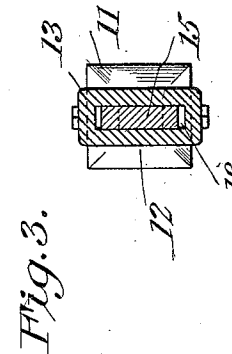
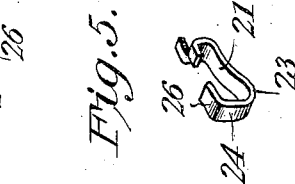
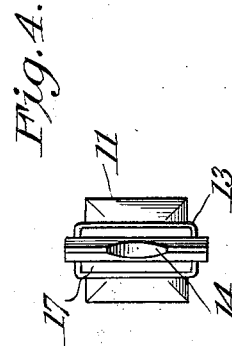
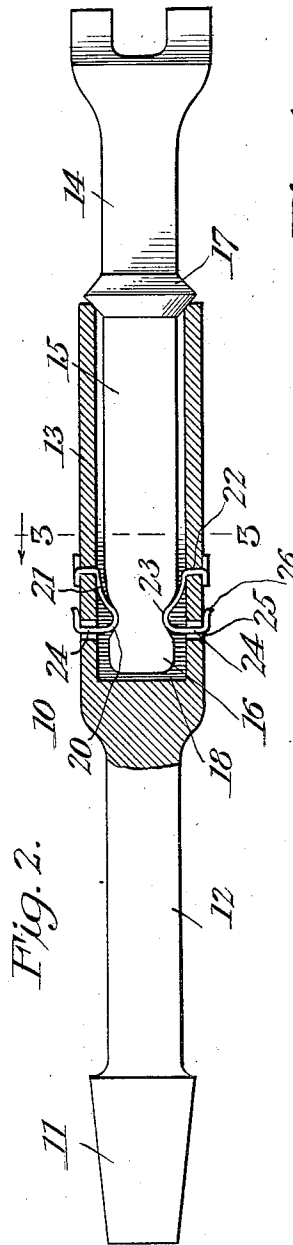
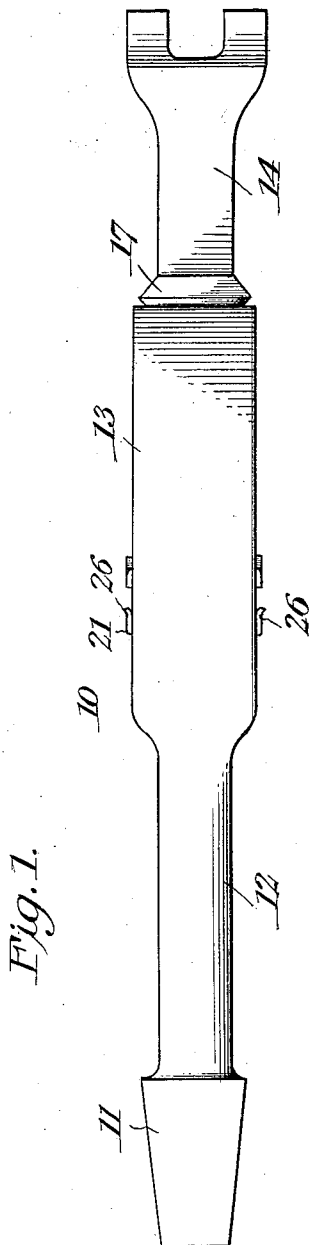


E. C. McMILLAN.
HANDLE FASTENER.
APPLICATION FILED JAN. 19, 1912.

1,052,077.

Patented Feb. 4, 1913.

2 SHEETS—SHEET 1.



WITNESSES

Fenton S. Bell
Chas. R. Nielsen.

INVENTOR

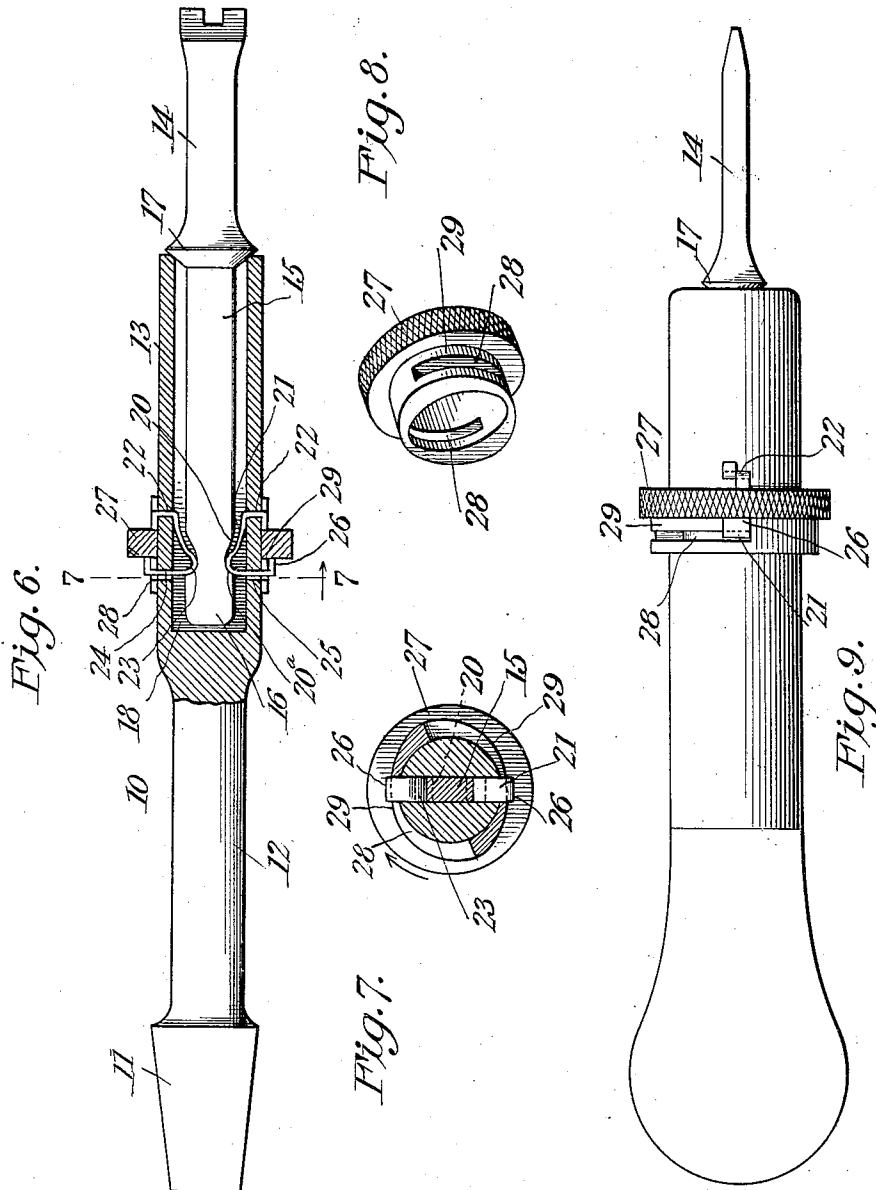
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H. Woodward Attorney

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EUGENE C. McMILLAN, OF LAREDO, TEXAS.

HANDLE-FASTENER.

1,052,077.

Specification of Letters Patent.

Patented Feb. 4, 1913.

Application filed January 19, 1912. Serial No. 672,083.

To all whom it may concern:

Be it known that I, EUGENE C. McMILLAN, a citizen of the United States, residing at Laredo, in the county of Webb and State of Texas, have invented new and useful Improvements in Handle-Fasteners, of which the following is a specification.

This invention relates to tools, particularly those in the form of removable bits, such as screw drivers, chisels, gimlets and augers, and has for its object to provide an efficient means for holding the bit members in a stock element, which means will be simple and cheap as well as durable and strong, and which will allow rapid change of bits without manipulation of gripping devices.

A further object is to provide a stock element suitable for use with braces of usual construction and which may be substituted for the ordinary bit, in the original stock of the brace, so that my rapid change device may be used in conjunction with the ordinary brace.

Another object is to present a construction whereby a bit loosely fitting the socket of my stock will upon use become seated firmly against lost motion or play.

Other objects and advantages will be apparent from the following description, and from the drawings, in which,

Figure 1 is a side view of my stock element with a screw driver engaged therein, Fig. 2 is a longitudinal sectional view thereof, Fig. 3 is a cross section thereof, Fig. 4, is an end view, Fig. 5, is a perspective view of one of the catches, Fig. 6 is a longitudinal sectional view showing the use of mechanical means for releasing a bit from the stock, Fig. 7 is a section on line 7-7 of Fig. 6, Fig. 8 is a perspective view of the ring shown in Fig. 6, Fig. 9 is a side view of a hand operated device constructed in accordance with my invention.

There is illustrated a bit-stock 10 including the usual rectangular tapered head 11 adapted to be engaged by the usual gripping devices of braces and the like, the attenuated shank 12, and the hollow or socketed head 13, in which is detachably engaged the screwdriver bit 14.

The head 13 is considerably elongated, and is substantially in the form of a sleeve.

It is oblong and rectangular in cross section and the shank portion 15 of the bit fits loosely and slidably therein. The bit has also a head portion 16, the line of division being marked by the enlargement forming a rib around the bit. The shank is somewhat less in length than the longitudinal depth of the socket 18 of the head 13 and thus the enlargement is allowed to seat against the outer end of the socket. The sides of the enlargement being inclined gradually from the plane surface of the shank and at an increasing angle, the bit naturally adjusts itself centrally of the socket without loose movement, when pressed inwardly.

A short distance from the inner end of the bit, notches or grooves 20 are formed on opposite sides thereof having sloping sides toward each end of the bit. Carried by the stock there are opposed spring catches 21 adapted to snap into the notches 20 when the bit is forced into the stock, whereby the bit is held releasably but securely in operative position. In the case of a screw driver the notch above described may be employed, which allows the bit to be drawn out in the same way it is engaged in the stock but in the case of an auger bit or other device which might tend to pull from the stock in use, it would be desirable to have the inner side of the notch not inclined but over hung, as at 20^a in Fig. 6. The catches 21 as shown are formed in a very simple manner, comprising each but a single piece of spring steel ribbon, one end of which is projected outwardly through an aperture 22 in the stock sleeve, being bifurcated and having one furcation bent toward the outer end of the stock, and the other furcation turned toward the inner end of the socket. The spring extends from this opening 22 longitudinally inward closely against the inner surface of the sleeve for a short distance, being then gradually curved outward to a suitable distance as at 23 to engage forcibly against the bit when forced inwardly thereagainst. The inner end portion of the spring is then bent abruptly outward at 24, extending at right angles to the axis of the stock, and through a suitable opening 25, above which the extremity of the spring is turned laterally to form a lip 26 under which

the finger nail may be engaged to raise the spring and allow the bit to clear the spring.

In Fig. 6, the device is constructed as above described but is provided with a means for readily raising the catch device without the use of the finger nail. It will be appreciated that with catches on opposite sides of the appliance, when it is desired to withdraw a bit it might be difficult to pull outward on both catches and withdraw the bit at the same time, the device requiring to be supported also, in the meantime. Therefore I have provided the ring 27, having two slots 28 opening therethrough in opposite sides each extending from the inner surface of the ring to its outer surface and the outer surface is made eccentric on each side of the slots, providing a catch lift surface 29 adjacent each slot. This surface inclines outward from one end of each slot, reaching the major diameter of the ring at the opposite end, the inclination being the same in direction for both slots. The slot receives the outer end or extremity 26 of the spring therethrough, which is turned sharply over the inclined lift surface 29. In this manner the ring is held in place by the springs themselves.

It will be seen from the foregoing that a device of great simplicity and cheapness is provided, which yet is adapted to perform its functions with a maximum of efficiency, which will be durable, and which may be made in very small size.

By rotation of the ring 27 in one direction the catches are moved easily into disengaged position, while reverse movement thereof releases them and allows them to securely engage and retain a bit when forced into the stock. On this account quick change and replacement of the bits may be accomplished.

It will be observed in Fig. 6 that the full depth of the notches of the side of the bit is located slightly forward of where the spring catches bear against the sides of the notches. Thus the springs do not fully seat in the notches normally, but are engaged against the inner inclined sides of the notches, whereby force is exerted against the bit tending to move it inwardly, and maintaining it firmly in seated position at the other end of the socket. In this way the device automatically compensates for wear on the sides of the socket and the bit, and loose play of the bit is prevented. With this form of bit and resilient means forcing it inwardly, the liability of the tool to wobble in the socket after long use is practically obviated. The operation of my device is essentially different from the ordinary practice of providing a tapered butt, fitting a correspondingly shaped socket, as in such devices the socket and bit become worn most at the extreme inner and outer

engaging surfaces, and notwithstanding the shape initially, after long use may develop a wobble.

What is claimed is:

1. A tool holder comprising a stock element having an axial socket, a bit member slidably engaged therein and having opposed recessed portions adjacent the inner end, longitudinally spaced pairs of apertures being formed through the socket disposed adjacent the recessed portion of the bit when in engaged position, a spring element having an end projecting outwardly through the outermost of the said openings the adjacent extremity of the spring being turned inwardly from the end of the stock and against its outer surface, the inner portion of the spring being also extended inwardly from the end of the stock in close engagement with the side of the socket and being then inclined toward the axis of the socket a distance, bent outwardly and presented through the innermost of the said openings, and shaped for engagement to release a tool.

2. A tool and holder comprising a stock element having an axial socket a bit member slidably engaged therein, and having opposed recessed portions adjacent its inner end, longitudinally spaced pairs of apertures being formed through the sides of the socket adjacent the recessed portions of the bit when in engaged position, a spring element having a bifurcated end projected outwardly through the outermost opening of each pair, the furcations being clenched in opposite directions, the inner portion of the spring extending inwardly a distance in close engagement with the side of the socket and being then inclined inwardly from the opening last named to be engaged by a bit when pressed into the socket, and being bent outwardly to present an inner end through the inner aperture thereadjacent, and its extremity outwardly thereof bent laterally for engagement to release a tool.

3. A device of the class described comprising a stock element having a socket, a detachable bit member slidably engageable in the socket, and having a recessed portion adjacent its inner end, longitudinally spaced pairs of apertures being formed through opposite sides of the socket adjacent the recessed portion of the bit, a spring element having one end projected through the outermost aperture of each pair and clenched the inner portion of the springs being inclined inwardly a spaced distance for engagement by the bit and being bent outwardly and extended through the inner apertures, a ring element having opposed slots therein receiving the springs ends slidable there-through, and having eccentric surfaces adjacent the slots, the respective extremities of the springs being bent laterally over the

eccentric surfaces, for retention of the ring and operation of the springs as described.

4. In a tool holder a stock element having a socket, a bit element slidably engageable
5 in the socket, and having a laterally projecting portion adapted to engage the end of the stock adjacent the socket while the inner end of the bit is spaced from the inner end of the socket, the engaging side of the
10 projection being inclined outwardly from the inner surface of the bit, whereby the bit will be held against lateral movement

when pressed inwardly, and resilient means bearing upon the bit and tending to move the bit longitudinally inward to hold it at 15 the inner limit of its movement.

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

EUGENE C. McMILLAN.

Witnesses:

GEO. R. PAYE,

J. E. APPLEWHITE.

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