J. W. GRIMES.

DETACHABLE BLADE CONNECTING DEVICE FOR TOOLS.

APPLICATION FILED JAN. 12, 1914.

1,104,987. Patented July 28, 1914.

FIG. 1.

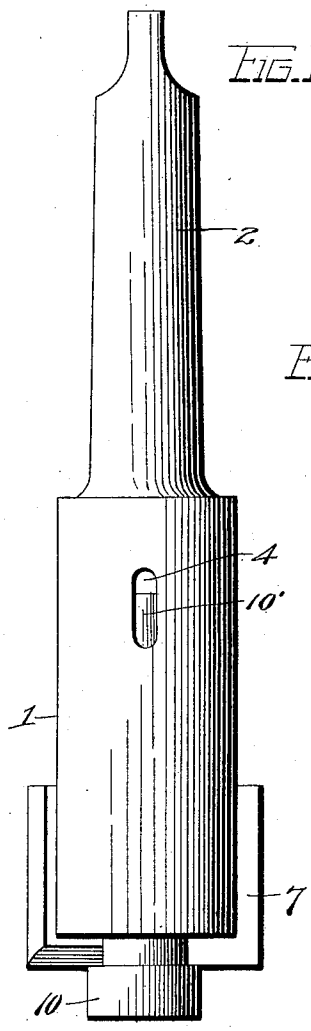


FIG. 2.

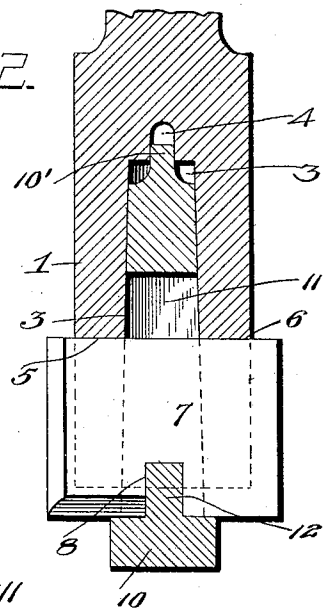


FIG. 3.

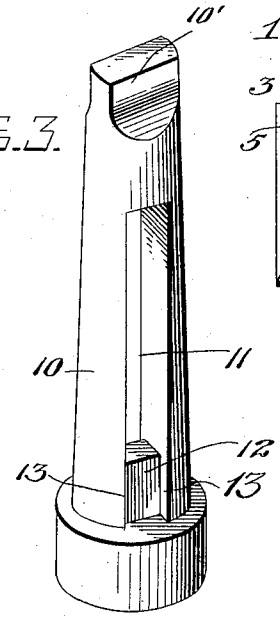


FIG. 4.

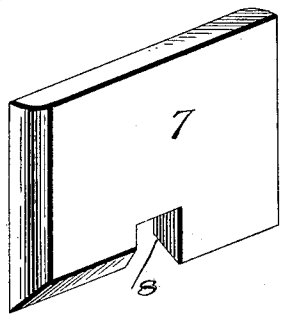
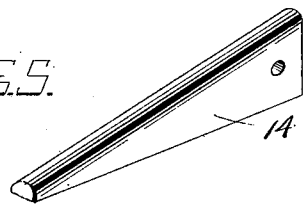


FIG. 5.



Witnesses

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DETACHABLE-BLADE-CONNECTING DEVICE FOR TOOLS.

1,104,987. Specification of Letters Patent. Patented July 28, 1914.

Application filed January 12, 1914. Serial No. 811,702.

To all whom it may concern:

Be it known that I, JOHN W. GRIMES, a citizen of the United States, residing at Tyler, in the county of Smith and State of Texas, have invented certain new and useful Improvements in Detachable-Blade-Connecting Devices for Tools; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to tools having detachable blades and more especially to counter boring tools.

The object of the invention is to provide a tool having simple and efficient means for detachably supporting interchangeable blades which may be quickly removed and replaced thus permitting the blades to be smoothly ground without forming shoulders thereon.

With this and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings—Figure 1 is a front elevation of a counter boring tool equipped with this invention and ready for use; Fig. 2 is a longitudinal sectional view of the tool head with the cutter or blade in operative position; Fig. 3 is a perspective view of the removable blade connecting element detached; Fig. 4 is a similar view of one of the blades used in connection with this device; Fig. 5 is a perspective view of a drift pin adapted for use in removing the blade connecting element.

In the embodiment illustrated, a counter boring tool is shown comprising a cylindrical head 1 having a suitable shank 2 to secure it to the machine in connection with which it is to be used. This head 1 has an inwardly tapering socket 3 and a slot 4 extends transversely therethrough intersecting the inner end of said socket for a purpose to be described. Slots 5 and 6 are formed in the outer end of said head 2 and are arranged diametrically opposite in a plane at right angles to the slot 4, said slots 5 and 6 being shown open at their outer ends. These slots 5 and 6 extend about one half the length of the socket 3 and are designed to receive a removable cutter blade 7 which projects at its opposite ends beyond said slots. The blade 7 is constructed as shown in detail in Fig. 4 having a notch 8 formed in one edge midway its length, said notch being shown formed in the cutting edge and is adapted to engage a keyway on a connecting element 10 soon to be described. As shown the cutting edge of the blade 7 on opposite sides of the notch 8 is beveled in opposite directions. This blade connecting element 10 is shown in the form of a pin tapered to fit snugly in the socket 3 said pin being longer than said socket and having an elongated slot 11 extending therethrough and adapted to register with the slots 5 and 6 in the outer end of the head 2. The tapered end of this pin 10 is flattened on opposite sides as shown at 10′ to adapt it to project into the slot 4 at the inner end of the socket 3 whereby said pin is locked against turning and is securely held in the socket with its slot 11 registering with the slots 5 and 6 of the tool head 2. The outer end of the pin 10 projects some distance beyond the outer end of the head 2 and has a fin or key 12 at the outer end of its slot 11 and which is of a width corresponding to the notch 8 in the blade 7 and is adapted to fit into said notch and thereby securely hold the blade against longitudinal movement. The walls of the slot at the opposite sides of the fin project beyond said fin and form overhanging lips 13 which overlap the edges of the walls of the recess or notch 8 and thus protect the cutting edge of the blade and prevent all danger of the corners thereof from becoming dulled or broken. This blade is preferably of a thickness substantially equal to the slot 11 in the pin 10 and is thus held by the walls of said slot against lateral movement.

When it is desired to mount a blade in the tool head 2 the connecting element or pin 10 having been disengaged from said head, the blade which is here shown substantially rectangular in form is slipped into the slot 11 of said pin until the notch 8 in the blade comes opposite the fin or key 12 when said blade is moved forwardly in said slot causing the notch 8 therein to interlock with said fin and hold the blade in operative position. The pin 10 is then inserted in the socket 3, and the ends of the blade projecting beyond the edges of the slot 11 in the pin 10 extend into the slots 5 and 6 of the head 2 and the flattened end 10′ of said pin projects into the slot 4 of the head. The

pin 10 is then forced into said socket to cause it to frictionally engage the walls of said socket whereby it is held securely against accidental disengagement. The flattened end 10′ of the pin which projects into the slot 4 of the head serves to prevent all possibility of the turning of the pin and thus relieves the blade of any strain which might be exerted thereon during the operation of the tool. When it is desired to remove the blade for grinding or for inserting another, a drift pin 14 such as is shown in Fig. 5 is inserted in the slot 4 of the head and on being forced into said slot the wedge shape thereof will drive out the pin 10 from the socket 3 permitting it to be readily removed and the blade 7 detached and another substituted in its place if desired or the one removed may have its edge sharpened and be again inserted in the tool for use in the manner above described.

I claim as my invention:

1. The combination with a tool head having an inwardly tapering socket with registering slots in its opposite walls, a blade connecting or securing element shaped to fit within said socket and having a slot extending therethrough positioned to register with the slots in said head when the parts are in operative position, said element having a key in said slot and a blade adapted to extend through the slots in said head and connecting element and having a notch in one edge to engage said key.

2. The combination with a tool head having an inwardly tapering socket with registering slots in its opposite walls, a blade connecting or securing element shaped to fit within said socket and having a slot extending therethrough positioned to register with the slots in said head when the parts are in operative position, said element having a key at the outer end of said slot and a blade adapted to extend through said head and connecting element and having a notch formed intermediately of the ends of its cutting edge and adapted to engage said key.

3. The combination with a tool head having an inwardly tapering socket with registering slots in its opposite walls, a blade connecting or securing element shaped to fit within said socket and having a slot extending therethrough positioned to register with the slots in said head when the parts are in operative position, said element having a key at the outer end of said slot and a blade adapted to extend through said head and connecting element and having a notch formed intermediately of the ends of its cutting edge and adapted to engage said key, the walls of the slot in said element projecting beyond said key and forming overhanging lips adapted to overlap the edges of the notch in said blade.

4. The combination with a tool head having an inwardly tapering socket with registering slots in its opposite walls at its outer end, a slot extending through said head at the inner end of said socket in a plane at right angles to the plane of the slots formed in the outer end of said head, a blade connecting element shaped to fit within said socket and having a flattened inner end for engagement with the slot at the inner end of said socket, said element having a slot extending therethrough positioned to register with the slots in the outer end of said head when the parts are in operative position, a blade to extend through the slots in said head and connecting element and coöperating means on said element and blade for locking the blade against longitudinal movement.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN WILLIS GRIMES.

Witnesses:
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Chas. Moore.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."