

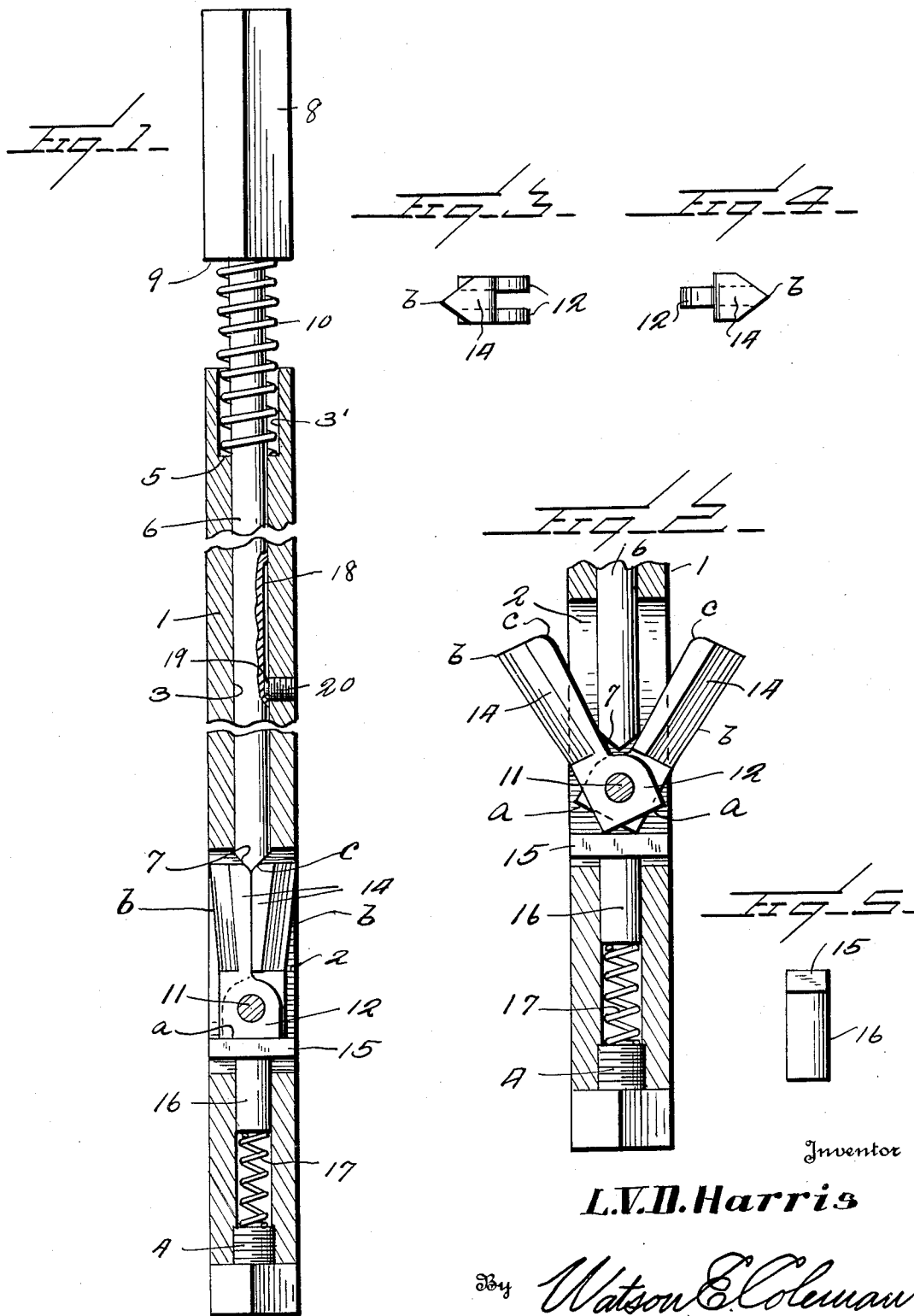
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COUNTER BORING TOOL

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COUNTER BORING TOOL

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5 Claims. (Cl. 255—76)

This invention relates to a counter boring tool, and it is primarily an object of the invention to provide a tool of this kind which operates upon impulse and which can, therefore, be operated to advantage with either a hand or pneumatic hammer.

The invention also has for an object to provide a tool of this kind which can be employed effectively for counter boring near the bottom of drilled holes in rock, concrete or the like to allow for a firmer grouting of hangers, expansion bolts, etc.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved counter boring tool whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawing, wherein:—

Figure 1 is a view partly in section and partly in elevation of a counter boring tool constructed in accordance with an embodiment of my invention;

Figure 2 is a fragmentary view partly in section and partly in elevation of the lower portion of the device as illustrated in Figure 1 and on somewhat a larger scale, the bits being shown in extended or working adjustment;

Figure 3 is a view in plan of the outer end of one of the bits;

Figure 4 is a view in plan of the outer end of the second bit;

Figure 5 is a view in elevation of the buffer member, said figure being at right angles to the disclosure of such member in Figures 1 and 2.

As disclosed in the accompanying drawing, my improved tool comprises an elongated tubular shank 1 of desired material and which in its lower portion has a transversely disposed elongated slot 2 extending radially therethrough and intersecting the bore 3 of the shank 1. The opposite ends of the bore 3 are open and the lower end of such bore is closed by a stud or plug 4 threaded within the lower portion of the shank 1. The upper portion of the bore 3 of the shank 1 is enlarged, as at 3', to provide an internal shoulder 5 for a purpose to be hereinafter more particularly referred to.

Slidably engaged from above and snugly fitting within the bore 3 of the shank 1 is an elongated operating rod or bar 6 of desired material, the inserted end portion of which being oppositely beveled, as at 7.

The upper or outer end portion of this rod or bar 6, or shaft as it may also be called, is provided with an enlargement or head 8 which is adapted to directly receive the blows or impulses of a proper instrument, such as a hand or pneumatic hammer. The inner or lower end of the head 8 provides a shoulder 9 and interposed between the internal shoulder 5 of the shank 1 and the shoulder 9 is an expansible member 10, herein disclosed as a coil spring, surrounding the upper portion of the rod or bar 6. This member or spring 10 is of a tension sufficient to normally maintain the rod or bar 6 in a raised position with the inserted beveled end 7 extending slightly within the slot 2.

Disposed through the shank 1 and intersecting the lower portion of the slot 2 is a pin 11 which is also directed through the interfitting knuckles or lugs 12 carried by the lower end portions of the elongated bits 14. The outer margins *a* of the knuckles or lugs 12 are at right angles to the longitudinal axes of the bits 14. The outer longitudinal margins of these bits 14 are formed to provide the cutting edges *b*. The outer or upper inner corners of the bits 14 are rounded, as at *c*, so that when the bits 14 are in retracted position within the slot 2 an entering recess will be provided for coaction with the beveled end 7 of the bar or rod 6 to facilitate the desired operation therebetween as a result of a blow upon the head 8. As the bar or rod 6 is moved downwardly the inner end thereof will pass between the rear faces of the bits 14 to cause the same to swing outwardly as indicated in Figure 2 whereby the desired counter boring operation may be readily and effectively obtained.

It is to be noted that the rear or back faces of the bits 14 are flat as illustrated in Figures 3 and 4 and that the pin 11 is so located with respect to the lugs or knuckles 12 to allow said flat backs of the bits 14 to abut whereby said bits positively limit their inward swinging movement into retracted position within the slot 2. When in their fully retracted position the bits 14, as illustrated in Figure 1, are substantially entirely housed within the shank 1.

Extending through the slot 2 below the bits 14 is a buffer member 15 having its upper or outer face flat and disposed at right angles to the longitudinal axis of the shank 1. The central

portion of this buffer member 15 carries a depending post 16 which is snugly and slidably received within the lower portion of the bore 3 of the shank 1. Interposed between the inserted end of the post 16 and the applied stud or plug 4 is an expansible member 17, herein disclosed as a coil spring. This member or spring 17 is of sufficient tension to constantly urge the buffer member 15 toward the straight edges *a* of the bits 14 and to provide automatic means for normally maintaining the bits 14 in their retracted positions. As illustrated in Figure 2 as the bits 14 swing outwardly they depress the buffer member 15 and place the member or spring 17 under further tension thereby materially facilitating the desired automatic return of the bits 14.

The periphery of the rod or bar 6 at a desired point intermediate its ends is provided with a longitudinally disposed groove or channel 18 in which is received a lug 19 carried by the inserted end of a plug 20 threaded into the shank 1, as is particularly illustrated in Figure 1. This stud 19 and coacting groove or channel 18 serves to hold the rod or bar 6 against turning movement thereby assuring the beveled end 7 of the rod or bar 6 to be at all times in effective working position with respect to the bits 14.

From the foregoing description it is though to be obvious that a counter boring tool constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:

1. A tool of the class described comprising an elongated tubular shank, a slot disposed through the lower portion of the shank and intersecting the bore thereof, elongated bits pivotally mounted within the slot, the pivoted ends of the bits being substantially straight and at right angles to the longitudinal axis of the shank when the bits are retracted within the slot, a return buffer within the slot coacting with the substantially straight edges of the bits, means for constantly urging said buffer toward the bits to automatically return and maintain the bits within the slot, and a member slidably disposed within the bore of the shank for engagement between the bits to force the same outwardly.

2. A tool of the class described comprising an elongated tubular shank, a slot disposed through the lower portion of the shank and intersecting the bore thereof, elongated bits pivotally mounted within the slot, the pivoted ends of the bits being substantially straight and at right angles to the longitudinal axis of the shank when the bits are retracted within the slot, a return buffer

within the slot coacting with the substantially straight edges of the bits, means for constantly urging said buffer toward the bits to automatically return and maintain the bits within the slot, a member slidably disposed within the bore of the shank for engagement between the bits to force the same outwardly, and means for normally maintaining said member in a position to allow the bits to return within the slot.

3. A tool of the class described comprising an elongated tubular shank, a slot disposed through the lower portion of the shank and intersecting the bore thereof, elongated bits pivotally mounted within the slot, the pivoted ends of the bits being substantially straight and at right angles to the longitudinal axis of the shank when the bits are retracted within the slot, a return buffer within the slot coacting with the substantially straight edges of the bits, means for constantly urging said buffer toward the bits to automatically return and maintain the bits within the slot, a member slidably disposed within the bore of the shank for engagement between the bits to force the same outwardly, the back faces of the bits being substantially flat and contacting one with the other to limit the movement of the bits inwardly of the slot.

4. A tool of the class described comprising an elongated tubular shank, a slot disposed through the lower portion of the shank and intersecting the bore thereof, elongated bits pivotally mounted within the slot, the pivoted ends of the bits being substantially straight and at right angles to the longitudinal axis of the shank when the bits are retracted within the slot, a return buffer within the slot coacting with the substantially straight edges of the bits, a post carried by the return buffer slidably engaging within the portion of the bore of the shank below the slot, and an expansible member within said lower portion of the bore of the shank coacting with the post for constantly urging the post outwardly to maintain the return buffer in desired engagement with the bits.

5. A tool of the class described comprising an elongated tubular shank, a slot disposed through the lower portion of the shank and intersecting the bore thereof, elongated bits pivotally mounted within the slot, the pivoted ends of the bits being substantially straight and at right angles to the longitudinal axis of the shank when the bits are retracted within the slot, a return buffer within the slot coacting with the substantially straight edges of the bits, a post carried by the return buffer slidably engaging within the portion of the bore of the shank below the slot, and an expansible member within said lower portion of the bore of the shank coacting with the post for constantly urging the post outwardly to maintain the return buffer in desired engagement with the bits, the bits when moved outwardly depressing the return buffer to put the spring under further tension.

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