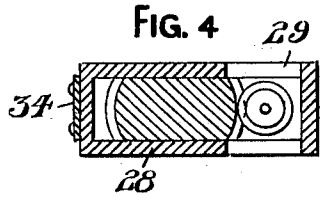


FIG. 6

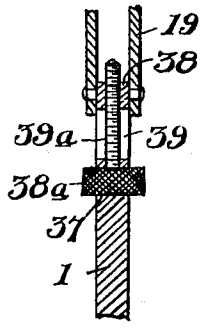
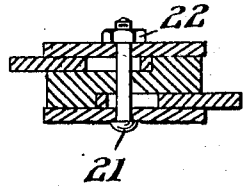


FIG. 7



WITNESSES

P. Hoffman

Ralph C. Evert.

INVENTOR

D. P. Kahle

BY

A. C. Evert & Co.

ATTORNEYS

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

D. P. KAHLE.

WRENCH.

APPLICATION FILED MAR. 8, 1912.

1,048,542.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 2.

FIG. 8

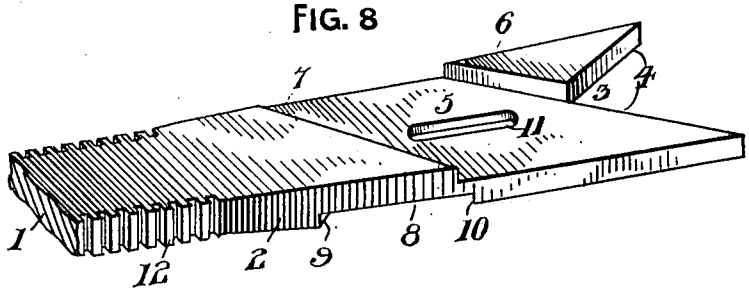


FIG. 9

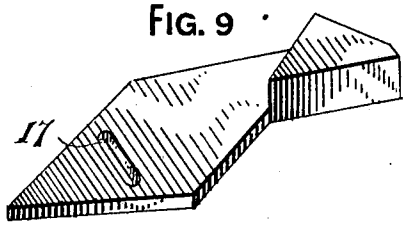


FIG. 10

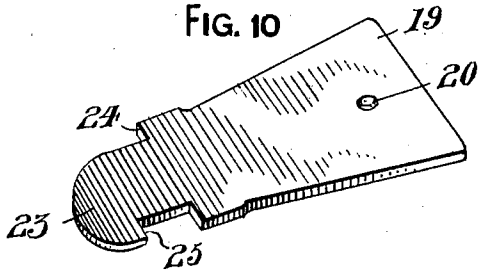


FIG. 11

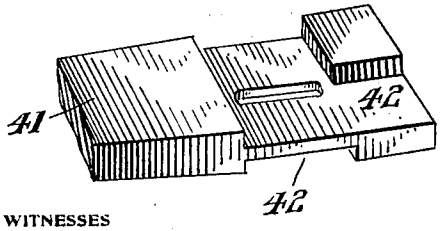
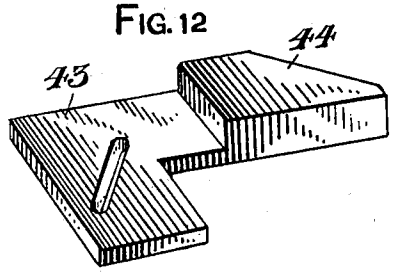


FIG. 12



WITNESSES

J. C. Hoffman,

Ralph C. Evert.

INVENTOR

D. P. Kahle

BY A. C. Evert & Co.

ATTORNEYS

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DORSEY P. KAHLE, OF VENUS, PENNSYLVANIA.

WRENCH.

1,048,542. Specification of Letters Patent. Patented Dec. 31, 1912.

Application filed March 8, 1912. Serial No. 682,350.

To all whom it may concern:

Be it known that I, DORSEY P. KAHLE, a citizen of the United States of America, residing at Venus, in the county of Venango and State of Pennsylvania, 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 and more particularly to that type of wrench commonly styled a quick-acting wrench.

The primary object of my invention is to provide a strong and durable wrench of the above type wherein positive and reliable means are employed, as hereinafter set forth for quickly adjusting the jaws of a wrench.

Another object of this invention is to provide a simple and inexpensive wrench having jaws that move in unison, the jaws having abutting bearing surfaces that firmly press the jaws and compensate for the strains and stresses upon the jaws when the wrench is in use.

A further object of this invention is to provide a wrench of the above type that can be advantageously used by mechanics in places that are inaccessible to the ordinary type of wrench, the wrench being especially applicable to an automobile kit.

A still further object of this invention is to provide a spanner wrench consisting of comparatively few parts, easy to assemble, and highly efficient for the purposes for which they are intended.

With the above and other objects in view, the invention resides in the novel construction, combination and arrangement of parts to be hereinafter specifically described and then claimed.

Reference will now be had to the drawing wherein there are illustrated the preferred embodiments of my invention, but it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claims.

In the drawings—Figure 1 is a front elevation of the wrench. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of a modified form of wrench, partly broken away and partly in section. Fig. 4 is a horizontal sectional view of the same. Fig. 5 is a front elevation of a portion of another modified form of wrench. Fig. 6 is a longitudinal sectional view of a portion of the same. Fig. 7 is a horizontal sectional view of the preferred form of wrench shown in Figs. 1 and 2. Fig. 8 is a perspective view of a portion of the shank of a wrench. Fig. 9 is a perspective view of one of the jaws thereof. Fig. 10 is a perspective view of a detached side plate. Fig. 11 is a perspective view of a portion of a modified form of shank, and Fig. 12 is a perspective view of one of the jaws adapted to form part of a modified form of shank shown in Fig. 11.

A wrench in accordance with this invention comprises a flat shank or handle bar 1, having the outer end thereof provided with a tapering flat head 2 that has the extreme end thereof provided with a V-shaped notch 3, the walls 4 of which are disposed at right angles and serve as stationary jaws. One side of the head 2 has an angularly disposed groove 5 with the walls 6 and 7 thereof in parallelism. The groove 5 is disposed at an angle whereby the wall 6 will longitudinally aline with one of the walls 4 of the notch 3. The opposite side of the head 2 has a groove 8 that is disposed at an angle, the reverse of the angularity of the groove 5, the groove 8 having the walls 9 and 10 with the wall 10 longitudinally alining with the other wall 4 of the notch 3. The head 2 is provided with a longitudinal slot 11, said slot being located intermediate the ends of the grooves 5 and 8 and establishing communication between said grooves. The shank or handle bar 1, adjacent to the head 2 has the edges thereof provided with transverse teeth or threads 12 for a purpose that will presently appear.

Slidably mounted in the grooves 5 and 8 are the jaw plates 13 and 14 of jaws 15 and 16 respectively. The jaw plate 13 is disposed at an angle relatively to the jaw 15 and is approximately one-third the thickness of said jaw. The jaw plate 13 completely fills the groove 8 when the jaw 15 is in a closed position, the edges of said jaw plate sliding against the walls 9 and 10 of the groove 8 and the jaw 15 having an angularly disposed shoulder 16^a against one of the walls 4 of the notch 3. The jaw plate has a transverse slot 17 that is in communication with the longitudinal slot 11 of the head 2. The jaw plate 14 and the jaw 16 are identical in construction to the jaw plate and jaw just described, and the jaw plate 14 is slidably mounted in the groove 5 with the edges thereof sliding against the walls 6 and

7. The jaws 15 and 16 have confronting flat faces 18 that are disposed at an obtuse angle relatively to the walls 4 of the notch 3, and these flat faces can coöperate to grip two oppositely disposed facets of a nut. Such would be the instance when using the wrench in connection with a rectangular nut.

Arranged upon the sides of the head 2 and extending on to the sides of the shank 1 are side plates 19 provided with openings 20 registering with the slots 11 and 17. The side plates are retained in position by a bolt 21 extending through said slots and a nut 22 is screwed upon the bolt to retain said bolt in position. A rivet or any other suitable fastening means can be used in lieu of the bolt and nut. The inner ends of the side plates 19 are hook-shaped, as at 23, the hook-shaped ends of said plates pressing outer and inner shoulders 24 and 25. Engaging said shoulders are the inner and outer edges of a knurled nut 26, said nut having the bore thereof threaded to engage the threads 12 of the shank or handle bar 1. It is necessary that the hook-shaped end of one plate be reversed relatively to the hook-shaped end of the other plate, whereby the shoulders 25 will retain the nut in engagement with said plates. It is also necessary that the hook-shaped ends of the plates be placed in the nut and then the handle bar placed between the plates and the nut screwed upon the threads 12. The jaws can then be slipped into position and retained between the outer ends of the side plates 19 by the bolt 21.

In operation it is only necessary to rotate the nut 26 in one direction to open the jaws 15 and 16 and in the other direction to close the same. As the nut is adjusted, the side plates 19 are shifted longitudinally of the head 2, and as the position of the bolt 21 is confined by the longitudinal slot 11, it is evident that a movement of said bolt within said slot will cause the jaw plates 13 and 14 to shift in unison in their respective grooves, consequently the jaws 15 and 16 will be opened or closed.

In Figs. 3 and 4 of the drawings there is illustrated a modification of my invention, wherein simply one side of the shank or handle bar 1 is threaded as at 27 and the side plates 19 formed integral with or secured to a rectangular strap 28 that embraces the shank 1. The strap has the side walls thereof, at one end, provided with openings 29 and top and bottom plates 30. Revolubly mounted between the top and bottom walls 30 by a pin 31 or its mechanical equivalent is a knurled spiral screw nut 32 that normally engages the threads 27. The nut 32 is retained in engagement with the threads 27 by a flat spring 33 having one end thereof attached to the strap 28 as at 34 and the opposite end thereof bearing against the side of the head 2 or the shank 1, as at 35. By pressing against one end of the strap, said strap can be shifted relative to the shank 1, whereby the nut 32 will be moved out of engagement with the threads 27 and then the jaws 15 and 16 can be rapidly adjusted. After having been set upon the nut or other object, said jaws can be minutely adjusted to firmly grip the nut or object by rotating the nut 32.

Another modification of the invention is illustrated in Figs. 5 and 6 of the drawings, wherein the side plates 19 are of a less length than the side plates of the preferred form of construction, and the inner ends of said side plates are connected by a block 38 that extends through a longitudinal slot 39 provided therefor in the shank 1. The shank 1 has an additional slot 37 accommodating a knurled nut 38^a, this nut has a screw 39^a that is adjustably mounted in the block 38. By revolving the nut 38^a, the side plates 19 are adjusted relatively to the shank 1.

In Figs. 11 and 12 there is illustrated a further modification, wherein the shank head 41 has the sides thereof provided with L-shaped grooves 42 instead of the angularly disposed grooves 5 and 8, and L-shaped jaw plates 43 are slidably mounted in the grooves 42, said jaw plates having jaws 44. The same principle is involved in this modification as in the preferred form of construction and the only difference is that the jaw plates 43 move transversely of the shank head 41, while in the preferred form of construction the jaw plates 13 and 14 move diagonally or at an angle relatively to the longitudinal axis of the shank.

From the foregoing it will be observed that I have devised a compact wrench that will withstand the rough usage to which tools of this type are subjected, and that each and every part of said wrench is inexpensive to manufacture and highly efficient as a gripping mechanism.

What I claim is:—

1. A wrench of the type described, comprising a shank having the outer end thereof notched to provide angularly disposed jaws, said shank having the sides thereof provided with grooves, with one wall of each groove alining with the angularly disposed jaws of said shank, jaw plates slidably mounted in said grooves, jaws carried by said plates and coöperating with the jaws of said shank in gripping a nut, side plates arranged upon the sides of said shank and adapted to be shifted to move said jaw plates within the grooves of said shank, and means carried by the inner ends of said side plates and adapted to lock said jaw plates and the jaws thereof in adjusted position relatively to said shank.

2. A wrench comprising a shank, said

shank having the outer end of its side faces provided with angularly disposed oppositely extending grooves, jaw plates slidably mounted in said grooves, jaws carried by said plates and opposing each other at the outer end of said shank, shiftable side plates arranged upon the side faces of and connected to said shank and operatively connected with the jaw plates and adapted when shifted to adjust said jaws relatively to each other, and means at the inner ends of said side plates for simultaneously adjusting and locking said side plates relatively to said shank.

3. A gripping mechanism comprising a grooved shank having the outer portion of its side faces provided with oppositely extending grooves, oppositely disposed adjustable plates movable in said grooves, jaws carried by said plates, side plates arranged at the sides of and connected to said shank and operatively connected to said jaw plates and adapted when shifted to simultaneously move said jaw plates to adjust said jaws, and rotatable means operatively engaging with the said side plates for shifting said side plates to adjust and lock the jaw plates relatively to said shank.

4. A gripping mechanism comprising a grooved shank, oppositely disposed jaws having plates slidably mounted in the grooves of said shank, shiftable side plates arranged at the sides of said shank and adapted when shifted to simultaneously adjust said jaws relatively to said shank, and a nut carried by the inner ends of said side plates and engaging said shank for simultaneously shifting said side plates and locking said plates relatively to said shank.

5. A wrench comprising a shank having the outer end thereof notched to provide angularly disposed jaws and further having each side thereof inwardly with respect to the jaws formed with a transverse groove, the groove of one side extending in an opposite direction with respect to the groove of the other side, jaw plates slidably mounted in said grooves, jaws carried by the plates and coöperating with the jaws of the shank in gripping a nut, longitudinally shiftable side plates arranged upon the sides of and connected to the shank and operatively connected with said jaw plates and adapted to shift said jaw plates to adjust the jaws, and means for shifting said side plates longitudinally.

6. A wrench of the type described, comprising a shank, a head carried thereby, said head having the sides thereof provided with angularly disposed grooves with the groove in one side of the head disposed the reverse of the groove in the opposite side of the head, jaw plates slidably mounted in said grooves, opposing jaws carried by said jaw plates and having bearing upon the outer end of said head, side plates movable relatively to said shank and adapted when moved to simultaneously shift said jaw plates, and rotatable means at the inner ends of said side plates and engaging said shank for moving said side plates and preserving the alinement of said side plates with said shank.

7. A gripping mechanism comprising a head having opposite sides thereof provided with angularly disposed grooves with the groove upon one side of the head disposed the reverse of the groove upon the opposite side of the head, jaw plates slidably mounted in said grooves and having bearing upon the walls thereof, opposing jaws carried by said jaw plates and having bearing upon the end of said head, side plates movable relatively to said head and adapted to simultaneously shift said jaw plates, and means carried by the inner ends of said side plates for movably holding said side plates in engagement with said head and to facilitate moving said plates to adjust said jaws.

8. A wrench comprising a shank provided with a head having each of its sides near its forward end provided with a groove, shiftable jaw plates mounted in said grooves and provided with integral jaws opposing and permanently sliding upon the forward edge of the head, and longitudinally movable means connected with said jaw plates and head for adjusting the plates when said means is shifted longitudinally.

9. A wrench comprising a shank provided with a head having each of its sides near its forward end provided with a groove, shiftable jaw plates mounted in said grooves and provided with integral jaws opposing and permanently sliding upon the forward edge of the head, and means engaging with said plates and head for shifting the plates to adjust the jaws.

10. A wrench comprising a shank provided with a head formed with oppositely extending grooves, shiftable jaw plates mounted in said grooves and provided with jaws opposing and permanently sliding upon the forward edge of said head and associating with said forward edge to grip a nut, and means connected with the head for shifting said jaw plates.

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

DORSEY P. KAHLE.

Witnesses:
CHRISTINA T. HOOD,
MAX H. SROLOVITZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."