This invention relates in general to adjustable wrenches and more particularly to an adjustable box type wrench. A primary object of the invention is to provide a wrench having a positive, multiple-surface grip on hexagonal objects such as nuts and bolt heads in a similar manner to that of conventional box wrenches, and at the same time provide a means whereby such a box wrench may be adjusted to various sizes, thereby eliminating the necessity for having a large number of box wrenches to cover a wide range of sizes.

Another object of this invention is to accomplish the above stated objective in such a manner that the overall bulk and contour of the wrench is comparable to that of conventional box wrenches so that the advantages gained through adjustability are not lost through inability to use the wrench in restricted spaces where the conventional box wrenches can be used.

Another object of the invention is to provide an adjustable wrench that can be used in much more restricted places than other adjustable-type wrenches presently available on the market.

A further object of this invention is to provide an adjustable box wrench that is simple in construction, is easy to assemble, has relatively few parts, and which may be manufactured economically of forged steel or any other suitable material of sufficient strength.

Still other objects reside in the combination of elements, arrangement of the various parts, and features of construction such as will be pointed out more fully hereinafter and disclosed in the accompanying drawings wherein there is shown a preferred and some alternate embodiments of this inventive concept, and wherein like reference characters designate like parts.

In the drawings:

Figure 1 is a front elevation of the wrench in its preferred form.

Figure 2 is a side elevation of the wrench comprising the invention.

Figure 3 is a sectional view taken substantially along line 3—3 of Figure 2 as viewed in the direction indicated by the arrows.

Figure 4 is a rear elevation of the wrench in its preferred form, with the handle broken away, and showing an optional graduated scale whereby the wrench may be adjusted to a desired size prior to use.

Figure 5 is a side elevation, partly broken away, showing an alternate construction which accommodates a torque-measuring handle.

Figure 7 is a side elevation of the wrench as illustrated in Figure 6.

Figure 8 is a front elevation showing another alternate method of constructing the head and jaws of the wrench, with the body and handle portion of the wrench broken away.

Referring now particularly to the drawings, the device of the instant invention comprises of a handle 10 integral with an enlarged body section 12. Attached integrally to the opposite end of enlarged body section 12 remote from handle 10, and on one side of said opposite end, is a projecting portion 14 having on its upper end a lower wrench jaw 16. Said lower jaw 16 is wider than projecting portion 14 and projects outwardly, horizontally, from one side of said projecting portion 14. Lower jaw 16 is formed, in Figures 1, 2, and 5, by two angular flat surfaces 18 and 20 which join each other at their inner ends to form a wide, V-shaped recess. The angle formed by surfaces 18 and 20 coincides exactly to the angle formed by any of two adjacent outer surfaces of a hexagonal object such as a hexagonal nut or bolt head. Facing surfaces 18 and 20 are two additional flat surfaces 22 and 24 forming an extension 38 of the wrench. Surfaces 22 and 24 are angularly joined at their inner ends in the same manner as surfaces 18 and 20, except that in this case the wide V-shaped recess is inverted. Upper jaw extension 38 is integral with and projects outwardly, horizontally, from one side of, in this case, a flat, oval-shaped part forming the adjustable jaw member 26 of the wrench. Jaw member 26 has the greater part of its center section cut out to provide an opening through which a bolt or other object may project when the wrench is to be placed over such an object and down on a nut installed thereon. Jaw member 26 is formed integrally on the outer end of a threaded shank 28 which extends downwardly through a channel 29 of complimentarily-shaped cross section, said channel 29 extending downwardly through enlarged body section 12. Handle 10 is off-set where it connects to the lower end of body section 12 sufficiently to allow threaded shank 28 to emerge from the lower end of said body section 12.

Body section 12 further contains an internally-threaded adjusting worm 32 located in an opening 34 which extends laterally through the body section 12 from front to back. Adjusting worm 32 is threaded engaging the threaded shank 28, and when turned, adjusts shank 28, head 26, and upper jaw 38 upward or downward as desired.

Figure 4 in Figure 5, the shanks 38' and 16' project outwardly at right angles from the wrench substantially farther than illustrated in Figure 2. This particular form of the invention is to facilitate reaching over a wall or similar obstruction, and for reaching into recesses to turn a nut or bolt.

In another alternate form of the wrench as illustrated in Figures 6 and 7, the handle 10 is eliminated and a short, offset extension 40 is substituted therefor. Extension 40 is located immediately below the body section 12 and has a square opening 42 extending therethrough for the purpose of receiving a male square-drive connection of a torque wrench (not shown).

Figure 8 shows still another alternate form of constructing the wrench wherein the upper and lower jaws 16' and 38' are formed with only one flat surface each (44 and 46), and in parallel alignment with each other at right angles to the longitudinal axis of the wrench.

It will be understood and is obvious that changes may be made in the forms, dimensions, construction and arrangement of the various parts, as shown, within the scope of the appended claims, without departing from the spirit of the invention, and therefore the invention is not necessarily limited to the exact construction illustrated and described herein, nor is the invention necessarily limited to any specific use or uses, but may
be used for any purpose to which it may be adapted and is suitable.

A wrench of substantially the type and construction illustrated and described herein has many advantages over conventional box and open-end wrenches, and other adjustable wrenches, in that it can be used in very restricted spaces due to its novel construction and has the additional advantage of being adjustable to size, which eliminates the necessity of having a multitude of wrenches to cover a wide range of sizes.

Having fully described the invention, what I claim as new, and desire to secure by Letters Patent of the United States, is:

In a wrench of the character described, an angular body forming the center portion of said wrench, a handle integral with said body and extending downwardly from the rear lower side of said body at an off-set angle in relation to the longitudinal axis of said body, a fixed jaw integral with said body and extending upwardly from the front upper side of said body parallel to said handle and off-set in relation to the longitudinal axis of said body and said handle, a bore extending downward through the longitudinal axis of said body, a movable jaw member having a screw-threaded shank extending downward to the rear side of said fixed jaw member and slidably through said bore, said shank emerging from said bore along the front side of said off-set handle, said movable jaw member further having an annular opening through its upper portion above said shank, said annular opening permitting the wrench to be placed over an extending bolt in the manner of a conventional box wrench, said body having an opening extending laterally therethrough and intersecting said bore, an adjusting worm rotatably mounted in said opening and threadedly engaging said screw-threaded shank for the purpose of adjusting said movable jaw member upward and downward in relation to said fixed jaw member, said movable and fixed jaw members having angular faces which cooperate with each other and permit the wrench to be placed flatly down over a nut or similar object, said angular faces being adapted to bear against opposite angular faces of a nut or similar object which is to be turned, said angular faces further extending laterally outward from the forward side of said wrench and having open areas on both sides which permit the wrench to be used on objects of various sizes.

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