This invention relates to wrenches, and has for one of its objects the production of a wrench having a pair of jaws, one jaw being pivotally mounted with respect to the other jaw, and an operating handle having an upper end extending into the pivotally mounted jaw and being adapted to engage the shank of the companion jaw to swing the pivotally mounted jaw and to thereby produce a vise-like grip upon an object placed between the jaws when the handle is swung in one direction.

A further object of this invention is the production of a simple and efficient connection between the operating handle and a swinging jaw of a wrench, wherein the swinging jaw will be lifted or moved toward a companion jaw as the operating handle is swung in one direction.

Other objects and advantages of the present device will be apparent throughout the following specification and claims.

In the drawings:

Figure 1 is a side elevational view of the wrench;

Figure 2 is an enlarged fragmentary sectional view thereof, showing the handle disengaged from the shank of the primary jaw to permit the primary jaw to be freely moved to an adjustable position within the guiding sleeve;

Figure 3 is a transverse sectional view taken on line 3-3 of Figure 2;

Figure 4 is a perspective view of the guiding sleeve;

Figure 5 is an enlarged sectional view of the wrench with the jaws in a pre-gripping position, certain parts being shown in elevation;

Figure 6 is a sectional view showing the jaws in a vise-like gripping position, certain parts being shown in elevation;

Figure 7 is a perspective view of the auxiliary jaw.

By referring to the drawings in detail it will be seen that 10 designates the primary jaw of the wrench having a depending shank 11. This shank 11 is provided with aligned rack teeth 12 upon its inner face. The jaw 10 is provided with conventional gripping teeth 13 upon its outer face. The shank 11 of the primary jaw 10 is slidable mounted through a guiding sleeve 14. The sleeve 14 carries upper parallel ears 15 between which is pivotally secured an auxiliary jaw 16 upon a journal pin 17. The auxiliary jaw 16 is provided with conventional gripping teeth 18 upon its upper face. The auxiliary jaw 16 is provided with a depending handle-receiving portion 19, having a handle-receiving socket 20 open at its inner face and lower end, as shown in Figures 2, 5 and 6. A fulcrum boss 21 is formed in the lower end of the socket 20 upon the inner face of the rear wall of the handle-receiving portion 19.

The sleeve 14 is provided with an integral handle-encasing portion 22, which portion 22 is provided with parallel arc-shaped slots 23, through which a transverse guiding pin 24 passes. This pin 24 is carried by a handle 25 and extends transversely through the handle 25. The pin 24 provides a support for the handle 25 by fitting in the slots 23 and constitutes a moveable fulcrum for the handle 25. The handle 25 is provided with a notch 26 upon its forward face near its upper end which fits within the socket 20, and this notch 26 is adapted to receive the fulcrum boss 21 when the parts are in the position shown in Figures 5 and 6, to move the auxiliary jaw 16 toward the primary jaw 10 as the handle 25 is pushed or swung in the direction of the arrow shown in Figure 6. The sleeve 14 is provided with a partition 27 adjacent the teeth 12 of the primary jaw to keep the shank 11 in a proper vertical position.

The handle 25 is provided with gear teeth 28 upon its inner face and at its upper end. These teeth are formed on the arc of a circle, and are adapted to mesh with the rack teeth 12 of the shank 11 of the primary jaw 10 when it is desired to clamp the jaws tightly around a nut, or other object, to be gripped with a vise-like action. A spring 29 is carried by the lower end of the jaw 16 and engages the upper face of the portion 22 of the sleeve 24 to swing the upper end of the jaw 16 toward the shank 11 of the primary jaw, and to move the teeth 28 of the handle into mesh with the teeth 12 when pressure on the handle is released by the operator.

The operation of the wrench is as follows:

The handle 25 and jaw 16 are swung away from the shank 11 to disengage the teeth 28 from the teeth 12 when it is desired to move the shank 11 longitudinally of the sleeve 14 to move the jaw 10 to an adjusted position. The parts are then in the position shown in Figure 2. The auxiliary jaw 16 is then swung toward the shank 11 of the primary jaw 10 to move the handle receiving portion 19 toward the shank 11. The upper end of the handle 25 which carries the gear teeth 28 is thereby moved toward the shank 11 to cause the teeth 28 to mesh with the teeth 12 in the manner shown in Figure 5. After the object to be gripped has been located between the jaws 10 and 16, the handle 26 is pushed or swung outwardly and the meshing of the teeth 28 with the teeth 12 will pull downwardly upon the shank 11 and move the jaw 10 downwardly toward the jaw 16, and at the same time move the jaw 16 upwardly toward the jaw 10. This will produce a vise-like grip between the jaws 10 and 16 and cause the gripping teeth of the jaws to bite into the object to be gripped and thereby firmly hold the object between the jaws 10 and 16. The object gripped between the jaws 10 and 16 may be quickly released by swinging the handle 25 rearwardly to release the jaws from a gripping action.

It should be understood that certain detail changes in the construction and arrangement of parts may be employed without departing from the function of the invention, so long as such changes fall within the scope of the appended claims.

Having described the invention, what I claim as new is:

1. A wrench of the class described comprising a primary jaw having a depending shank, an auxiliary jaw, a guiding sleeve, said shank being slidable through said sleeve, means pivotally securing said auxiliary jaw to said sleeve, said sleeve having a handle encasing portion, a handle having an upper end extending through said encasing portion and engaging said auxiliary jaw, gear teeth carried by the upper end of said handle, said shank having rack teeth engageable by said gear teeth of said handle for drawing said jaws toward each other as said handle is swung in one direction, said auxiliary jaw and the teeth of said handle being adapted to be swung away from said shank for disengaging the teeth of said handle from said teeth of said shank to facilitate the unobstructed adjustment of said shank longitudinally through said sleeve, said encasing portion having aligned arc-shaped slots, and a retaining pin carried by said handle.
and passing through said slots for facilitating the swing of said handle in said encasing portion and for connecting said handle to said encasing portion.

2. A wrench of the class described comprising a primary jaw having a depending shank, an auxiliary jaw, a guiding sleeve, said shank being slidable through said sleeve, means pivotally securing said auxiliary jaw to said sleeve, said sleeve having a handle encasing portion, a handle having an upper end extending through said encasing portion and engaging said auxiliary jaw, gear teeth carried by the upper end of said handle, said shank having rack teeth engageable by said gear teeth of said handle for drawing said jaws toward each other as said handle is swung in one direction, said auxiliary jaw and the teeth of said handle being adapted to be swung away from said shank for disengaging the teeth of said handle from said teeth of said shank to facilitate the unobstructed adjustment of said shank longitudinally through said sleeve, said auxiliary jaw having a depending portion provided with a handle receiving socket encasing the upper end of said handle, said depending portion having a fulcrum boss formed in said socket, and said handle having a notch to receive said boss to facilitate the lifting of said auxiliary jaw as said handle is swung.

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