

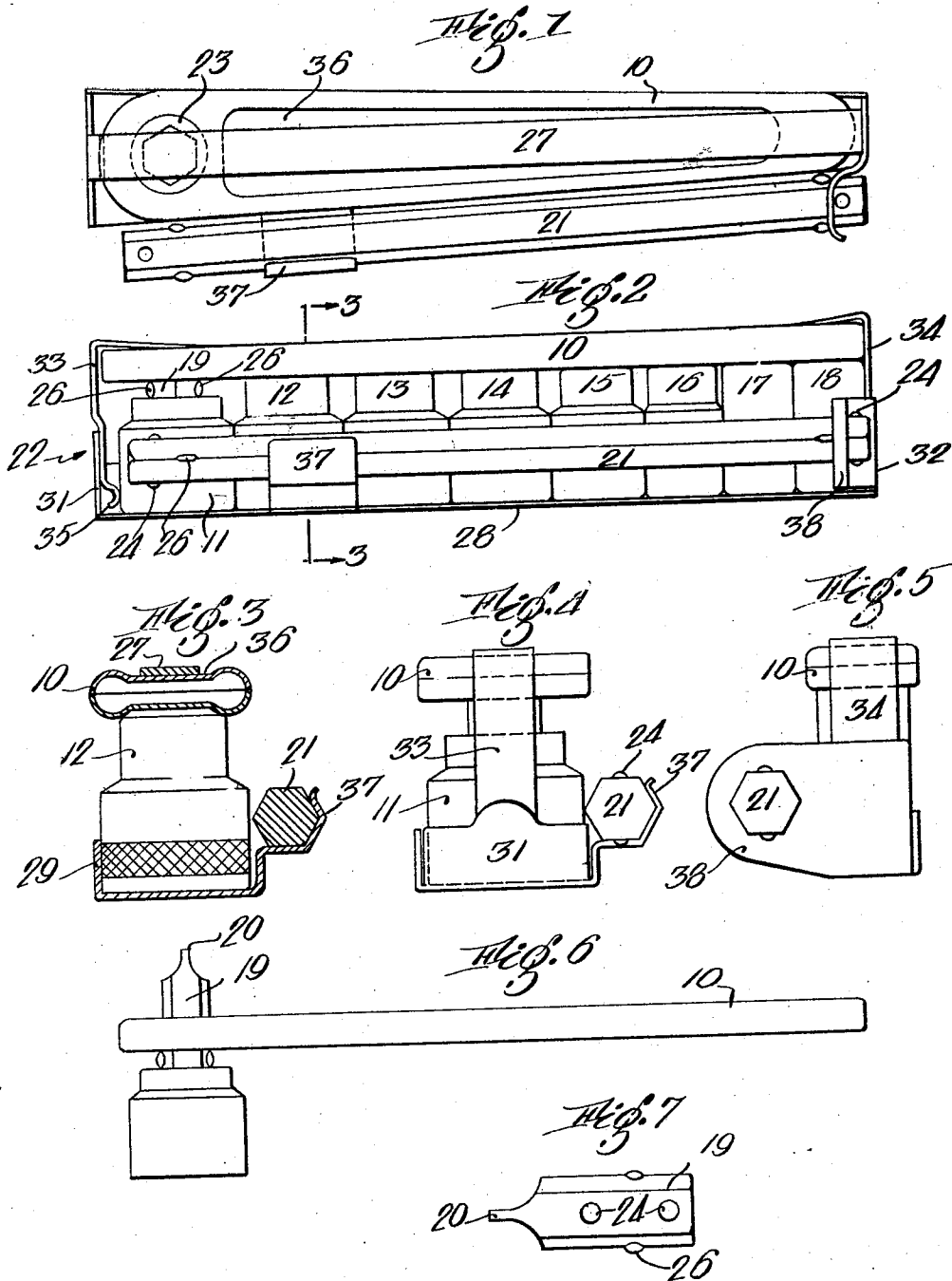
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TOOL SET AND CONTAINER THEREFOR

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# UNITED STATES PATENT OFFICE

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## TOOL SET AND CONTAINER THEREFOR

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This invention relates to compound tool sets and to a container or holder for a compound tool of the type comprising an operating member such as a handle, a number of detachable heads and means for connecting the heads to the operating member. A socket wrench set is representative of tools of this general class. It is customary to provide tools of this character with both long and short extensions for connection between the operating handle and the selected detachable head or socket.

Objects of this invention are to provide an improved holder for the detachable heads, operating handle and other parts or connections of the complete tool; to provide an efficient holder of a strong and durable construction consisting of few parts which are relatively simple and inexpensive to manufacture; and also to improve the relative proportions and construction of the parts of a compound tool so that the latter may be readily fitted into a holder of the class described.

In the drawing:

Fig. 1 is a top plan view of a compound tool set;

Fig. 2 is a front elevation of the tool set shown in Fig. 1;

Fig. 3 is a section taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is an end elevation of the left end of the tool set as viewed in Fig. 2;

Fig. 5 is an end elevation of the right end of the tool set in Fig. 2;

Fig. 6 is a side elevational view of the operating member connected to one of the detachable heads of the set; and

Fig. 7 is a side elevation of the short adaptor or extension.

The tool set selected for illustrating the features of the present invention comprises an operating member or handle 10, a plurality of detachable heads 11 to 18, a short adaptor or extension 19, a long adaptor or extension 21 and a container or rack indicated generally at 22 for supporting the compound tool. The operating handle 10 has a rotary socket 23 which is free to rotate in one direction but is held against rotation in the other direction by any approved means, as

for example by means of a ratchet (not shown). This rotary socket fits either end of the short extension 19 as well as the long extension 21. Each of these extension members has a spring-pressed ball 24 adjacent the end thereof. This ball normally protrudes slightly beyond the outer surface of the extension and provides a yieldable means for holding the extension member in the rotary socket of the operating handle. At points spaced inwardly from the yieldable detents or balls 24 each extension member is also provided with abutments 26 which are adapted to engage the rotary socket of the handle and thus to limit longitudinal movement of the extension relative to the handle. Each of the detachable heads 11 to 18 has a socket in the upper end thereof to receive the selected adaptor or extension member, and yieldable engagement of these parts is effected by means of the spring-pressed detents 24 while longitudinal movement of the extension is limited by the abutments 26 in the same manner as described with reference to the connection of these parts to the operating handle. Each of the operating heads 11 to 18 may be adapted to fit a nut of a different size or these heads may constitute threading tools of different sizes or may be used for various other purposes, as is well understood in this art.

The container or rack for supporting the compound tool set comprises upper and lower opposed longitudinal walls 27 and 28 which are spaced to receive the detachable heads arranged in side by side relation with the operating handle 10 disposed across the upper ends thereof. Along the rear edge of the bottom wall 28 a side wall 29 extends longitudinally between the end walls 31 and 32, which are also preferably formed integral with the bottom wall 28. The upper wall 27 is relatively narrow, at least in the middle portion thereof, and the ends 33 and 34 of this upper wall are turned downwardly and secured to the end walls 31 and 32, these parts being so constructed and arranged that the intermediate portion of the upper wall 27 normally bows downwardly to engage a depression 36 in the operating handle when the latter is mounted in the rack, so as to prevent

accidental or unintentional removal of this handle.

The lower portion of the end 33 is preferably in the form of a resilient foot or abutment 35 arranged to bear on the head 11 so as to assist in holding the tool firmly in the rack. The upper portion of the end 33 being offset outwardly provides ample clearance to permit the adjacent end of the handle 10 to swing about the short adaptor 19 as a pivot while the tool is being inserted or removed from the rack. A bracket 37 may be formed integral with the front edge of the bottom wall (Fig. 3) and shaped to receive the body or shank of the long adaptor 21, this bracket preferably being positioned to hold the body portion of the extension member 21 snugly against the detachable heads resting on the bottom wall 28. The other end of the long extension member 21 is receivable in an opening formed in a bracket 38, which is preferably integral with the end wall 32.

To remove the compound tool from its rack or container, the long adaptor 21 is moved longitudinally towards the left, as shown in Fig. 2, so as to depress the spring-pressed ball 24 at the right end of this extension member, and thus to permit the member to pass freely through the opening in the bracket 38. The extension member 21 may then be removed from the front side of the rack. This having been done, it is possible to remove any or all of the detachable heads, and by means of one of the extension members 19 or 21, to connect the selected head to the rotary socket 23 in the operating handle 10. To replace the tool in the rack the short adaptor 19 is mounted in the handle with the operating head 20 thereof pointed downwardly and extending through the socket of the detachable head 11. This head is made enough shorter than the other detachable heads to provide sufficient space to allow the abutments 26 of the extension member to be disposed between the operating handle and the upper end of this head. The operating handle with the extension 19 and the head 11 connected thereto is then mounted in the rack 22, as shown in Fig. 2. As the operating handle is swung beneath the flexible top wall 27, the latter snaps downwardly into the recess 36 of the handle and thus detachably holds the latter part from accidental movement. The detachable heads 12 to 18 may then be arranged in the holder in the manner shown in Fig. 2, and the long adaptor or extension member 21 may be snapped into the brackets 37 and 38. It will be seen that the retaining wall 29 which extends along the rear side of the holder and the detachably mounted extension member 21 on the front side of the holder constitute abutment means for preventing movement of the heads transversely of the rack. As the operating handle is positioned snugly to engage the upper ends of the detachable heads,

it will also be clear that the retaining wall 29 need not be of any considerable height as tipping of the various heads is effectively prevented by the superposed operating member 10.

I claim:

1. A frame for holding a compound tool comprising an operating member and a plurality of detachable heads therefor, said frame comprising opposed longitudinal walls and transverse end walls therebetween, the longitudinal walls being spaced to receive the detachable heads disposed in side by side relation with the operating member disposed across the end faces of the heads and along the inner side of one of the longitudinal walls, a longitudinally disposed member carried by the frame and extending along one side thereof for retaining the heads, and means releasable from the frame and disposed along the other side thereof for holding the heads therein.

2. A frame for holding a compound tool comprising an operating member and a plurality of detachable heads therefor, said frame comprising opposed longitudinal walls and transverse end walls therebetween, the longitudinal walls being spaced to receive the detachable heads disposed in side by side relation with the operating member disposed across the end faces of the heads and along the inner side of one of the longitudinal walls, side members disposed longitudinally along the sides of the frame for holding the heads therein, one of the side members being rigidly connected to the frame, and releasable means for holding the other side member to the frame.

3. A container for a compound tool comprising an operating member and a plurality of detachable heads therefor, said container comprising opposed longitudinal walls spaced to receive the detachable heads in side by side relation with the operating member disposed across the end faces of the heads and along the inner side of the adjacent longitudinal wall, transverse end walls extending between the longitudinal walls, a side wall extending along the edge of one of the longitudinal walls and between the end walls, this side wall being spaced from the other of the longitudinal walls to provide an opening through which the operating member may be inserted and withdrawn, and means releasably attached to the frame and disposed along the other edge of said one of the longitudinal walls for retaining the heads in the frame.

4. A container for a compound tool comprising an operating member, an extension member, and a plurality of detachable heads, said container comprising opposed longitudinal walls spaced to receive the detachable heads in side by side relation with the operating member disposed across the end faces of the heads and along the inner side of one

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of these walls, transverse end walls extending between these longitudinal walls, a side wall extending substantially between the end walls, the other side of the container being open to receive the compound tool, and releasable means for holding the extension member of the compound tool disposed longitudinally along said other side of the container for retaining the heads therein.

5 5. A container for a compound tool comprising an operating member, an extension member, and a plurality of detachable heads, said container comprising opposed longitudinal walls spaced to receive the detachable heads in side by side relation with the operating member disposed across the end faces of the heads and along the inner side of one of these walls, transverse end walls extending between these longitudinal walls, a side wall extending substantially between the end walls, this side wall having an opening therein to provide for insertion and removal of the operating member, the other side of the container being open to receive the heads of the compound tool, and means for supporting the extension member of the compound tool in a longitudinal position to retain the heads in the container.

10 6. A holder for a compound tool comprising an operating handle, a long adaptor, and a plurality of detachable heads, said holder comprising a rack having a bottom wall, rear side wall, end walls and a substantially open front side for receiving the detachable heads, the bottom wall of the rack being adapted to support a row of the detachable heads with the operating handle disposed across the upper ends thereof, resilient means carried by the rack and engageable with the upper side of the operating handle for releasably holding the latter in the aforementioned position, and means for releasably supporting the long adaptor along the front open side of the rack in position to retain the detachable heads in the rack.

15 7. A holder for a compound tool comprising an operating handle, a long adaptor, and a plurality of detachable heads, said holder comprising a rack having a bottom wall, rear side wall, end walls and a substantially open front side for receiving the detachable heads, the bottom wall of the rack being adapted to support a row of the detachable heads with the operating handle disposed across the upper ends thereof, resilient means connected to an end wall of the rack and extending longitudinally above the operating handle for releasably holding the latter in the aforementioned position, and means for releasably supporting the long adaptor along the front open side of the rack in position to retain the detachable heads in the rack.

20 8. A holder for a compound tool comprising an operating handle, a long adaptor, and a plurality of detachable heads, said holder

comprising a rack having a bottom wall, rear side wall, end walls and a substantially open front side for receiving the detachable heads, the bottom wall of the rack being adapted to support a row of the detachable heads with the operating handle disposed across the upper ends thereof, a resilient bar extending longitudinally above the operating handle when the latter occupies the aforementioned position, the resilient bar having its intermediate portion normally bowed downwardly releasably to engage the upper side of the operating handle to retain the latter above the heads, and means for supporting the resilient bar from the rack.

25 9. The combination with a tool comprising an operating member and a plurality of detachable heads, of a holder comprising upper and lower longitudinal walls spaced to receive a row of detachable heads arranged side by side with an operating member disposed across the ends thereof, means for supporting the longitudinal walls in this spaced relationship, the intermediate portion of the upper wall normally being bowed downwardly, the upper side of the operating member having a longitudinally extending depression to receive the downwardly bowed portion of the upper wall, whereby the upper wall may cooperate with the longitudinal depression in the operating member to tend normally to hold the latter in position in the holder above the detachable heads.

Signed by me at New Britain, Conn., this 27th day of June, 1930.

WILLIAM F. COSTELLO.

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