

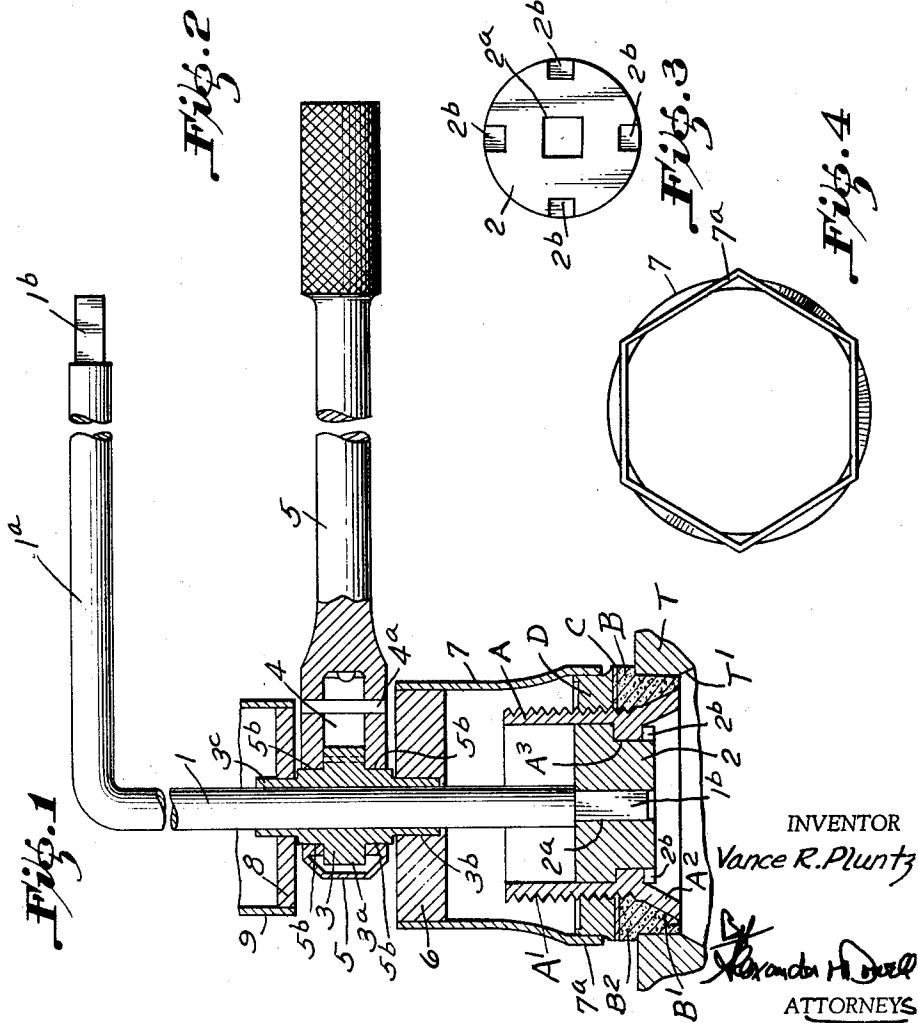
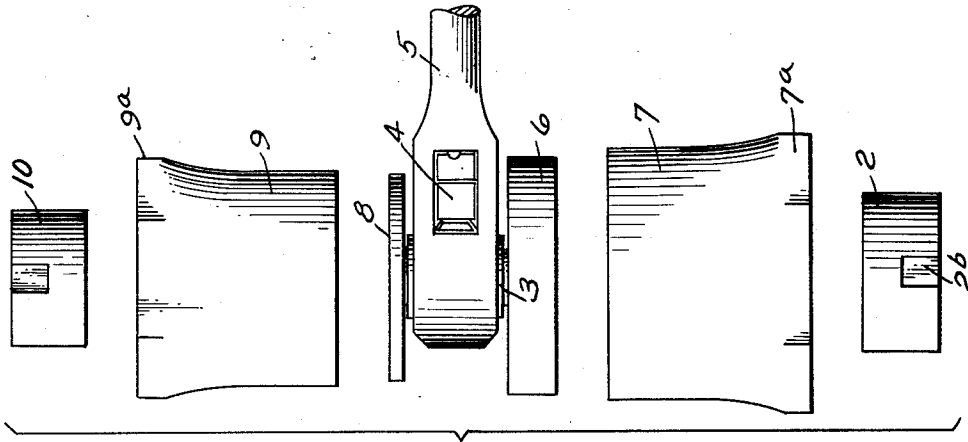
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COMBINATION INSIDE-OUTSIDE SPUD WRENCH

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COMBINATION INSIDE-OUTSIDE SPUD WRENCH

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2 Claims. (Cl. 81-53)

This invention is an improved multiple spud wrench especially adapted for assembling and disassembling the water inlet connection on urinals and commodes commonly known either as a spud or as a nipple.

The principal objects of my invention are to provide a simple tool which will accomplish the task usually performed by the use of two or more tools in combination, my novel wrench including sockets, a pawl, and an engaging L-shaped handle that fits through the center of the sockets and pawl; also to provide a wrench that fits the two most common sizes of spud nipples known and used in the plumbing industry and slides on a forward and reverse ratchet; also to provide a wrench that fits the two major connections by simply turning the wrench over, there being no adjustment and no slippage.

The connection for which my novel wrench is intended consists of four parts, to wit, (a) the nipple itself, also referred to as a spud; (b) a rubber gasket sealing ring; (c) a brass retaining washer; and (d) a locking nut, all of which are assembled in the foregoing sequence.

A further object of the invention is to provide a wrench that also fits and is useful in assembling and disassembling basket strainers of kitchen sinks; and a wrench that performs two or more operations at one time.

Summarizing, the primary object of my invention is to provide a spud wrench for assembling and disassembling spud assemblies in water inlets of commodes or the like in which the spud assembly includes an externally threaded nipple to receive a locking nut, and has a flange at its end engaging the walls of the commode inlet, and said nipple having a series of inwardly extending spaced lugs in its bore, the spud wrench according to my invention comprising a lever having a non-circular end portion, a head adapted to be inserted in the nipple having a series of recesses in its outer periphery adapted to engage the lugs of the nipple, and having a non-circular central hole receiving the correspondingly shaped end of the lever, a ratchet head rotatably and slidably mounted on the lever above the first head and having ratchet teeth therearound, a ratchet lever rotatably mounted on the ratchet head and carrying a pawl for engaging the ratchet teeth in one direction of swing of the ratchet lever for engaging the ratchet teeth to rotate the ratchet head with the ratchet lever, a socket sleeve fixedly mounted on the ratchet head adapted to engage the locking nut to rotate the latter as the ratchet head is being rotated, while the nipple is held from rotation by the first lever, said socket sleeve having a circular inner end, a disk mounted on the ratchet head and fixedly mounted within the circular inner end of the socket sleeve, and the outer end of the socket sleeve having a non-circular shape to suit that of the locking nut and being radially spaced from and concentrically surrounding the first named head.

I will explain the invention with reference to the accompanying drawing, which illustrates one practical embodiment thereof, to enable others familiar with the art to adopt and use the same; and will summarize in the claims, the novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawing:

FIG. 1 is a vertical section through my novel combination inside-outside spud wrench showing the same applied to the nipple or spud assembly as attached to the commode or urinal, and showing the locking nut of the nipple seated upon the brass retaining washer disposed above the rubber gasket sealing ring.

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FIG. 2 is an exploded view of the parts of the wrench separated from the handle per se.

FIG. 3 is a top plan view of the separable nipple engaging head of the wrench.

FIG. 4 is a plan view of one of the socket wrench sleeves of the wrench, showing the non-circular or hexagonal end thereof which engages the correspondingly shaped locking nut of the nipple assembly.

As shown in FIG. 1, the standard spud or nipple assembly on which my novel wrench is intended to operate consists of the nipple A itself, a rubber gasket sealing ring B, a brass retaining washer C, and a locking nut D, which assembly as shown is that normally used in connection with such commodes and urinals and other plumbing fixtures. As shown, the commode T has a water inlet T' in one face thereof, the walls of which are upwardly convergent to facilitate the attachment of the nipple A thereto. The nipple A is threaded at its upper end, as at A' and has at its lower end an outwardly flaring or conical flange A2, the outer walls of which are parallel with the converging walls T' of the commode inlet, and normally the conical flange A2 is disposed within the commode inlet T', as shown in FIG. 1, but is spaced therefrom in order to engage the correspondingly shaped conical flange B' of the rubber gasket sealing ring B, the upper end of which ring B normally seats upon the top of commode T, the same having an annular flange B2 of greater diameter than the inlet opening T' of the commode. Upon the top of the flange B is placed the brass retaining washer C as shown in FIG. 1; and the locking nut D is threaded upon the threaded portion A' of nipple A and squarely contacts and compresses the retaining washer C and also the gasket sealing ring B to form a water-tight connection between the converging walls T' of the commode inlet and the flange A2 of the nipple assembly. The completed connection of the nipple assembly to the commode T is such that the compression of the sealing ring B must withstand 40 to 60 pounds water pressure per square inch in order to effectively connect the nipple assembly to the commode.

With respect to the nipple A, as shown in FIG. 1, the nipples of standard design are provided in the bores thereof adjacent the conical flange A2 with a series of four inwardly extending lugs A3 disposed 90° apart, the provision of the lugs A3 being standard on substantially all nipples for connection to urinals, commodes or the like.

My novel wrench makes use of these standard lugs A3 of the nipple, and as shown in FIG. 1, my wrench includes an L-shaped lever 1 adapted to be disposed axially of the nipple assembly, lever 1 having at its upper end a lateral extension 1a which is preferably of greater or less length than the vertical portion 1 so that either end of the lever may be utilized in making the assembly. As shown, each end of lever 1a is provided with a reduced squared extension 1b for insertion into the correspondingly shaped central hole 2a in the head 2, FIGS. 1 and 3, which head 2 is further provided in its lower periphery with recesses 2b, four being shown disposed 90° apart, which recesses correspond in shape and arrangement with the lugs A3 of nipple A when the block 2 is inserted down through the loosely assembled nipple assembly as shown in FIG. 1, the lower squared end 1b of the lever 1 engaging the correspondingly shaped central hole 2a of head 2. When so engaged it is obvious that the lever 1 may be grasped by one hand of the operator or plumber, and the loosely assembled nipple assembly including the nipple A prevented from rotation within the opening T' of commode T, which is an essential feature of my novel wrench.

Rotatably mounted upon and around the lever 1 is a rotatable ratchet assembly head 3 having ratchet teeth 3a extending around same adapted to be engaged by a pawl 4 pivoted as at 4a in a ratchet handle 5, the handle 5 having journals 5b engaging bearing surfaces disposed above

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and below the ratchet teeth 3a, whereby the ratchet head 3 may be freely rotated on the lever 1, the pawl 4 riding over the teeth 3a during swinging of the lever in one direction but engaging the teeth 3a during the opposite swinging movement of the lever 1 so that the ratchet head 3 may be revolved around the lever 1 during movement of the ratchet lever 5 in said opposite direction, the lever 1 being, as above stated, held stationary by the other hand of the plumber or operator during actuation of the ratchet lever 5.

Fixedly mounted upon one end 3b of the ratchet head 3 is a circular disc 6 of somewhat smaller diameter than the locking nut D, and fixedly secured to the periphery of the disc 6 is a socket wrench 7 having its lower end 7a formed as shown in FIG. 4 to hexagonal shape to engage the correspondingly shaped locking nut D, whereby rotation of the ratchet lever 5 in one direction will rotate the locking nut D on the stationary threaded portion of the nipple A, thereby compressing the gasket B of the nipple assembly so as to withstand water pressures up to 40 or 60 pounds per square inch.

The opposite end of the ratchet head 3 has an extension 3c, FIG. 1, upon which is mounted a disk 8 similar to but smaller than the disk 5, and a second socket wrench 9, FIGS. 1 and 2, having a non-circular outer end 9a is mounted for rotation with the disk 8 and ratchet head 3, the socket wrench 9 being preferably of smaller size than the socket wrench 7 so as to be usable in attaching smaller standard sizes of nipple assemblies by merely upending the ratchet assembly 3-9 on the lever 1. In connection with the smaller socket wrench 9 a corresponding head 10, FIG. 2, would be used similar in all respects to, but smaller in diameter than, the head 2.

By the above arrangement the wrench may be readily assembled by merely first inserting the ratchet assembly 3 to 9 as a unit on one end of the end of the lever 1, inserting the block 2 (or 10) down into the standard nipple as shown in FIG. 1, using the appropriate size with the squared end 1b thereof engaged in the hole 2a of the head, and then the operator by holding with one hand the horizontal arm 1a of the lever 1, and by manipulating the ratchet lever 5 with the other hand, The loosely assembled nipple assembly can be readily tightened in the inlet T' of the commode T, the arm 1a of the wrench preventing rotation of the nipple A and ratchet lever 5 rotating the socket wrench 7 (or 9) and also the locking nut D with each movement of the ratchet lever 5 in one direction of swing. Such movement of the ratchet lever 5 while holding the lever arm 1a against rotation, will complete the tightening of the locking nut D of the nipple assembly securing same to the commode T, the flange B2 of rubber sealing ring B being forced against the top of the commode T and the flange B' of the rubber sealing ring B which normally is of approximately 1/8" thickness in the portion B', being sealed against the converging inlet walls T' of the commode T so that the connection will withstand from 40 to 60 pounds water pressure per square inch.

My novel wrench therefore provides a very effective and convenient tool for accomplishing the spud or nipple connection, and provides a wrench in the form of a single tool, thus dispensing with the customary use of several tools to accomplish the same purpose. Moreover, my assembly is one which permits the plumber or workman to operate in very confined spaces, the wrench holding the nipple against rotation while the locking nut D is being threaded tightly onto the nipple A. If desired the ratchet may be such that the same will operate on forward or reverse movements so as to take care of any nipples or locking nuts which are right-handed or left-handed.

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My novel wrench may also be used in assembling and disassembling basket strainers on kitchen sinks; and also provides a wrench which performs two or more operations at the same time, i.e., the tightening of the locking nut D and the prevention of rotation of the nipple A. The use of my novel wrench permits the proper connection to be made in approximately one-third of the time necessary when using the usual separate conventional tools.

I do not limit my invention to the exact form shown in the drawing, for obviously changes may be made therein within the scope of the claims.

I claim:

1. A spud wrench for assembling and disassembling spud assemblies in water inlets of commodes or the like in which the spud assembly includes an externally threaded nipple to receive a locking nut, and has a flange at its end engaging the walls of the commode inlet, and said nipple having a series of inwardly extending spaced lugs in its bore, comprising a lever having a non-circular end portion; a head adapted to be removably inserted in the nipple and having a series of recesses in its outer periphery adapted to receive and engage the lugs of said nipple, and having a non-circular central hole receiving the correspondingly shaped end of the lever; a ratchet head rotatably and slidably mounted on said lever above the first head and having ratchet teeth therearound; a ratchet lever rotatably mounted on said ratchet head; a pawl carried by said ratchet lever for engaging the ratchet teeth in one direction of swing of the ratchet lever to rotate the ratchet head with the ratchet lever; a socket sleeve fixedly mounted on the ratchet head, said sleeve being adapted to engage the locking nut to rotate the latter as the ratchet head is being rotated while the nipple is held from rotation by the first lever; said sleeve having a circular inner end, a disc fixedly mounted on the ratchet head, said disc being fixedly mounted within the circular inner end of the socket sleeve; and the outer end of said socket sleeve having a non-circular shape to suit that of the locking nut and radially spaced from and concentrically surrounding the first named head.

2. A spud wrench comprising a lever having a non-circular end portion; a removable head having a series of recesses in its lower periphery and having a non-circular central hole adapted to receive the correspondingly shaped end of the lever; a removable ratchet head rotatably and slidably mounted on said lever above the first head and having ratchet teeth therearound; a ratchet lever rotatably mounted on said ratchet head; a pawl carried by said ratchet lever for engaging the ratchet teeth in one direction of swing of the ratchet lever to rotate the ratchet head with the ratchet lever; a socket sleeve fixedly mounted on the ratchet head; said socket sleeve having a circular inner end, a disc fixedly mounted on the ratchet head, said disc being fixedly mounted within the circular inner end of the socket sleeve; and the outer end of said socket sleeve having a non-circular shape and radially spaced from and concentrically surrounding the first named head.

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