June 12, 1962 F. MÄCHTLE 3,038,177

MULTIPLE PURPOSE TOOL

Filed Aug. 17, 1959

FIG. 1

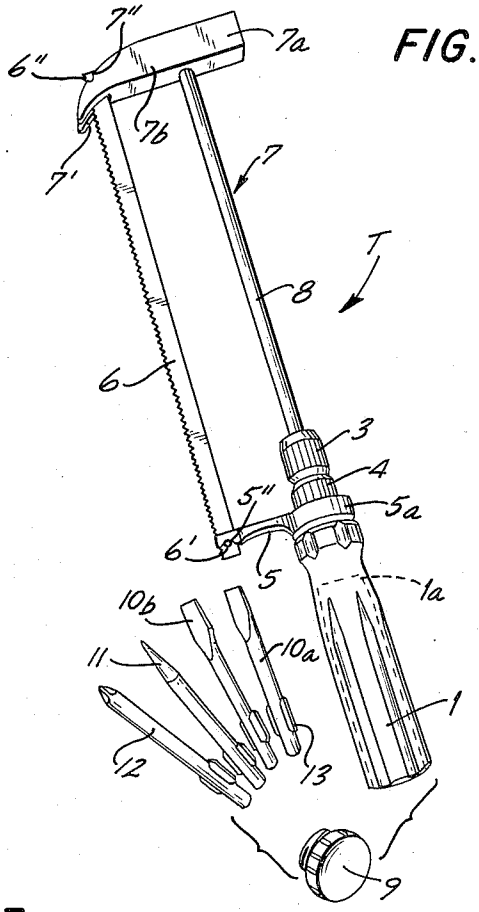


FIG. 3

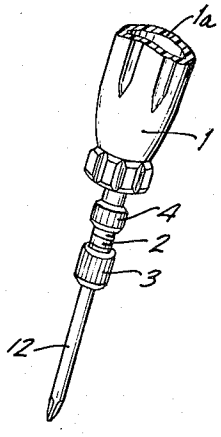
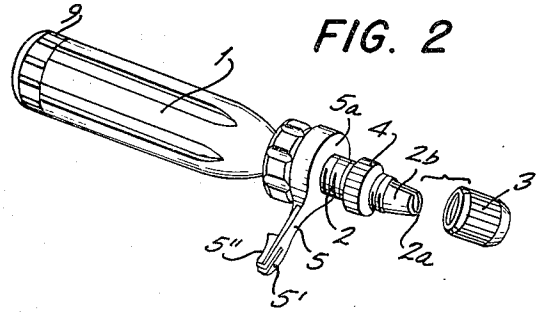


FIG. 2



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MULTIPLE PURPOSE TOOL

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The present invention relates to a multiple-purpose tool for use by tinkers, in households, workshops and the like.

It is already known to provide a comparatively small universal hand tool, for example, by utilizing the hollow handgrip member as a means for storing certain implements, such as screw drivers, drills and the like. The disadvantage of presently known tools of such design is in that the implements must invariably be interchanged whenever a different function is to be performed by the tool, i.e. that the transformation of the device from say a hammer into a drill, screw driver or any other type of hand tool always necessitates at least partial disassembly and renewed assembly of the device.

An important object of the present invention is to provide a multiple-purpose tool which is so constructed as to be capable of performing at least two widely different functions in connecting with similar or dissimilar materials without requiring any interchange, removal or addition of component parts.

Another object of the invention is to provide a universal tool which may be utilized simultaneously as a hammer and nail remover and/or as a hand saw, and which may be readily transformed into a screw driver, awl, drill or like implement.

A further object of the instant invention is to provide a multiple-purpose tool which is particularly suitable for use in households and home workshops, and which may be readily taken apart for transportation and storage.

An additional object of the invention is to provide a combined hammer and hand saw which may be readily transformed into a screw driver, a drill, an awl or a number of other implements for use in workshops and households in connection with the treatment and processing of wood, metal, plastic and many other substances.

Still another object of the invention is to provide a universal tool of the above outlined characteristics which is of very compact design; which occupies little space when taken apart for storage or transportation; which may be taken apart and reassembled within very short periods of time; which consists of a small number of component parts; and which may be rapidly transformed into a wood working, ice cutting, or metal or plastic working tool.

With the above objects in view, the invention resides in the provision of a preferably hollow handgrip member which is connected with a hollow externally threaded sleeve capable of alternately receiving the handles or shafts of various implements or tool members, such as awls, hammers, screw drivers, drills and a number of others. Releasable connection between the sleeve and the handle of a selected tool member may be established by a cap screw which is threaded onto the preferably slotted free end of the hollow sleeve to compress the latter and to generate between the handle and the sleeve a frictional force sufficient to insure safe retention of a selected tool member when the novel multiple-purpose tool is put to actual use. At least some or all comparatively short tool members may be stored in the hollow handle and, when not in use, are preferably locked therein by a threaded plug or the like.

The important feature of my invention resides in that

the multiple-purpose tool may simultaneously support a hammer and a saw blade in such manner that the hammer and the saw blade may be utilized without requiring removal or addition of any parts whatever, i.e. that the hammer and the saw blade may be utilized simultaneously by which is meant that the hammer need not be removed when the saw blade is used and vice versa. In fact, the hammer constitutes one component part of the means for guiding, retaining and supporting the saw blade during actual use. The other end of the saw blade is supported, guided and tensioned by a special bracket which is adjustable in its position with respect to the sleeve by a ring nut screwed onto the sleeve beneath the screw cap; the ring nut is adapted to urge the annular end or eye of the bracket in a direction toward the handgrip member. The other end of the bracket is slotted to receive one end of the saw blade and to engage with a pin or like member carried by the latter. The other end of the blade extends through a suitable slot formed in the hamer head and is retained by the latter due to the provision of a second transverse pin carried by the saw blade and receivable in a transverse recess in the hamer head. By rotating the ring nut about the sleeve, the saw blade may be subjected to requisite tension due to movements of the bracket toward or away from the handgrip member, depending upon the direction in which the nut is rotated.

The hammer and the saw blade may be separated from the handgrip member after the bracket is moved in a direction away from the handgrip member and upon subsequent release of the screw cap to permit withdrawal of the hammer handle.

It is preferred to utilize a so-called claw-hammer whose slotted or bifurcated head may serve as a means for extracting nails and may simultaneously serve as a means for holding and guiding one end of the saw blade. Upon withdrawal of the hammer handle, the handle of a different implement may be inserted into the sleeve of the handgrip member to be securely retained therein by the tightly drawn screw cap.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood with reference to the following description of a specific embodiment when read in connection with the accompanying drawing, in which:

FIG. 1 is perspective view of the fully assembled multiple-purpose tool ready to be used as a hammer and/or saw, and further showing a plug removed from the rear end of the handgrip member as well as a series of alternate tool members which may be stored in the hollow handgrip member;

FIG. 2 is perspective view of the partly assembled multiple-purpose tool with the screw cap separated from the handgrip member; and

FIG. 3 is a perspective view of the tool in the form it assumes when used as a screw driver, a portion of the hand-grip member being broken away.

Referring now in greater detail to the illustrated embodiment, and first to FIG. 1, the universal or multiple-purpose tool T comprises a hand-grip member **1** which is preferably hollow, the axial blind bore **1***a* of its body portion being adapted to accommodate a series of spare tool members such as, for example, a pair of standard screw drivers **10***a*, **10***b*, a Phillips screw driver **11**, and a round awl **12**. The outer end of bore **1***a* at the rear end of the body portion of handgrip member **1** is tapped and may be sealed by a threaded plug **9** which thus serves as a means for preventing the loss of spare tool members received in the bore **1***a*.

The forward end of handgrip member **1** carries a coaxial externally threaded hollow sleeve **2** whose free end, distant from the member **1**, is formed with axially parallel slots **2***a* (see FIG. 2). The resilient prongs **2***b* between the slots **2***a* are movable radially toward and away from the axis of sleeve **2** to alternately release the shaft or handle of a tool member, shown in FIG. 1 as the handle **8** of a claw-hammer **7** which is inserted into the hollow sleeve **2** and is held therein by a knurled screw cap **3**. The purpose of screw cap **3** is to press the prongs **2***b* against the peripheral zone of the hammer handle or shaft **8** and to thus retain same by friction against axial and angular movements with respect to the handgrip member **1** and sleeve **2**.

The outer or front end of handle **8** carries a hammer head comprising a flat-surfaced peen **7***a* and a clawed or bifurcated portion **7***b* which latter, in addition to the customary slot **7'** for receiving the stem of a nail or the like, is formed at its outer side which is turned away from member **1** with a transverse recess or cutout **7''**. Peen **7***a* and clawed portion **7***b* are located at the opposing sides of handle **8**. In addition to serving its well-known purpose of driving or extracting nails and the like, the claw hammer **7** also supports one end of an elongated flat saw blade **6** which latter carries at its longitudinal ends a pair of transverse retaining pins **6'**, **6''**, the pin **6''** being received in the transverse recess **7''** of the hammer head while the adjacent portion of saw blade **6** passes through the slot **7'** in parallelism with the handle **8**. The other transverse pin **6'** of saw blade **6** bears against and is received in a recess **5''** formed in the rear side of a bracket **5** whose eye **5***a* receives the sleeve **2** and whose outer end is slotted, as at **5'** (see FIG. 2) to permit passage of that portion of blade **6** which is adjacent to the pin **6'**. Slots **5'** and **7'** are aligned. The eye **5***a* of bracket **5** is held against angular and axial movements with respect to the handgrip member **1** by a knurled ring nut **4** whose threads mesh with the external threads on the sleeve **2** and normally hold the eye **5***a* in abutment with the forward end of handgrip member **1**.

As a first step in assemblying the multiple-purpose tool T of FIG. 1, the handle or shaft **8** of hammer **7** is inserted into the slotted end of hollow sleeve **2** and is securely fixed in such position by the screw cap **3**. The ring nut **4** is then rotated in a direction to move a short distance toward or into actual abutment with the screw cap **3** in order to provide room for movements of eye **5***a* in the axial direction of sleeve **2**. The saw blade **6** is thereupon inserted into the slots **5'**, **7'** whereby the transverse pin **6''** enters into the recess **7''** and the other pin **6'** is adjacent to the rear side of the bracket **5**. By rotating the nut **4** in a direction to move the eye **5***a* away from the screw cap **3**, the saw blade **6** is subjected to requisite tension for immediate use, and the pin **6'** is caused to enter into the recess **5''**.

The design and the material of saw blade **6** may vary depending upon the intended use of the universal tool T. For example, a metal-, wood-, plastic- or ice-cutting saw may be utilized. For cutting of ice blocks, the saw blade **6** should preferably consist of rustproof steel or a rustproof steel alloy.

To remove the saw blade **6** from its retaining means **7***b* and **5**, ring nut **4** is rotated to move in a direction toward the screw cap **3** which enables the eye **5***a* of bracket **5** to slide about the sleeve **2** in a direction away from the forward end of handgrip member **1**. The saw blade is then readily removable from the slots **5'**, **7'**.

FIG. 2 shows the basic construction of the universal tool T with the hammer handle **8** removed from the sleeve **2**. The screw cap may, but need not, be completely separated from the sleeve **2** when a handle is inserted into or withdrawn from the member **2**. While the universal tool is utilized as a saw and/or a hammer, the smaller tool members **10***a*, **10***b*, **11** and **12** are preferably stored in the bore **1***a* and locked therein by the plug **9**.

As is shown in FIG. 3, the universal tool T may be rapidly transformed into a screw driver merely by inserting the tool member **12** into the slotted end of sleeve **2** and by drawing tight the screw cap **3**. The ring nut **4** then performs no function and is merely threaded onto the sleeve **2** between the screw cap **3** and the forward end of handgrip member **1** to prevent it from being misplaced. As is shown the bracket member **5**, too, may be removed when the universal tool is used as a screw driver, an awl or the like. Each of tool members **10***a*, **10***b*, **11** and **12** is formed with a handle or shaft whose rear end preferably comprises a pair of axially parallel radial ribs **13** receivable in slots **2***a* to prevent rotation of the tool members with respect to the sleeve **2** and handgrip member **1**. This is particularly important when the tool is used as a screw driver.

It is preferred to provide a non-represented receptacle or bag which may be made of leather, canvas or a suitable plastic material to receive the multiple-purpose tool T in disassembled condition. Thus, the size of a receptacle must be such as to accommodate the hammer **7**, the saw blade **6**, the handgrip member **1** with sleeve **2**, screw cap **3** and ring nut **4** connected thereto, and the bracket **5**, while the tool members **10***a*, **10***b*, **11** and **12**, as well as a number of other implements, may be stored in the bore **1***a* of handgrip member **1**. If desired, the exterior of the receptacle may be provided with advertising literature or may bear instructions for assembling, disassembling and handling of the multiple-purpose tool.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic and specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A multiple-purpose tool comprising, in combination: handgrip means having a forward end; an externally threaded hollow sleeve fixed to the forward end of said handgrip means; a hammer having a head and a handle, said handle being receivable in said sleeve; means for releasably holding the handle of said hammer in the sleeve; bracket means carried by said sleeve; a saw blade having two ends; and means provided on said head, on said bracket means and on each of said saw blade ends for releasably connecting one end of said saw blade to the head of said hammer and for releasably connecting the other end of said saw blade to said bracket means.

2. A multiple-purpose tool comprising, in combination: handgrip means having a forward end; an externally threaded hollow sleeve fixed to the forward end of said handgrip means; a hammer having a head and a handle, said handle being receivable in said sleeve; means for releasably holding the handle of said hammer in the sleeve; bracket means having an eye surrounding the sleeve; a nut threaded onto the sleeve for holding the eye of said bracket means against the forward end of said handgrip means; a saw blade having two ends; and means provided on said bracket, on said head and on each of said saw blade ends for releasably connecting one end of said saw blade to the head of said hammer and for releasably connecting the other end of said saw blade to said bracket means.

3. A multiple-purpose tool comprising, in combination: handgrip means having a forward end; an externally threaded hollow sleeve fixed to and having a slotted end distant from the forward end of said handgrip means; a hammer having a head and a handle, said handle being receivable in the slotted end of said sleeve; a screw cap screwed onto said sleeve for releasably holding the handle of said hammer in the sleeve by urging said slotted end

into frictional engagement with said handle; bracket means carried by said sleeve; a saw blade having two ends; and means provided on each of said saw blade ends, on said head and on said bracket means for releasably connecting one end of said saw blade to the head of said hammer and for releasably connecting the other end of said saw blade to said bracket means.

4. A multiple-purpose tool comprising, in combination: handgrip means having a forward end; a hammer having a head and a handle, the head comprising a peen extending to one side of said handle and a portion extending to the other side of said handle; means for releasably connecting said handle with the forward end of said handgrip means; bracket means; means for releasably connecting said bracket means with the forward end of said handgrip means in such manner that the bracket means is aligned with said head portion; a saw blade having two ends; and means provided on said head portion, on said bracket means and at each of said saw blade ends for releasably connecting one end of said saw blade to said head portion and for releasably connecting the other end of said saw blade to said bracket means.

5. A multiple-purpose tool comprising, in combination: handgrip means having a forward end; an externally threaded hollow sleeve having a first end fixed to the forward end of said handgrip means and a slotted second end; a hammer having a handle inserted into the slotted end of said sleeve and a head distant from said sleeve, the head having a peen extending to one side of said handle and a slotted portion extending to the other side of said handle; a bracket having a first end formed with an eye surrounding said sleeve and a slotted second end aligned with the slotted portion of said hammer head; a ring nut threaded onto the sleeve and adapted to move the eye of said bracket toward the forward end of said handgrip means; a saw blade having ends extending through the slotted portion of said hammer head and through the slotted end of said bracket, respectively; a transverse pin fixed to each end of said blade and respectively engaging with the slotted portion of said hammer head and with the slotted end of said bracket for maintaining the blade in tensioned condition when the eye of said bracket is moved by said nut in a direction toward the forward end of said handgrip means; and a screw cap threaded onto the slotted end of said sleeve for releasably holding the handle of said hammer therein.

6. A multiple-purpose tool comprising, in combination: hollow handgrip means having a rear end and a forward end; means for removably sealing the rear end of said handgrip means; a hammer having a handle and a head formed with a slot; means for releasably connecting said handle with the forward end of said handgrip means; bracket means having a slot; means for releasably connecting said bracket means with the forward end of said handgrip means in such a way that the slot in said bracket means is aligned with the slot in said hammer head; and a saw blade extending through the slots in said hammer head and said bracket means, the blade having two ends and means at said ends for releasably holding the same in the respective slots.

7. A multiple-purpose tool comprising, in combination, a hammer including elongated handle means and a hammer head secured to one end of and extending transversely to said handle means so as to have a portion spaced from the handle means, said hammer head being slotted to form a pair of claws and said handle means comprising a handle member connected with said hammer head and a handgrip member releasably connected to said handle member; bracket means releasably secured to and extending from said handle means in the same direction as and spaced from said portion of the hammer head, said bracket means having a portion spaced from said handle means; and an elongated saw blade having two end portions and securing means at each of said end portions, one of said securing means releasably securing one end portion of said blade to said pair of claws of said hammer head and the other of said securing means releasably securing the other end of said blade to said bracket means whereby said tool may be used as a hammer when said blade is not secured thereto, and as a saw when said blade is secured thereto.

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