F. R. CUNNINGHAM.

MULTIPLE TOOL.

APPLICATION FILED SEPT. 11, 1908.

910,789.

Patented Jan. 26, 1909.

Fig. 1.

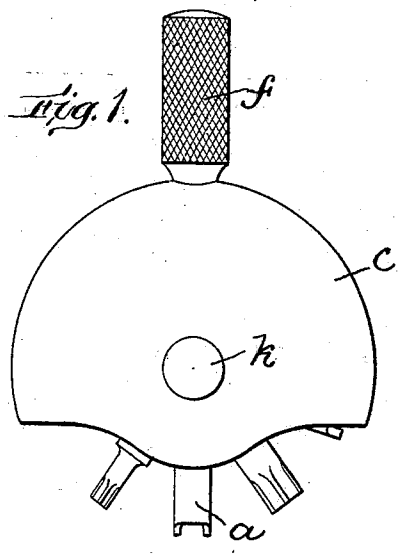


Fig. 2.

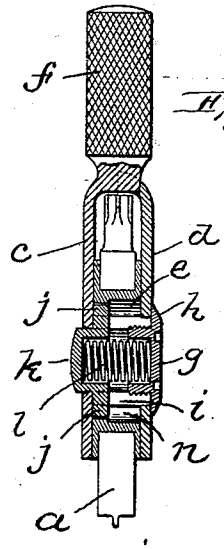


Fig. 3.

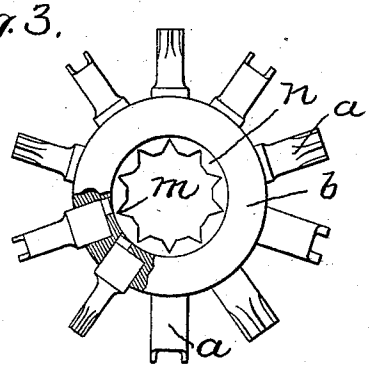


Fig. 6.

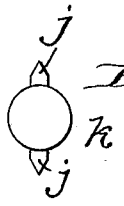


Fig. 4.

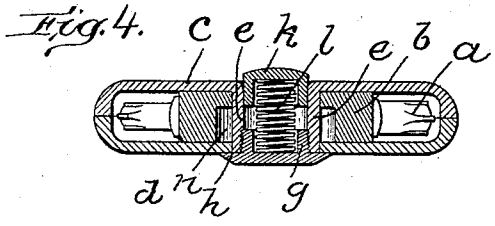
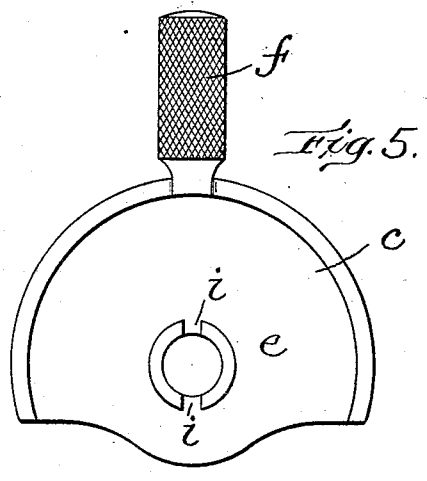


Fig. 5.



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MULTIPLE TOOL.

No. 910,789. Specification of Letters Patent. Patented Jan. 26, 1909.

Application filed September 11, 1908. Serial No. 452,621.

To all whom it may concern:

Be it known that I, FRANK R. CUNNINGHAM, of Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Multiple Tools, of which the following is a specification.

This invention relates especially to watchmakers' tools such as are known as sleeve wrenches and are used to screw in or out the sleeve which is contained in the pendant of a stem-winding watch.

The tool which constitutes the subject of the present invention contains a number of bits adapted to perform work of the same general character but on watches of different sizes.

The invention, however, is not limited in its application to tools of the particular character above indicated, but is of broader application and may embrace all kinds of multiple tools in which several tools of different sizes or characters are mounted upon a holder and adapted to be brought individually into position for operation.

The object of the invention is to so mount a plurality of tools and the holder by which they are carried that all or nearly all of the tools which are not in use are covered by a smooth shield which prevents the hand of the user from coming into contact with sharp edges, corners or points on the tools, and enables a firm grip to be obtained so that the particular tool which is being used when such a tool is a wrench, may be easily turned without danger of injury to the fingers of the user.

The character and construction of the invention are described in the following specification and shown in detail in the accompanying drawings, in which,—

Figure 1 represents an elevation of the tool. Fig. 2 represents a central vertical section thereof. Fig. 3 represents an elevation of the holder and the individual tool elements carried thereby, shown separate from the casing in which they are ordinarily contained. Fig. 4 represents a cross-sectional view of the complete tool. Fig. 5 represents an elevation of one member of the dividing casing in which the tool holder is mounted. Fig. 6 represents an elevation of a detent by which the tool holder is prevented from rotating when in the casing.

The same reference characters indicate the same parts in all the figures.

a represents tool elements which may be of any character, and are shown in the drawings as being sleeve wrenches for watchmakers' use. These elements are all mounted upon an annular holder *b* which in turn is supported in a casing or shell *c* so that it may rotate. The tool elements project radially from the outer periphery of the holder *b* and rotation of the latter will bring any one of the elements into position for use.

The shell *c* is of sufficient extent to cover and inclose nearly all of the tool elements, being of circular outline, but not continuing through a complete circle. Its lower part is cut away so as to expose one or more of the tools in condition for use. This shell or casing is made in two parts, the front side of which is represented by *c* and the rear portion by *d*. The edges of these parts are brought toward each other so as to meet and inclose a space of sufficient depth to accommodate the tool holder *b*. The part *c* of the casing has a tubular internal boss *e* upon which the tool holder is rotarily mounted, and there is also connected either integrally or detachably with this part a handle *f*. The other member *d* of the casing has a perforation of sufficient size to receive the end of the tubular boss *e*, and when placed over the same is secured by a screw *g* which is threaded into the interior of the boss and has a head *h* which overlaps the surrounding edges of the casing member *d*. The boss is located at the center of curvature of the casing.

On opposite sides of the boss *e* are formed slots *i* through which project the teeth *j* of a detent *k*. This detent is in the form of a plunger which slides in the tubular boss and the end of which projects slightly from the outer face of the casing member *c*, as shown in Figs. 2 and 4. A spring *l* is contained within recesses in the plunger and screw *g*, and serves to hold the plunger outward so that its teeth are against or near the extended plane portion of the casing member *c*.

The inner circumference of the annular tool holder *b* which bears upon the boss *e* has notches *m* into which the teeth of the detent extend to lock the holder against rotation. These notches are equal in number to the tool elements, and arranged so that two of them are occupied at the same time by the teeth of the detent. One side of the tool holder is recessed to provide an enlarged

chamber n of which the circumference lies beyond the ends of the teeth j. This chamber is of a depth at least as great as that of the teeth, and ordinarily is somewhat greater, so that the detent when moved in opposition to the pressure of the spring l, may be disengaged from the notches, its teeth j then lying in the recess n free from any engagement whatever with the tool holder. This leaves the latter free to turn so that any one of the tool elements mounted upon it may be caused to project beyond the cut-away edges of the casing in position to be used. When the pressure which displaces the detent is removed, the spring returns it into the position shown in Figs. 2 and 4, so that its teeth will automatically enter two of the notches when the tool holder is turned to bring them into registry therewith.

The utility of the casing c is to serve both as a grip and as a protector. As it extends over the major part of the tool elements beyond the ends thereof, it affords as great a leverage as the tool element itself can stand, which may be exerted in turning the operative element. Its smoothness and the fact that it completely shields the hand of the user from contact with the inoperative tool elements enables it to be firmly grasped and allows the user to apply his full strength, if necessary, without harm to his hand.

The handle f may be grasped between the thumb and fingers to enable the tool to be more rapidly turned, after the work with which it is engaged has been started, than it can be when the turning force is applied to the shield alone.

I claim:—

1. A multiple tool comprising a holder having a plurality of tool elements projecting therefrom, and a hand grip consisting of a shield extending over and covering sufficient of said tool elements to protect the hand of the user and afford a firm grip.

2. A multiple tool consisting of a holder, a plurality of tool elements projecting therefrom, and a casing in which said holder is mounted in such manner that any tool element may be set in operative position, said casing inclosing the greater part of the tool elements and extending sufficiently far to afford a grip and protect the hand of the user, while exposing the operative tool element.

3. A multiple tool consisting of an annular holder, a plurality of tool elements attached thereto and projecting therefrom, and a hand grip in which said holder is rotatably mounted, inclosing a part of said elements.

4. A multiple tool consisting of an annular holder, a plurality of tool elements attached thereto and projecting therefrom, and a circularly-formed casing constituting a hand grip in which said holder is pivotally mounted, and which is concentric with said holder, said casing being cut away at one side to expose one or more of the tool elements, and covering others, whereby to enable the tool to be firmly grasped without injury to the hand of the user.

5. A multiple tool comprising a casing or shell, a tool holder mounted thereon, and tool elements secured to said holder and projecting therefrom, the casing covering part of said tool elements and being cut away to expose others, and the tool holder being movable so that any one of the tool elements may be operatively exposed at the opening.

6. A multiple tool comprising a casing or shell constituting a hand grip having an internal pivot, a tool-holding ring mounted rotatably on said pivot, tool elements projecting therefrom, and a detent adapted to hold said ring from rotation.

7. A multiple tool comprising a casing or shell constituting a hand grip, an annular tool holder pivoted within said shell, tool elements projecting from said holder, and a detent adapted to engage notches formed in said holder and prevent rotation of the latter, said detent being accessible at the side of the casing so that it may be disengaged.

8. A multiple tool comprising a casing or shell, a tool holder mounted therein, tool elements secured to said holder and projecting therefrom, the casing covering the greater part of said tool elements and being cut away to expose others, and the tool holder being movable so that any one of the tool elements may be operatively exposed at the opening, and a detent positively restraining said holder from rotation and manually displaceable to permit shifting of the holder and setting of other tool elements in operative position.

9. A multiple tool comprising a hand grip, an annular tool holder pivoted within said grip, tool elements projecting from said holder, and a detent protruding through the side of the grip and having a tooth arranged to enter notches in said ring and hold the same from rotation, said detent being disengageable from the notches by pressure applied to its protruding portion.

10. A multiple tool comprising a casing having a hollow interior boss, an annular tool holder journaled on said boss, having notches, tool elements fixed to said holder and mainly inclosed by said casing, and a detent contained in said boss and having a tooth adapted to enter said notches to prevent rotation of the tool holder, said detent being accessible from the outside so that it may be moved to displace its tooth from the notches and permit rotation of the holder.

11. A multiple tool comprising a casing having a hollow interior boss slotted at one side, an annular tool holder journaled on said boss, having notches and a chamber adjacent the notches of sufficient width to contain said tooth without engagement, tool elements

fixed to said holder, and a detent contained in said boss and having a tooth projecting through the slot in the boss and adapted to enter said notches to prevent rotation of the tool holder, said detent being accessible from the outside so that it may be moved to displace its tooth from the notches and permit rotation of the holder.

12. A multiple tool comprising an annular tool holder, tool elements secured thereto, a casing made in parts so as to inclose said holder and a number of said tool elements, one of said parts having a tubular boss with slots in its sides on which said holder is journaled, the other part fitting over the end of said boss, a screw threaded into the end of said boss and having a head overlapping the surrounding part of the casing, holding said parts together, a detent plunger mounted in the boss and having teeth projecting laterally through the slots thereof, and a spring pressing against said detent and holding screw, normally holding the teeth of the detent in notches formed in the tool holder.

13. A multiple tool comprising a holder having a plurality of tool elements projecting therefrom, and a body portion to which said holder is pivotally connected, with provision for adjustment to bring any said element into operative position, said body having a hand grip extending around said tool elements on opposite sides of the pivot to permit application of relatively great leverage effectively to the operative tool element.

14. A multiple sleeve wrench for watchmakers' use, comprising a holder having a plurality of wrench elements projecting therefrom, and a body portion to which said holder is pivotally connected, with provision for adjustment to bring any said element into operative position, said body having a hand grip of sufficient lateral extent to permit application of relatively great leverage for turning the operative wrench element.

15. A watch maker's multiple sleeve wrench comprising a holder, radiating wrench elements carried by said holder, and a handle or grip consisting of a shell in which said holder is pivotally contained and from one side of which the displaceable operative wrench element extends, said shell inclosing certain of the wrench elements on opposite sides of the pivot.

16. A watch maker's multiple sleeve wrench comprising a holder, radiating wrench elements carried by said holder, and a handle or grip consisting of a circularly formed shell in which said holder is contained, and in the center of curvature of which it is pivotally mounted, said shell being cut away at one side to expose the displaceable operative wrench element and extending continuously throughout more than half of a circle, whereby a grip is afforded on opposite sides of the pivot to furnish relatively great leverage for turning such operative element.

In testimony whereof I have affixed my signature, in presence of two witnesses.

FRANK R. CUNNINGHAM.

Witnesses:

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P. W. PEZZETTI.