Sept. 17, 1940. D. D. LEVY 2,215,222

DENTAL TOOL HOLDER

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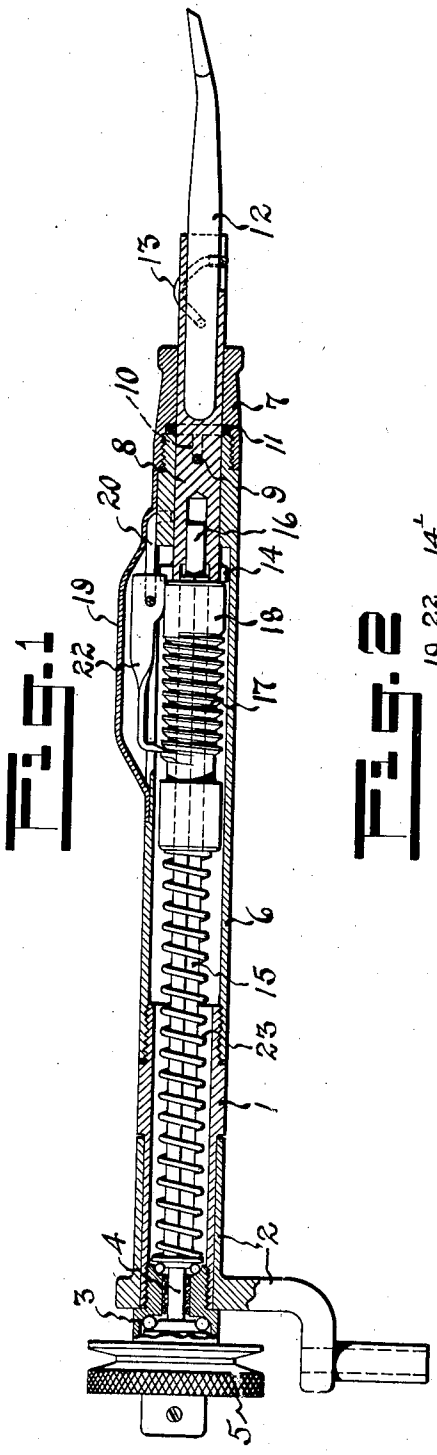


Fig. 1

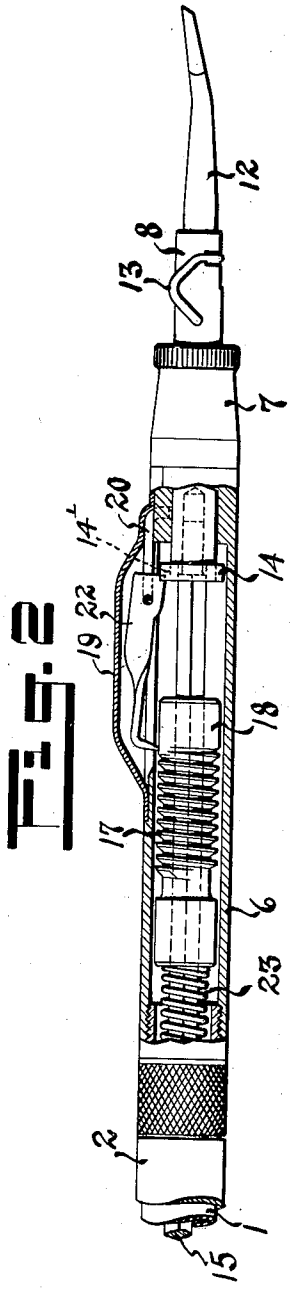


Fig. 2

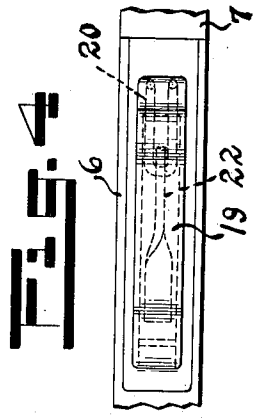


Fig. 4

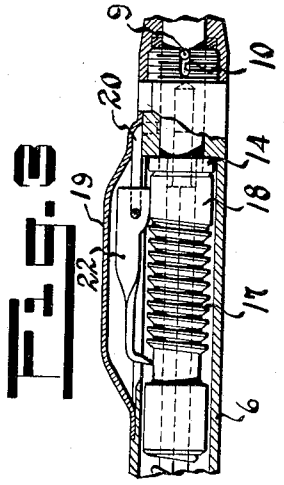


Fig. 3

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DENTAL TOOL HOLDER

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Application December 29, 1938, Serial No. 248,150

2 Claims. (Cl. 32—53)

This invention relates to improvements in a power actuated dental tool holder of the impact or hammer type.

The general object of this invention is concerned with improvements in the structure of the impact portion of such a device and is concerned particularly with the simplification and reduction in the cost of structures of this type as heretofore known.

More specifically the invention is concerned with improvements in that portion of the device which controls the operation of the hammer.

Other objects of the invention will become fully apparent after a description of the structure comprising it.

This invention resides in the combination, construction, arrangement and relative location of parts, all as more fully explained hereinafter.

In the accompanying drawing:

Figure 1 is a vertical, longitudinal, central, cross-sectional view through a device in accordance with this invention, with some parts in elevation.

Figure 2 is a view similar to that of Figure 1 with some parts broken away, showing the position of the parts just as the hammer is released.

Figure 3 is a similar cross-sectional view showing the position of the parts after the hammer has impacted the tool holder.

Figure 4 is a top plan view of the structure of Figure 3.

As illustrated, the device includes a casing comprising the sleeves 1 and 6 threadedly united together as shown. Rotatably mounted on the sleeve 1 is a belt guide such as is commonly used in devices of this type. The free end of the sleeve 1 is closed by means of a cap 3 having suitable bearings therein to receive the end 4 of the driving shaft 15 which intermediate the bearing portions is of some irregular cross-section such as a square cross-section.

The end 4 of the shaft projects beyond the cap 5 and has secured thereto a driving wheel 5. The other end of the sleeve 6 is closed by means of a cap or thimble 7 between which is interposed a washer 11. The same end of the sleeve 6 has thickened walls as shown to provide a reduced bore in which the tool holder 8 is slidably mounted.

This tool holder is provided with a pin 9 which is mounted for sliding movement in an open ended slot 10 formed in the end of the sleeve 6. At 12 has been indicated one form of tool used in a device of this type and at 13 is the spring clip for holding it in the tool holder.

The inner end of the tool holder 8 is provided with a collar or head 14 which can be either integral therewith or secured thereto in any suitable manner. The head 14 is the striking piece for the hammer 18. The adjacent end of the shaft 15 is journaled for rotation in the tool holder 8 as shown.

Slidably mounted on the shaft 15 and provided with a bore of cross-section complementary to the cross-sectional shape of the shaft 15 is a hammer 18 which is provided with a threaded portion 17. As is clear from the figures, the thread at the left hand end terminates abruptly at a point in the hammer of reduced diameter. At the other end the thread runs out into the head or right hand end thereof.

As is clear from Figure 3, for example, a pair of holes is bored in the sleeve 6 in such position as to receive the terminal ends of a U-shaped support 20 which projects out over a slot in the sleeve, as shown. Pivotally mounted between the legs of the support 20 is a pawl or latch 22 the terminal end of which is positioned to engage between the threads 17. The latch 22 projects beyond the sleeve, as is clear from the figures, and to enclose it a cover plate 19 is secured thereover in any suitable manner.

A properly proportioned spring 23 encircles the shaft 15 and rests at one end against the cap 3 and at the other end against the hammer 18. The head or collar 14 is provided with a surface notch 14' into which the tail end of the pawl 22 may be moved for the purpose about to be described.

Normally the parts are in the position shown in Figure 3, at which time the terminal end of the pawl lies opposite the portion of reduced diameter of the hammer 18 and its tail end rests along the periphery of the hammer end. At this time the tool holder is in the position shown with the head 14 against the thickened wall of the sleeve. The parts remain in this position even though shaft 15, and, of course, the hammer 18 are revolving at normal speed.

The device goes into operation when pressure is applied to the tool, such as that incident to the use thereof. As soon as pressure is applied to the tool it acts through the tool to push the tool holder 8 to the position shown in Figure 1. This pushes the hammer 18 back to the point where the terminal end of the pawl may move between the threads 17 as the hammer revolves.

Continued rotation of the hammer causes it to gradually move to the left by reason of the engagement between the pawl **22** and the threads **17** until the pawl runs out of the threads, as indicated in Figure 2. By this time spring **23** is fully compressed. It is also noted that the tail end of the pawl **22** has now moved down into the notch **14'** in the head **14**. This notch is simply provided to permit this movement. The instant the pawl runs out of the threads the spring **23** snaps the hammer back to the position shown in Figure 3. This action is so rapid and pawl **22** is so light that before its terminal end could drop down between the threads the hammer has completed its return stroke. Just as the pawl clears the last thread the leading end of the hammer engages the tail of the pawl and moves it back to the position shown in Figure 3. If pressure is still applied to the tool this operation is repeated and in actual use the hammer reciprocates quite rapidly.

The invention herein disclosed is to be distinguished from the prior art in that the structure completely eliminates various auxiliary elements commonly employed in devices of this type to control the pawl **12** and return it to the position shown in Figure 3. By the simple structure herein disclosed all of these additional elements are eliminated thereby simplifying the device and materially reducing its cost and therefore minimizing the possibility of its getting out of order.

I realize that those skilled in the art will in the light of this disclosure be able to make modifications thereof without departure from the novel scope of the improvements herein disclosed. I do not, therefore, desire to be strictly limited to the specific form of construction given here for purposes of illustration but intend that the limits of my protection be defined by the claims granted me.

What I seek to secure by Letters Patent is:

1. In an implement of the type described, the combination including a housing, a shaft journaled therein, a hammer mounted on said shaft for rotation therewith and reciprocation thereon, a spring positioned to be compressed when said hammer is retracted, said hammer having an exterior thread, and a pawl pivotally mounted on said housing so that the end thereof may engage said thread, the leading end of said hammer being of substantially the same diameter as the outside diameter of said thread and said thread running out thereat, said spring returning said hammer from retracted to initial position and said hammer causing the pawl to return so that it may again engage said thread.

2. In an implement of the type described, the combination including a housing, a shaft rotatably mounted in the housing, a hammer mounted on said shaft for rotation therewith and reciprocation thereon, a spring positioned to be compressed when said hammer moves in one direction, said hammer having an external thread, a pawl pivotally mounted on said housing so as to engage said thread, a tool holder slidably mounted in said housing, said pawl being out of engagement with said thread when the hammer is adjacent said tool holder, and means on said hammer for causing the pawl to disengage from said thread after said spring is compressed, and to return to engaging position with said hammer at the end of its return stroke.

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