June 25, 1940. W. R. TAYLOR 2,205,964

SHARPENING DEVICE

Filed April 27, 1939 2 Sheets-Sheet 1

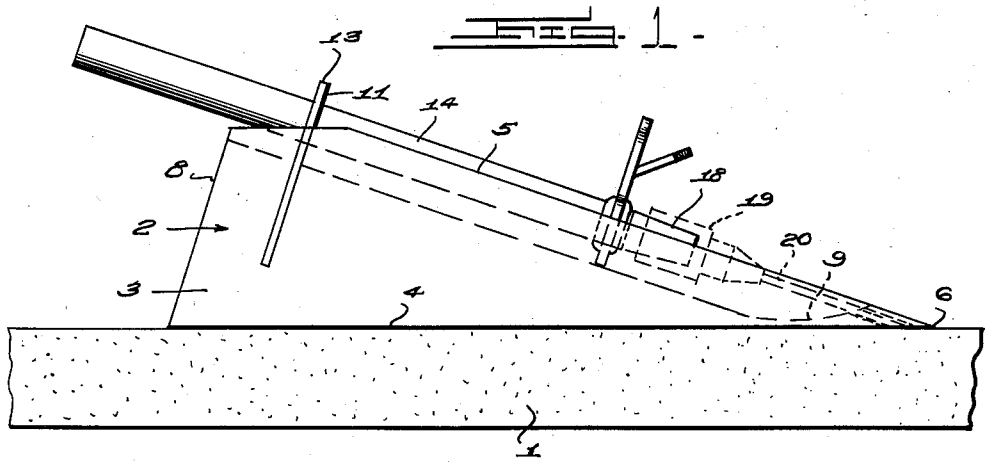


FIG. 1

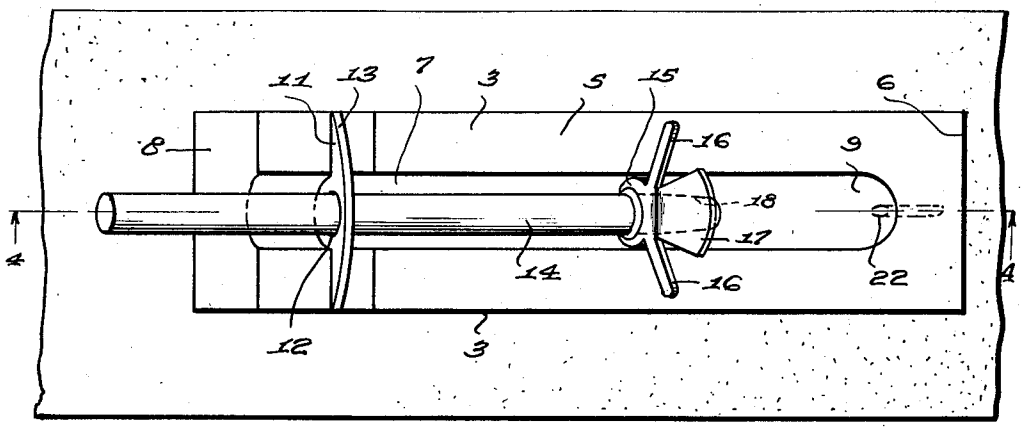


FIG. 2

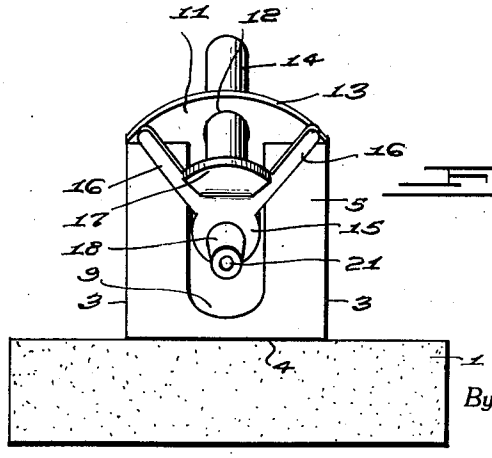


FIG. 3

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SHARPENING DEVICE

Filed April 27, 1939 2 Sheets-Sheet 2

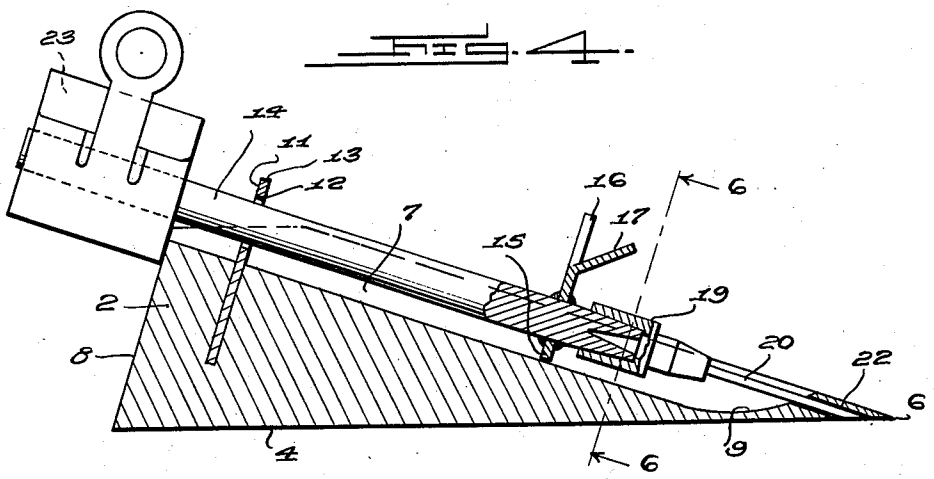


FIG. 4

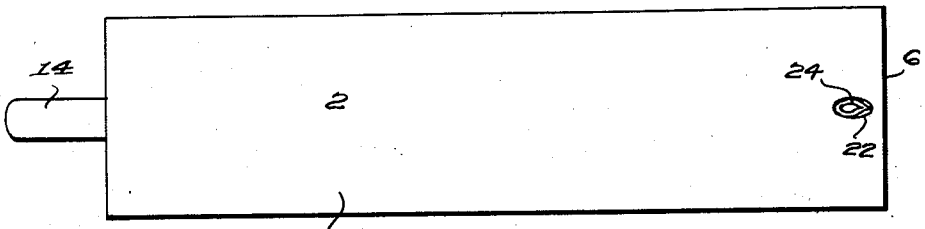


FIG. 5

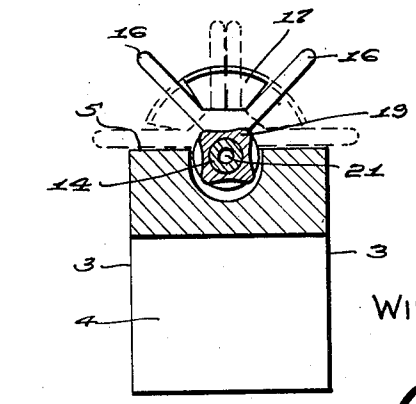


FIG. 6

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UNITED STATES PATENT OFFICE

2,205,964

SHARPENING DEVICE

William Robert Taylor, Tacoma, Wash.

Application April 27, 1939, Serial No. 270,409

3 Claims. (Cl. 51—221)

My invention relates broadly to improvements in tool-sharpening devices and more specifically to holders for hypodermic needles for use in pointing and sharpening the same.

The invention is designed with the particular purpose in view of providing a simply constructed holder for use in conjunction with a hone, or the like, to quickly provide hypodermic needles with a stiff sharp scientifically correct point and cutting edge so that they will cleanly and painlessly penetrate all tissues.

Another object is to provide a device of the character and for the purpose set forth adapted for easily sharpening hypodermic needles of either the hub-equipped or plain type.

My invention also comprehends other and subordinate objects all of which, together with the precise nature of my improvements, will become readily apparent when the succeeding description and claims are read in conjunction with the drawings accompanying and forming part of this specification.

In said drawings:

Figure 1 is a view in side elevation of a preferred embodiment of my invention,

Figure 2 is a view in top plan,

Figure 3 is a view in rear end elevation,

Figure 4 is a view in longitudinal section taken on the line 4—4 of Figure 2 looking in the direction indicated by the arrows,

Figure 5 is a view in bottom plan, and

Figure 6 is a view in transverse section taken on the line 6—6 of Figure 4 looking in the direction indicated by the arrows.

Describing now my invention in detail with reference to the drawings by numerals, the holder of my invention is designed for manipulation over a flat hone, or abrasive stone, 1 of fine texture and comprises as its basic feature an elongated, block-like shoe 2, of any suitable material, having straight sides 3 and being wedge-shaped in longitudinal section throughout the greater portion of its length to impart thereto a flat bottom face 4 and a top face 5 inclining downwardly to a front feather edge 6.

The top face 5 has formed therein a groove 7 extending in the longitudinal center thereof from the rear end 8 of the shoe to within a short distance of the front edge 6 and terminating in a front upwardly curved end 9.

Adjacent to the rear end 8 of the shoe 2 is a transversely disposed bearing plate 11 mortised into said shoe to extend upwardly for a short distance therefrom in a plane at a right angle to the axis of the groove 7, said plate having an aperture 12 therein substantially in the axis of groove 7 and preferably having a rounded convex upper edge 13.

The bearing plate 11 functions as a guide for the rear end of a needle-operating shaft 14 slidable in the aperture 12 for reciprocation forwardly and rearwardly of the shoe 2 along the groove 7 and rotatable in said aperture for rocking from side to side. Adjacent to its front end said shaft 14 has fast thereon a semicircular bearing collar 15 fitting into the groove 7 to slide along the same and for rocking laterally therein and which together with the plate 11 supports the shaft 14 substantially parallel with the groove 7. The collar 15 has extending upwardly therefrom a pair of diverging arms 16 for use in manipulating the same to rock the shaft 14 and adapted to engage the top face 5 of the shoe 2 under rocking movement of the shaft 14 in opposite directions, respectively, to thereby function as stops limiting such movement of the shaft. Intermediate the arms 15 a tongue 17 extends upwardly and forwardly from the collar 15 providing a finger-grip for use in reciprocating shaft 14. The front end of the shaft 14 is forwardly tapered, as at 18, to frictionally fit into the hub, or socket, 19 of a hypodermic needle 20 of the hub type. An axial, inwardly tapered bore 21 is provided in the front end of the shaft 14 for frictionally gripping the butt end of a plain or hubless needle, not shown.

The front end 6 of the shoe 2 has formed therein a bore 22 opening into the front end 9 of groove 7 and onto the bottom face 4 of the shoe, said bore being inclined downwardly and forwardly from said groove 7 in the axis of the shaft 14 and hence that of the needle 20.

The rear end of the shaft 14, behind the bearing plate 11, may be equipped with a suitable, detachable stop for coaction with the rear end of the shoe 2 to limit forward movement of the shaft 14, said stop being adapted for setting along said shaft to variably limit such movement of the shaft. The stop, designated 23, may have the form of the usual paper clip as shown in Figure 4.

The use and operation of the described holder will be readily understood. The shaft 14 is first moved rearwardly in the bearing plate 11 so as to adequately clear the bore 22 and the needle 20 is then inserted into the bore and its hub 19, or butt if it be a plain needle, attached to the front end of said shaft in the manner already described. The stop 23 is then set along the rear end of the shaft 14 for cooperation with the rear

end of the shoe 2 to limit forward movement of said shaft 14 and hence needle 20 in accordance with the maximum amount to be taken off the point of the needle 20. The shoe 2 is next imposed on the hone 1 and held by the hand. The shoe 2 is now reciprocated over the hone 1 and the shaft 14 rocked from side to side within the limits of such movement thereof as established by contact with the arms 16 with the top face 5 of said shoe. This rocking movement of the shaft imparts rotary movement to the point of the needle 20 in opposite directions and while engaged with the working face of the hone 1. Under such manipulation of the needle 20 a beveled elliptical point with a sharp cutting edge is formed on said needle for instance as illustrated at 24 in Figure 5. Such a point will obviously have a sharp inner cutting edge and a correspondingly-shaped outer cutting edge, the outer edge merging into a sharp point. Also the ground edge portion will be transversely rounded so that both the inner and outer edges are effective in piercing tissues. The manner in which the sharpened needle 20 may be removed will be clear without explanation. Of course, as will be understood, during the rocking operation described and consequent rotation of the needle 20 the shaft 14 is urged forwardly by pressure on the tongue 17 to cause the needle 20 to bear lightly on the hone 1. The angle of inclination of the shaft 14, needle 20, and bore 22 relative to the horizontal, or in other words the base of the hone 1, may vary in accordance with operating requirements for different needles, but, is preferably between fifteen and twenty degrees.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly the invention as described, is susceptible of modification without departing from the inventive concept and right is herein reserved to such modifications as fall within the scope of the subjoined claims.

What I claim is:

1. A holder for use in sharpening hypodermic needles on a stone comprising an elongated block-like member for reciprocation over the face of said stone and having flat top and bottom faces converging to form a thin front end on said member, a needle operating shaft slidably and rotatably mounted on top of said member parallel with said top and in the longitudinal center thereof for reciprocation thereon and oscillating movement from side to side, said shaft having a front end attachable to the butt end of a needle to secure the same thereto in axially extending position, stop means settable along said shaft for coaction with the rear end of said block to limit reciprocation of said shaft forwardly in selected degree, and a tongue upstanding from said shaft for exerting finger pressure on the shaft forwardly and oscillating the same.

2. A holder for use in sharpening hypodermic needles on a stone comprising an elongated block-like member for reciprocation over the face of said stone and having flat top and bottom faces converging to form a thin front end on said member, a needle operating shaft slidably and rotatably mounted on top of said member parallel with said top and in the longitudinal center thereof for reciprocation thereon and oscillating movement from side to side, said shaft having a front end attachable to the butt end of a needle to secure the same thereto in axially extending position, stop means settable along said shaft for coaction with the rear end of said block to limit reciprocation of said shaft forwardly in selected degree, and a tongue upstanding from said shaft for exerting finger pressure on the shaft forwardly and oscillating the same, said member being provided in the front end thereof with a longitudinal oblique guide bore opening onto the bottom of the member for the extension of the point of the needle through the member into engagement with said stone.

3. A holder for use in sharpening hypodermic needles on a stone comprising an elongated block-like member for reciprocation over the face of said stone and having flat top and bottom faces converging to form a thin front end on said member, a needle operating shaft slidably and rotatably mounted on top of said member parallel with said top and in the longitudinal center thereof for reciprocation thereon and oscillating movement from side to side, said shaft having a front end attachable to the butt end of a needle to secure the same thereto in axially extending position, stop means settable along said shaft for coaction with the rear end of said block to limit reciprocation of said shaft forwardly in selected degree, and a tongue upstanding from said shaft for exerting finger pressure on the shaft forwardly and oscillating the same, said shaft having a pair of diverging stop arms extending laterally therefrom for engagement with the top face of said member under oscillation of the member in opposite directions, respectively, to limit such oscillation thereof.

WILLIAM ROBERT TAYLOR.