Aug. 9, 1927. 1,638,261

E. HENRICSON

HOLDER FOR PUNCHES OR OTHER TOOLS

Filed Aug. 8, 1925

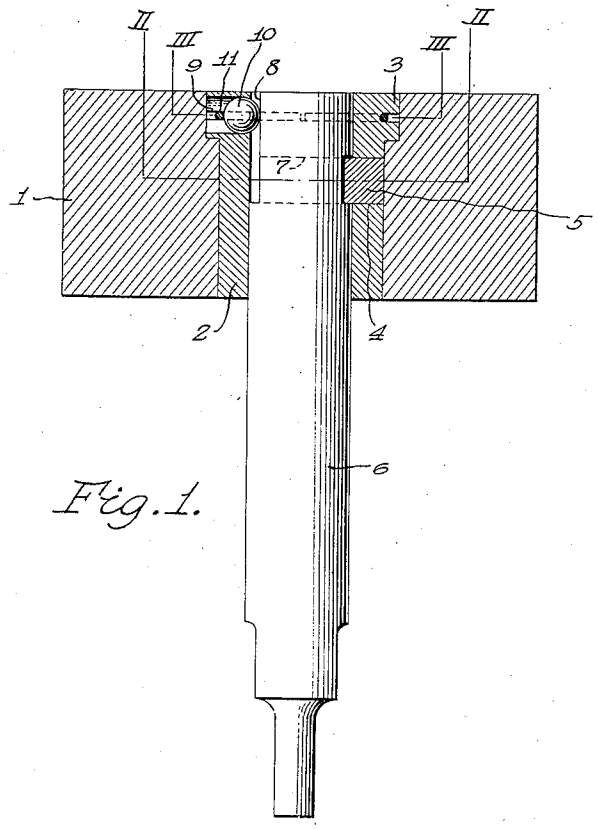


Fig. 1.

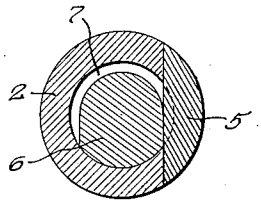


Fig. 2.

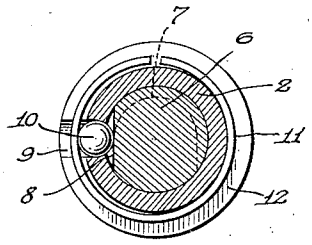


Fig. 3.

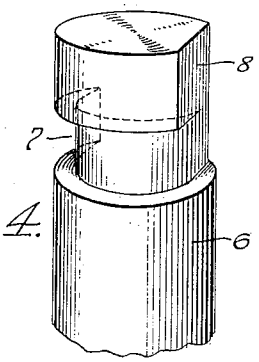


Fig. 4.

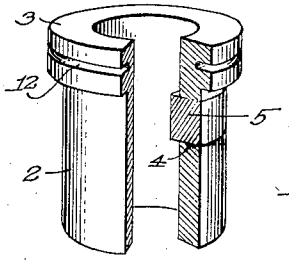


Fig. 5.

Inventor

Edwin Henricson,

By Bartlett & Bartlett

Attorneys

Patented Aug. 9, 1927. 1,638,261

UNITED STATES PATENT OFFICE.

EDWIN HENRICSON, OF DETROIT, MICHIGAN.

HOLDER FOR PUNCHES OR OTHER TOOLS.

Application filed August 8, 1925. Serial No. 49,145.

This invention relates to a fastener or holder for detachably holding a punch or other tool within its ram or carrying member and an object of the invention is to facilitate the detachment from and insertion in the holder of the tool, and to provide a device for the purpose which is simple and compact in construction, requiring but small space in which to install the same, and the construction of which is such as to give great strength and durability.

A further object is to provide certain other new and useful features in the construction and arrangement of parts, all as hereinafter more fully described.

With the above and other ends in view, the invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims, reference being had to the accompanying drawing in which

Figure 1 is a vertical section through a device illustrative of the invention and showing a punch in place and in side elevation;

Fig. 2 is a transverse section substantially on the line II—II of Fig. 1;

Fig. 3 is a similar section upon the line III—III of Fig. 1;

Fig. 4 is a perspective detail of an end portion of a punch or tool detached, and

Fig. 5 is a perspective view of a bushing showing the same partly in section to more clearly disclose the construction.

In the drawing, 1 indicates the ram of the punch press or other part or holding member within which the punch or other tool is inserted. Within a suitable bore in the head or ram 1, is inserted a bushing 2 having an enlarged upper end portion 3 and which bushing is cut away at one side or slotted, as at 4, to receive a key 5, said key being formed with a semicircular side face in plan view to fit the contour of the bore in which the bushing 2 is inserted, and this key has a straight opposite side to abut against the bottom of the slot 4 in the bushing and to project slightly into the bore of the bushing. This key is therefore held in place by the insertion of the bushing in the bore of the head.

The punch or other tool 6 is formed adjacent the end portion which is to be inserted and fit within the bushing 2, with an annular groove 7 extending a portion of the way around the shank of the tool or punch and this groove is of substantially the same width as the thickness of the key 5 so that said key will fit within said groove when the punch is turned with its grooved side toward the key. The shank or end portion of the punch is also formed with a flattened side 8 and a lateral bore 9 is provided in the bushing 2 near its upper end to receive a ball 10, said ball being urged into frictional contact with the flattened side 8 of the punch shank, by a spring wire 11 in the form of a split ring, said spring being inserted within an annular peripheral groove 12 formed in the enlarged upper end portion 3 of the bushing 2.

The shank or upper end portion of the punch or tool 6 is inserted in the bushing 2 to be held therein, by an endwise movement of the punch with the flattened side 8 toward the key 5 so that the groove 7 may be brought into alignment with the key and then by a turning movement of the punch, the groove is brought opposite the key with the key in the groove to firmly hold the punch shank within the bushing and prevent the punch from dropping out of the ram of the press. When the punch is turned to bring the key into the groove, it is given a substantially half rotation to bring the flattened side 8 of the punch shank opposite the ball 10 so that the frictional engagement of this ball with the flattened side will prevent rotation of the punch in the bushing and thus retain it in position with its groove engaged with the key.

To release the punch from the ram 1 it is only necessary to rotate the punch against the frictional resistance of the ball 10 engaging the flattened side of the shank of the punch, bringing this flattened side opposite the key 5, when the punch may be moved endwise past the key and disengaged from the ram.

In this construction the entire holding means for detachably holding the punch in place, is contained within the cross-sectional area of a simple bushing, which bushing may be readily installed in the punch press ram or other holder by simply boring out the ram to receive the bushing which is driven into this bore with a tight fit so that it will not become loose therein in use and will form a permanent fixed part of the ram. The key for locking the punch within the bushing, is, by reason of the form of the key, securely held in place by the insertion of the bushing within the bore of the ram

and the ball and ball and spring for putting a frictional resistance to turning movement, upon the punch shank within the bushing, are also held in place against dropping out, by the insertion of the bushing within the bore of the ram, the bore 9 in which the ball 10 is inserted, being formed with an inner end which is reduced in diameter to prevent the ball from passing out of the inner end of this bore into the axial bore of the bushing when the shank of the punch is withdrawn. The split ring 11 is also retained in place by being placed within a peripheral groove in the bushing, which groove is closed by the insertion of the bushing in the bore of the ram.

A very simple device is thus provided for detachably holding a punch or other tool within its ram or holder and the construction of this device is such that by a simple turning movement of the punch, it may be readily detached or inserted. The bushing not only serves to carry the key 5 and the friction device for normally holding the punch shank against rotation, but also serves as a bushing for the bore in the ram, which bushing may be hardened to prevent wear.

Obviously changes may be made in the construction and arrangement of parts within the scope of the appended claims, without departing from the spirit of the invention and I do not, therefore, limit myself to the particular construction shown.

Having thus fully described my invention, what I claim is:—

1. A device of the character described, comprising a tool carrying member provided with a bore, a bushing adapted to fit within a bore of said tool carrying member, said bushing being formed with a transverse bore opening at its inner end into the axial bore of the bushing and with an annular peripheral groove, a key carried by the bushing with one side of said key projecting into the axial bore of the bushing, a ball within the transverse bore of the bushing, a spring within the annular groove in the bushing to engage the ball and yieldingly hold the same projected from the end of its bore into the axial bore of the bushing, and a tool having a shank to fit within the axial bore of the bushing and formed with an annular groove to receive the key and with a flattened side to pass the key in the removal of the shank from the bushing.

2. A tool holder comprising a carrying member having a bore, a bushing to fit within the bore in the carrying member, said bushing being formed with a transverse slot in one side intermediate its ends, said slot cutting through the wall of the bushing into the bore thereof, and also formed with a transverse bore adjacent one end which bore extends inwardly from the outer side of the bushing and opens into the axial bore thereof, a key within the slot in the bushing, said key having a side curved to conform to the curve of the bore in which the bushing is inserted and with a substantially straight opposite side to project into the axial bore of the bushing, said key being held in place by the insertion of the bushing within the bore of the carrying member, a tool having a shank portion to fit within the axial bore of the bushing and formed with a flattened side to pass by the key and with an annular groove at the inner end of said flattened side to receive the key when the shank is inserted in the bushing past the key and then turned, and means within the transverse bore in the bushing to engage the tool shank and yieldingly resist turning movement of the shank within the bushing, the outer end of said transverse bore being closed by the insertion of the bushing in the bore of the carrying member.

In testimony whereof I affix my signature.

EDWIN HENRICSON.