Dec. 15, 1936. N. F. McNAUGHT ET AL 2,064,351

SOCKET WRENCH KIT

Filed Jan. 30, 1935 2 Sheets-Sheet 1

Fig. 1.

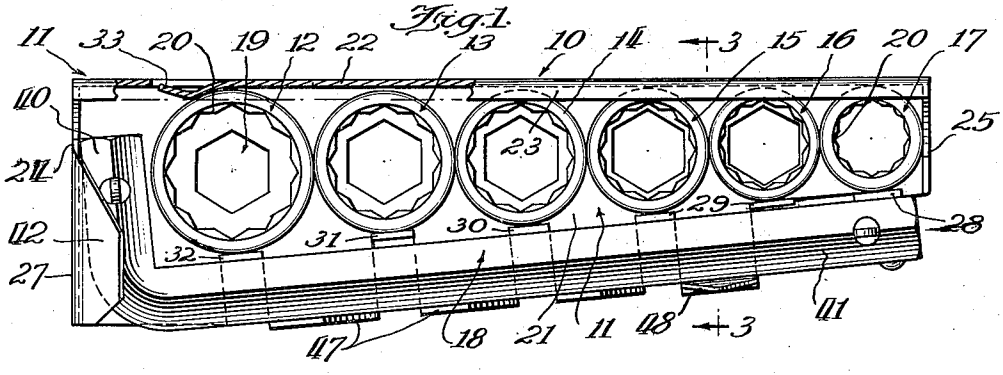


Fig. 2.

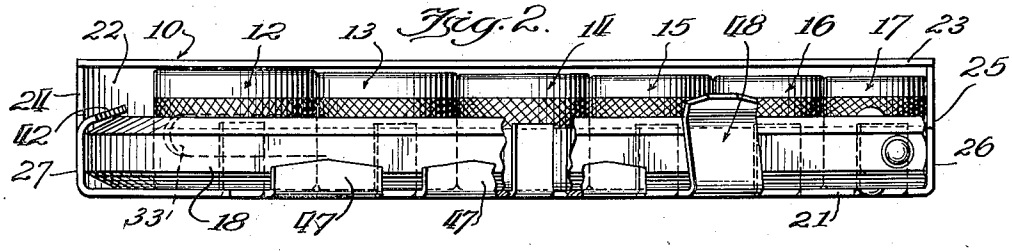


Fig. 4.

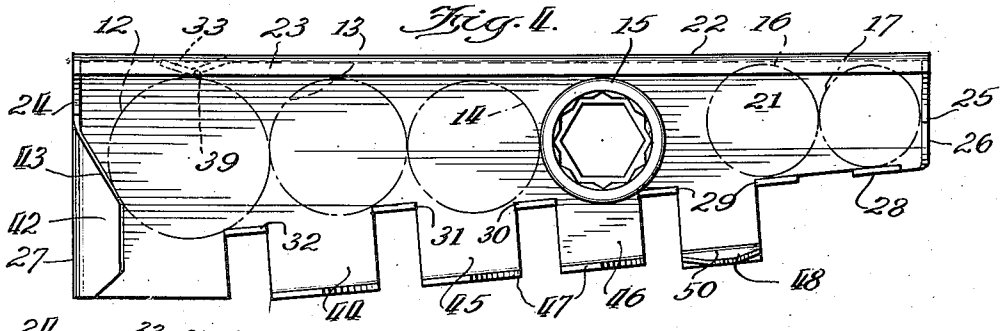


Fig. 5.

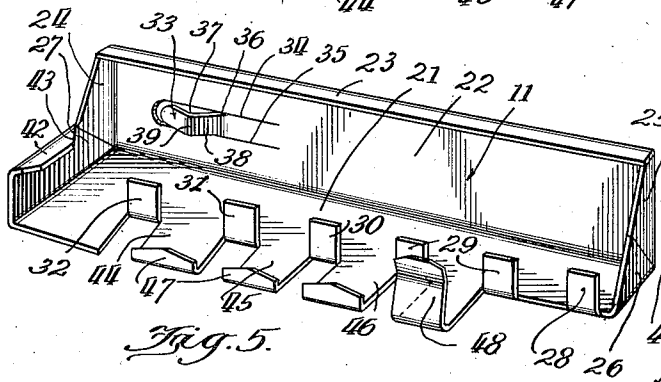
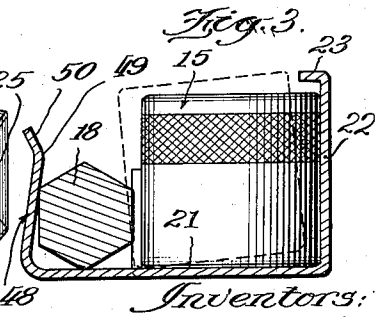


Fig. 3.



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Fig. 6.

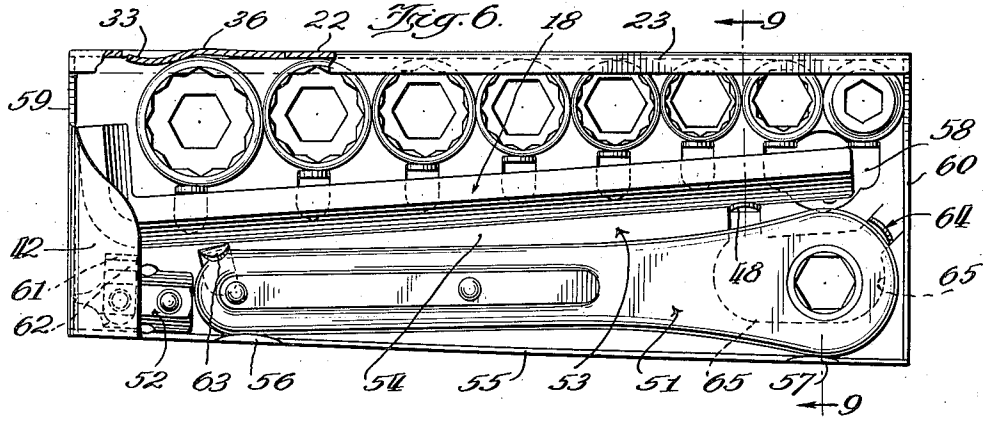


Fig. 7.

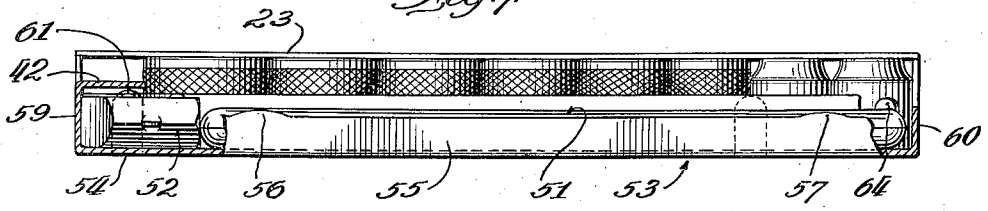


Fig. 8.

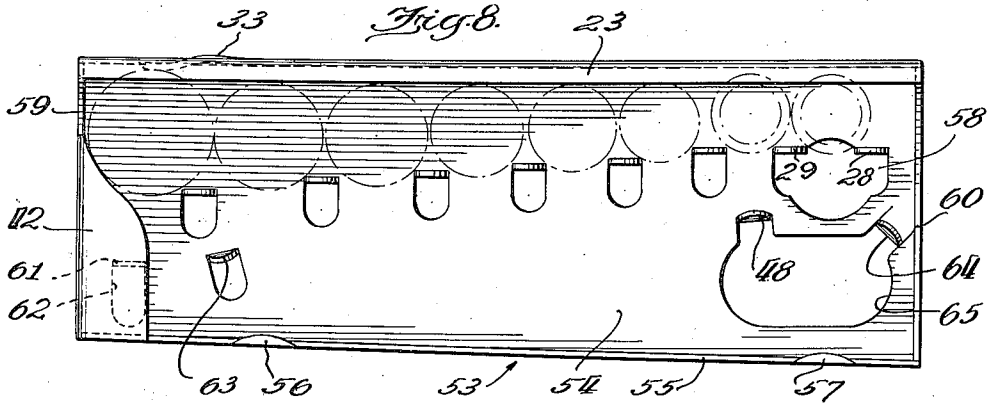
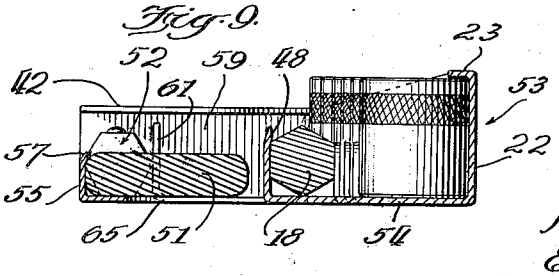


Fig. 9.



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Patented Dec. 15, 1936 2,064,351

UNITED STATES PATENT OFFICE

2,064,351

SOCKET WRENCH KIT

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Application January 30, 1935, Serial No. 4,122

14 Claims. (Cl. 206—16)

The present invention relates to socket wrench kits and is particularly concerned with kits adapted to hold a plurality of socket wrenches and other actuating devices in a convenient and accessible assembly.

One of the objects of the invention is the provision of an improved socket wrench kit or wrench holding device which may be constructed of a single metallic stamping, thereby reducing the cost of the kit and placing the kit within the means of a larger number of purchasers.

Another object of the invention is the provision of an improved socket wrench kit comprising a plurality of socket wrenches, a wrench lever, and a holding device in which the various parts are secured together in a novel and conveniently accessible manner.

Another object of the invention is the provision of a novel holding device for socket wrenches, a wrench lever, ratchet lever and/or stub shaft which is more compact, more conveniently used, and more economically manufactured than the devices of the prior art.

Another object of the invention is the provision of an improved socket wrench holding device in which all of the socket wrenches are held in locked position by a resilient securing device, but which is so arranged that all of the socket wrenches may be shifted simultaneously or separately into a different position out of engagement with securing flanges where the socket wrenches can be lifted directly out of the holding device but are maintained in classified position so that they can be quickly replaced and secured without confusion or expenditure of much time in their assembly.

Other objects and advantages will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the drawings, of which there are two sheets,

Fig. 1 is a top plan view of one embodiment of the invention;

Fig. 2 is a side elevational view of the device of Fig. 1;

Fig. 3 is a vertical sectional view taken on the plane of the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a top plan view of the holding device with one socket wrench in position for convenient removal, showing the positions of other socket wrenches in dotted lines;

Fig. 5 is a view in perspective of the holding device with the socket wrenches and accessories removed;

Fig. 6 is a top plan view of another modification in which the holding device is also adapted to secure a ratchet lever and stub shaft;

Fig. 7 is a side elevational view of the device of Fig. 6, partially broken away to show the location of the stub shaft;

Fig. 8 is a top plan view of the device of Fig. 7, with the socket wrenches and other accessories removed, the positions of the socket wrenches being shown in dotted lines; and

Fig. 9 is a vertical sectional view of the device of Fig. 6, taken on the plane of the line 9—9 of Fig. 6, looking in the direction of the arrows.

Referring to Figs. 1 to 5, 10 indicates in its entirety our improved socket wrench assembly, consisting of the holding device, indicated in its entirety by the numeral 11, the socket wrenches 12 to 17, and the socket wrench lever 18.

The present assembly may include various types of socket wrenches and levers, and the present types of devices secured in the holding device 11 are merely exemplary of some of the most common wrenches and levers which may be used.

The socket wrenches 12 to 17 are ordinarily substantially cylindrical in shape and provided with the non-circular aperture 19 adapted to receive the end of the complementary socket wrench lever 18, and with the wrench sockets 20, which may be of various different geometrical shapes, that illustrated being exemplary of one of the most popular shapes being used at the present time.

It should be understood, however, that socket wrenches of different external geometrical shape may also be secured in this holding device, provided the characteristics of the holding device are made such that the securing flanges and/or resilient members extend sufficiently over parts of the wrenches. Thus, in Fig. 7, it will be observed that the smaller socket wrenches diverge from the cylindrical shape but are nevertheless secured in place by the holding device.

The socket wrench lever 18 illustrated is of the conventional type, comprising a substantially hexagonal bar formed with a laterally turned end for engaging in the socket wrench.

The holding device, which may be seen most clearly in Fig. 5, preferably comprises a single piece of metal, such as a stamping, which may be formed with a substantially flat bottom portion 21 for supporting the wrenches and lever. At the rear side the bottom portion 21 carries an upwardly extending flat flange 22, forming a back

which engages the socket wrenches on one side, and carrying at its upper edge an over-hanging flange 23 which may be substantially parallel to the bottom 21.

The width of the back 22 is preferably substantially equal to the length of the socket wrenches, which are preferably of the same length overall so that when the socket wrenches are disposed on the bottom 21 against the back 22 they are substantially engaged or secured against upward movement by the over-hanging flange 23, but when the socket wrenches are moved slightly forward they may be lifted free of the flange 23, since the flange 23 is relatively narrow.

The ends of the holding device 11 may be formed by forwardly extending flanges 24, 25, carried by the back 22, and by upwardly extending flanges 26, 27, carried by the bottom 21, these flanges 24—27, being so shaped that when they are in abutting relation and the back 22 is at right angles to the base 21, the ends of the container are substantially closed.

In some embodiments of the invention these end flanges may be over-lapped and/or soldered or welded, or they may be welded in abutting relation, but in other embodiments of the invention the flanges will be held in place merely by virtue of their stiffness, the holding device being constructed of relatively stiff steel, other sheet metal, or other suitable material.

At its forward edge the base 21 is provided with a plurality of upwardly extending retaining flanges or ears 28—32, the retaining flanges 28—32 being spaced from each other sufficiently so that each one engages its socket wrench at a point which is diametrically opposite to the point of engagement of the socket wrench with the back 22. Since the socket wrenches are of different diameters, gradually increasing in diameter from the right to the left in Fig. 1, the retaining flanges 28—32 will also be spaced differently, the spacing increasing from the right to the left in Fig. 5.

The flanges 28—32 may extend upward at substantially right angles to the base 21, and may be resilient if desired, as shown in Fig. 3, so that a socket wrench may be tilted after removal of the lever 18 in Fig. 3 by flexing the flanges 28, 29, but I prefer to make these flanges relatively stiff so that the socket wrenches are more firmly held, but may be removed by a method which will be described in greater detail hereinafter.

In order to reduce or substantially prevent rattling, the flanges 28—32 may be so located that they resiliently engage the socket wrenches when the wrenches are in the position of Fig. 1, a slight amount of flexure being caused by the placing of the wrenches in that position by the longitudinal movement of the wrench sockets toward the right in Fig. 1. Since the socket wrenches increase in size toward the left, the spacing of the retaining flanges 28—32 increases from the right toward the left in Fig. 5, each flange 28—32 being spaced from the back 22 a distance substantially equal to the diameter of its wrench socket.

The height of the flanges 28—32 may vary considerably, the flanges preferably being sufficiently high to hold the socket wrenches in place without possibility of removal when the wrenches are in the position of Fig. 1, except as described in the next paragraph.

The width of the flanges 28—32 may also vary considerably, but sufficient space should be left between the flanges 28—32 so that when the wrench lever 18 is removed and the socket wrenches are shifted toward the left, as shown in Fig. 4, to a position where they are located at the spaces between the retaining flanges 28—32, the socket wrenches may be moved forward from the back 22 sufficiently to clear the flange 23, as shown in Fig. 4. This is also illustrated in Fig. 3 in dotted lines, the largest socket wrench 20 being shown in the course of its removal from the holding device 11, clearing the flange 23.

The back 22 is preferably provided with a resilient retaining device 33, comprising a tongue of sheet metal which is stamped or cut out of the body of the back 22, the length of the slits 34, 35 being predetermined with respect to the stiffness of the material so that the retaining member 33 may be sufficiently resilient. The retaining member 33 is bent inward at the point 36, and again backward at the point 37, so as to form a retaining surface 38 which will be located against the periphery of the largest socket wrench 12 when the socket wrench 12 is in the position of Fig. 1. It will be noted that the retaining surface 38 and apex 39 of the resilient member 33 are located toward the left of a line drawn diametrically from the back 22 to the retaining flange 32.

The resilient member 33 is thus adapted to secure all of the socket wrenches in the holding device by its securement of the end socket wrench 12 and by the cooperation of the other retaining parts of the holding device 11. The outwardly bent end of the resilient member 33 serves as a camming surface by means of which the resilient member 33 is bent backward when the socket wrench 12 is shoved into position toward the right.

The length of the holding device 11 is preferably such that there is space left at the one end, such as the left end of Fig. 1, for the short end 40 of the lever 18. The width of the base is also preferably such that the long portion 41 of the lever 18 may lie on the base 21 beside the socket wrenches 12—17, but outside of the retaining flanges 28—32. The end flange 27 is preferably provided with an inwardly projecting retaining flange 42 which engages above the end portion 40 of the lever 18, but the flange 42 is preferably beveled at 43 or otherwise suitably shaped, as shown in Fig. 4, so as not to interfere with the large socket 12, clearing the over-hanging flange 23.

The base 21 may have a plurality of extensions 44—46 located between the slots which are formed by the flanges 30—32 for engaging beneath the lever 18, and these flanges may be provided with upwardly extending retaining members 47 which engage outside of the lever 18. If desired, however, some of these flanges may be eliminated and the base 21 provided with one upwardly extending flange 47 outside the lever 18, suitably placed to hold the lever 18 against the flanges 29—32.

At a point suitably located to hold the lever 18, the base is provided with an upwardly extending retaining flange 48, of sufficient length to be resilient in view of the thickness of the material employed, and the retaining flange 48 is bent outward at 49 to provide a camming surface 50. The camming surface 50 engages the lever 18 when the lever 18 is shoved into the position of Fig. 3 from above so that the retaining flange 48 may spring outward to permit the lever 18 to move into this position, but it holds the lever in this position by engaging the upper outer corner of the lever, as shown in Fig. 3.

The method of removal of the socket wrenches has already been described in connection with the structure of the devices for holding these

socket wrenches. It should also be noted that while the socket wrenches are held in place by the resilient member 33, there is absolutely no possibility of their being removed or shaking loose until the lever 18 is removed, since the end portion 40 occupies the space into which the socket wrench 12 must be moved preliminary to its removal. Furthermore, the removal of the other socket wrenches depends in each case upon the preliminary lateral movement of all of the socket wrenches located toward the left of it in Fig. 1.

Referring to Figs. 6 to 9, this is a modification in which the holding device is also adapted to hold a ratchet lever 51 and a stub shaft 52. In this embodiment of the invention the holding device will be designated in its entirety by the numeral 53, and its base by the numeral 54. The base 54 is made of sufficiently greater width to provide space for supporting the ratchet lever 51, and the lower edge of base 54 is provided with an upwardly extending retaining flange 55.

Retaining flange 55 is preferably of substantially the same height as the thickness of the ratchet lever 51, and it may be curved inward at 56 and 57 so as to provide retaining portions 56, 57 which engage over the curved edge portions of the ratchet lever 51 at those points.

The upper portion of the modification of Figs. 6 to 9 is substantially the same as that described with respect to Fig. 1, with the following exceptions: The retaining flanges 28—32 are in this case punched or cut out of the bottom 54, leaving apertures instead of slots. The retaining flanges 28 and 29 are located at the border of a relatively larger aperture 58, which is directly beneath the end of the wrench lever 18, so that the fingers may be inserted through the aperture 58 to lift the wrench lever 18 out of engagement with its resilient retaining member 48.

The ends of the holding device in this embodiment may be formed by upwardly extending flanges 59, 60 carried by base 54 and the overhanging flange 42 at the left end and is extended forward, that is, downward, in Fig. 6, to cover the stub shaft 52. An upwardly extending ear 61 is punched out of the base 54, leaving an aperture 62 below the stub shaft 52 to facilitate its removal, and a retaining flange 63 is punched out of the base 54 adjacent the end of ratchet lever 51 opposite the retaining member 56, to engage the opposite side of that end of the ratchet lever. A relatively long resilient ear 64 is punched out of the base 54 at the border of an enlarged aperture 65 for engaging the side of the ratchet lever 51 opposite to the point 57. Resilient member 64 is of substantially the same shape as resilient member 48 previously described, and is forced back by the ratchet lever 51 when the ratchet lever is pushed into the position of Fig. 6, and it retains the ratchet lever in the holding device.

The fingers may be inserted into engagement with the ratchet lever 51 through the aperture 65 from the bottom of the device to facilitate its removal. It will thus be observed that we have invented an improved socket wrench kit or assembly which may be constructed out of a single sheet metal stamping so that the present device may be manufactured at a very low cost. Furthermore, socket wrenches are secured in place by a novel structure in such a manner that they are held firmly against rattling by the holding device, but they may be very quickly removed by first removing the wrench lever to provide space for longitudinal movement for the assembly of wrenches. The wrenches are thus brought into position so that they can clear the retaining flanges which are otherwise held in position, and each wrench may be removed separately or replaced in the position which enables all of the socket wrenches to cooperate with each other in locking them in the holding device.

While we have illustrated and described a specific embodiment of our invention, many modifications may be made without departing from the spirit of the invention, and we do not wish to be limited to the precise details set forth, but desire to avail ourselves of all changes within the scope of the appended claims.

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

1. In a socket wrench kit, the combination of a holding device having a base for supporting a plurality of socket wrenches with an upwardly extending flange located along one side of said base and engaging the sides of said socket wrenches, a plurality of socket wrenches on said base and located beside each other in a series, retaining means carried by said upwardly extending flange and normally extending over the top of said socket wrenches, and a plurality of upwardly extending lugs carried by said base for engaging said socket wrenches at a point diametrically opposite to the engagement of said socket wrenches with said upwardly extending flange, said lugs being spaced from each other, whereby the socket wrenches may be moved laterally with respect to said lugs and upwardly between said lugs to clear said retaining means so that said socket wrenches may be lifted from said base.

2. In a socket wrench kit, the combination of a holding device having a base for supporting a plurality of socket wrenches with an upwardly extending flange located along one side of said base and engaging the sides of said socket wrenches, a plurality of socket wrenches on said base and located beside each other in a series, retaining means carried by said upwardly extending flange and normally extending over the top of said socket wrenches, and a plurality of upwardly extending lugs carried by said base for engaging said socket wrenches at a point diametrically opposite to the engagement of said socket wrenches with said upwardly extending flange, said lugs being spaced from each other, whereby the socket wrenches may be moved laterally with respect to said lugs and upwardly between said lugs to clear said retaining means so that said socket wrenches may be lifted from said base, and resilient means carried by said holding device for engaging the end member of said series of socket wrenches to prevent lateral movement of said socket wrenches to hold said socket wrenches in position to be engaged by said upwardly extending flange and lugs.

3. In a holding device for socket wrenches, a stamped sheet metal member having a base and having an upwardly extending flange for engaging the sides of a series of socket wrenches, said flange carrying an over-hanging inwardly extending flange for engaging above the socket wrenches, means for engaging the endmost of a series of socket wrenches, and a plurality of upwardly extending lugs carried by said base for engaging each of the series of socket wrenches at a point diametrically opposite to the engagement of the socket wrench with said upwardly extending flange, said lugs being suitably spaced so that said socket wrenches may be moved

laterally and forwardly between said lugs to permit said socket wrenches to clear said over-hanging flange.

4. In a holding device for socket wrenches, a stamped sheet metal member having a base and having an upwardly extending flange for engaging the sides of a series of socket wrenches, said flange carrying an over-hanging inwardly extending flange for engaging above the socket wrenches, means for engaging the endmost of a series of socket wrenches, and a plurality of upwardly extending lugs carried by said base for engaging each of the series of socket wrenches at a point diametrically opposite to the engagement of the socket wrench with said upwardly extending flange, said lugs being suitably spaced so that said socket wrenches may be moved laterally and forwardly between said lugs to permit said socket wrenches to clear said over-hanging flange, and a resilient metal member carried by said upwardly extending flange for engaging the other endmost socket wrench to hold said socket wrenches in engagement with each other between said upwardly extending flange and said lugs.

5. In a holding device for socket wrenches, a stamped sheet metal member having a base and having an upwardly extending flange for engaging the sides of a series of socket wrenches, said flange carrying an over-hanging inwardly extending flange for engaging above the socket wrenches, means for engaging the endmost of a series of socket wrenches and a plurality of upwardly extending lugs carried by said base for engaging each of the series of socket wrenches at a point diametrically opposite to the engagement of the socket wrench with said upwardly extending flange, said lugs being suitably spaced so that said socket wrenches may be moved laterally and forwardly between said lugs to permit said socket wrenches to clear said over-hanging flange, said base having sufficient space for reception of the laterally bent end of a wrench lever, means for engaging the said end of said wrench lever located opposite to said socket wrenches, and resilient means for retaining the opposite end of said wrench lever in engagement with said base.

6. In a holding device for socket wrenches, a stamped sheet metal member having a base and having an upwardly extending flange for engaging the sides of a series of socket wrenches, said flange carrying an over-hanging inwardly extending flange for engaging above the socket wrenches, means for engaging the endmost of a series of socket wrenches and a plurality of upwardly extending lugs carried by said base for engaging each of the series of socket wrenches at a point diametrically opposite to the engagement of the socket wrench with said upwardly extending flange, said lugs being suitably spaced so that said socket wrenches may be moved laterally and forwardly between said lugs to permit said socket wrenches to clear said over-hanging flange, said base having sufficent space for reception of the laterally bent end of a wrench lever, means for engaging the said end of said wrench lever located opposite to said socket wrenches, and resilient means for retaining the opposite end of said wrench lever in engagement with said base, and said base having upwardly extending retaining members for supporting a stub shaft and ratchet lever.

7. A one piece retaining device for socket wrenches formed with a base and upwardly extending rear side, said base also having upwardly extending end portions, and said rear side being provided with a narrow over-hanging flange, and a plurality of upwardly extending tongues punched out of said base, each tongue being located to engage a socket wrench diametrically opposite to the point of engagement to the socket wrench with the rear of said lugs being provided with space between said lugs whereby the socket wrenches may be moved into said spaces sufficiently to clear said narrow over-hanging flange.

8. In a socket wrench kit, a retaining device for socket wrenches comprising a tapered receptacle including means for confining socket members on four sides of the socket members, when said members are in packed position, one of said means extending over said socket members only sufficiently so that the sockets are adapted to pass said latter means when moved to a larger part of the tapered receptacle, and means for holding the sockets in packed position in the tapered receptacle and engaging the opposite sides thereof, comprising a resilient metal member forming a part of the receptacle and engaging the largest and endmost socket member to hold all of said socket members in position.

9. In a socket wrench kit, the combination of a plurality of sockets arranged in a series with a socket container comprising a metal member having a substantially flat bottom, said bottom having an upwardly extending rear side wall flange confining the sockets on one side, and said bottom having upwardly extending shorter front wall flange means confining the sockets on the opposite side, an end flange carried by one of said flanges for closing one end of the container, and a horizontally projecting retaining flange carried by said rear wall flange, said retaining flange extending only slightly over the upper edge of the sockets in such manner as to retain the sockets in the container.

10. In a socket wrench kit, the combination of a plurality of sockets arranged in a series with a socket container comprising a metal member having a substantially flat bottom, said bottom having an upwardly extending rear side wall flange confining the sockets on one side, and said bottom having upwardly extending shorter front wall flange means confining the sockets on the opposite side, an end flange carried by one of said flanges for closing one end of the container, and a horizontally projecting retaining flange carried by said rear wall flange, said retaining flange extending only slightly over the upper edge of the sockets in such manner as to retain the sockets in the container, one of the parts of said container having a resilient tongue located adjacent the upper end of the container and engaging the endmost socket of said series to retain said socket in predetermined position and thereby retain all of the sockets in the container.

11. In a socket wrench kit, the combination of a plurality of sockets arranged in a series with a socket container comprising a metal member having a substantially flat bottom, said bottom having an upwardly extending rear side wall flange confining the sockets on one side, and said bottom having upwardly extending shorter front wall flange means confining the sockets on the opposite side, an end flange carried by one of said flanges for closing one end of the container, and a horizontally projecting retaining flange carried by said rear wall flange, said retaining flange extending only slightly over the

upper edge of the sockets in such manner as to retain the sockets in the container, said container being tapered, and said retaining flange extending over said sockets only sufficiently to confine said sockets until they are moved to a wider part of said receptacle.

12. In a socket wrench kit, the combination of a plurality of sockets arranged in a series with a socket container comprising a metal member having a substantially flat bottom, said bottom having an upwardly extending rear side wall flange confining the sockets on one side, and said bottom having upwardly extending shorter front wall flange means confining the sockets on the opposite side, an end flange carried by one of said flanges for closing one end of the container, and a horizontally projecting retaining flange carried by said rear wall flange, said retaining flange extending only slightly over the upper edge of the sockets in such manner as to retain the sockets in the container, said front wall flange means comprising a plurality of means located each to engage a part of a socket substantially diametrically opposite to the engagement of the socket with the rear wall.

13. In a socket wrench kit, the combination of a plurality of sockets arranged in a series with a socket container comprising a metal member having a substantially flat bottom, said bottom having an upwardly extending rear side wall flange confining the sockets on one side, and said bottom having upwardly extending shorter front wall flange means confining the sockets on the opposite side, an end flange carried by one of said flanges for closing one end of the container, and a horizontally projecting retaining flange carried by said rear wall flange, said retaining flange extending only slightly over the upper edge of the sockets in such manner as to retain the sockets in the container, and said front wall flange means having spaces into which said sockets may move forward upon being shifted longitudinally of the container, to clear said retaining flange.

14. A socket wrench kit comprising a plurality of sockets and a receptacle of such shape as to receive said sockets when arranged in a row, portions of said receptacle being so shaped as to provide retaining lugs, said lugs being so located as to engage and retain said sockets when in secured position and said lugs being so spaced with respect to one another as to permit removal of said sockets from the receptacle when moved longitudinally thereof.

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