M. MERLISS.

DRILL PRESS.

APPLICATION FILED NOV. 5, 1912.

1,092,070.

Patented Mar. 31, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

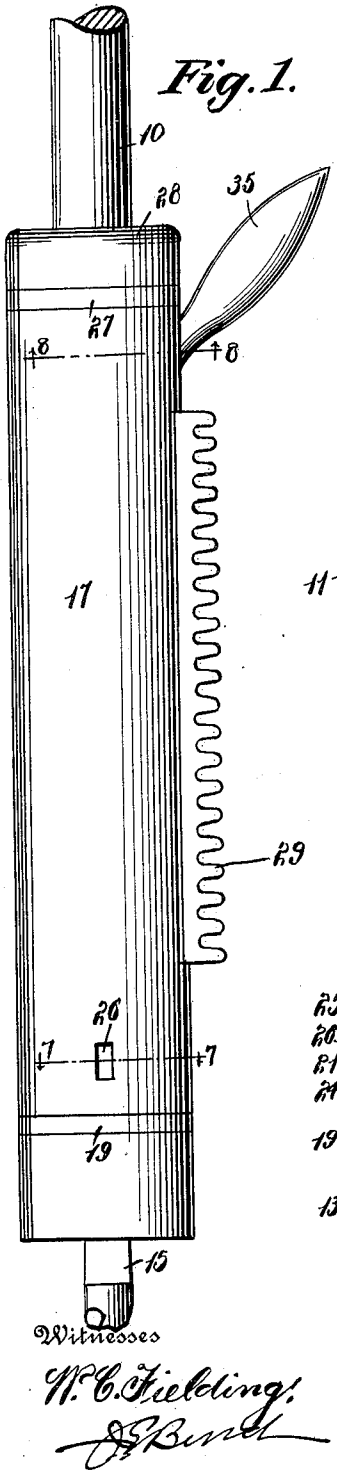


Fig. 2.

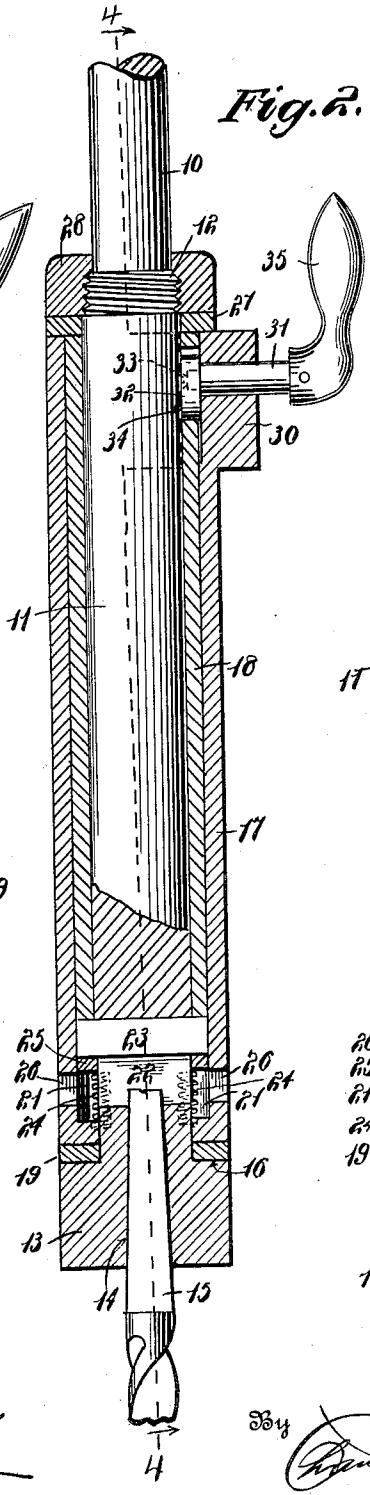
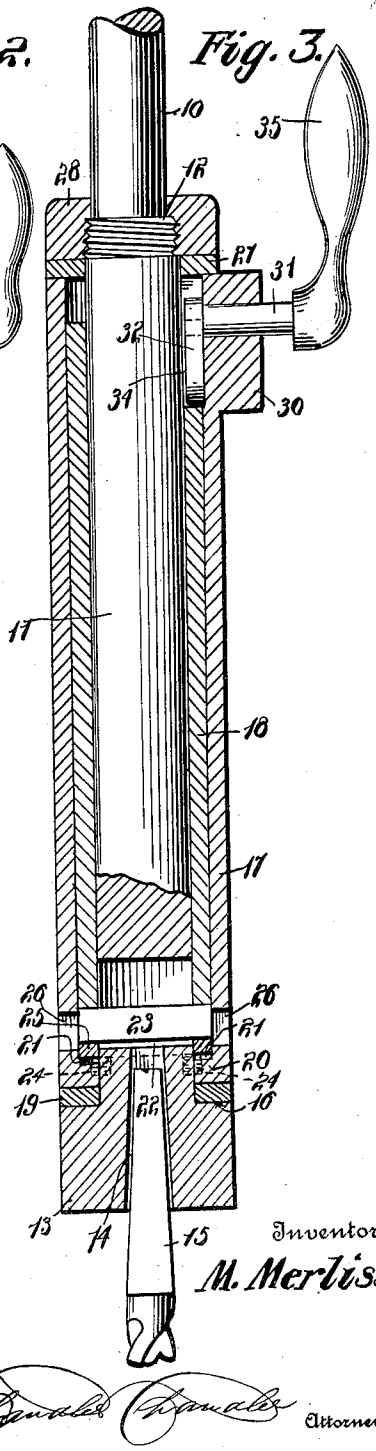


Fig. 3.



Witnesses

W. C. Fielding.

O. E. Burdett

Inventor

M. Merliss,

By Chandlee & Chandlee

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 4.

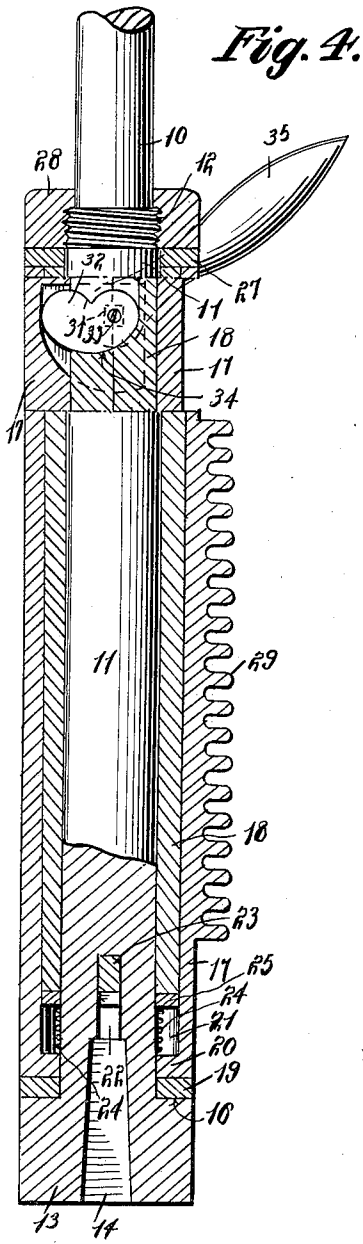
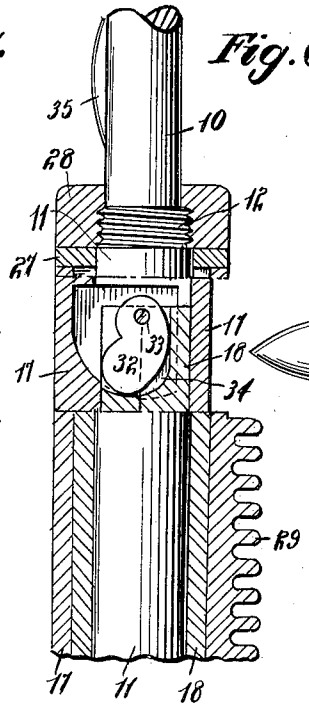


Fig. 6.



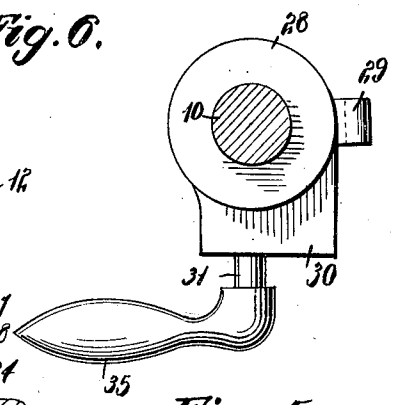
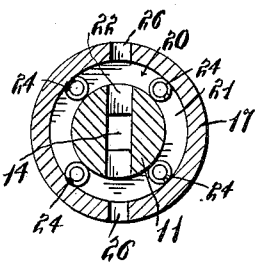
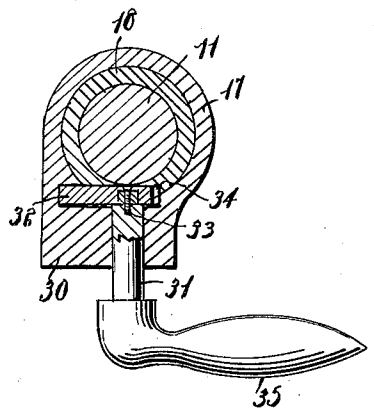


Fig. 5.

Fig. 8.

Fig. 7.





Witnesses

W. C. Fielding

D. F. Bond

Inventor

M. Merliss.

By Howson & Howson

Attorneys

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MORDUCK MERLISS, OF FLINT, MICHIGAN.

DRILL-PRESS.

1,092,070. Specification of Letters Patent. Patented Mar. 31, 1914.

Application filed November 5, 1912. Serial No. 729,672.

To all whom it may concern:

Be it known that I, MORDUCK MERLISS, a citizen of the United States, residing at Flint, in the county of Genesee, State of Michigan, have invented certain new and useful Improvements in Drill-Presses; and I do hereby 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 has special reference to new and useful improvements in drill presses and the invention resides more particularly in an improved means for the purpose of more readily removing a tapered shank drill, reamer, tap or other tool from the spindle of a drill press.

The invention further resides in providing a novel structure which permits the removal of the tapered shank by the operation of a lever so as to dislodge the tool from its wedged position, while novel means are also provided for the insertion of a drift pin or wedge where the shank is more tightly held in position or in very obstinate cases.

With the above and other objects in view, the invention consists of certain other combinations and arrangements of parts as will be hereinafter more fully described, as will be partly illustrated in the accompanying drawings, although the invention is protected for all desirable changes and uses within the scope of the invention as claimed.

Figure 1 is a side elevation of a drill press constructed in accordance with the invention. Fig. 2 is a longitudinal sectional view thereof with a drill having a tapered shank engaged therein. Fig. 3 is a similar view but showing the device in operation for removing the drill. Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 2. Fig. 5 is a top plan view. Fig. 6 is a fragmentary sectional view, similar to Fig. 4, showing the cam acting on the interior sleeve of the drill press when releasing the tool. Fig. 7 is a cross sectional view taken on the line 7—7 of Fig. 1. Fig. 8 is a cross sectional view taken on the line 8—8 of Fig. 1.

As illustrated, the improved drill press embodies a spindle 10, the shank portion of which is adapted for connection with the operating mechanism in the usual manner, while the shank is provided with a slightly enlarged intermediate portion 11 and an exteriorly threaded portion 12. The head 13 of the spindle is considerably enlarged relative to the aforesaid portions and is provided with a tapered socket 14 for the reception of a tool 15 having a tapered shank whereby the tool will be tightly held in the socket. It will be seen that the enlargement 13 forms a shoulder 16, and an outer sleeve 17 is mounted on the shank to surround an inner tool displacing sleeve 18, adapted to be reciprocated on the shank portion 11 and within the outer sleeve; a good working fit being provided for this purpose. A washer 19 is engaged with the shoulder 16 and around the adjacent portion 11 of the spindle, while the lower extremity of the sleeve 17 is thickened or flanged inwardly, as shown at 20, to fit against said spindle and provide a bearing portion having an annular recess 21 therein, communicating with a transverse opening or slot 22 through the spindle, having a tang or key 23 vertically slidable therein. This key is in contact with the lower end of the inner sleeve 18 and is held normally upward by means of a plurality of expansible and preferably coiled springs 24 seated in counterbores in the flange 20, to exert pressure against a hardened washer 25, fitted between the springs and key; it being observed that the bore of the washer conforms to the bore of the inner sleeve. Openings 26 are provided transversely through the outer sleeve between the respective pairs of springs and these openings register with the slot 22 to form a transverse opening through the device; into which slot the shank of the tool extends when in working position, whereby a drift pin may be inserted and wedged through the slot for releasing the shank in obstinate cases or where it is impossible to displace the shank by means of the tang or key 23 in the manner to be hereinafter described. It is also to be observed that the interior grooves or recesses and slot for the tang or key are of greater width than the slots 26 so that displacement of the key is obviated when moving past said opening.

A washer 27 is engaged around the spindle portion 11 for engagement by the adjacent extremities of the sleeves, while an adjusting nut 28 is threaded on the portion 12 of the spindle for securing the parts in position. A feed rack 29 is also provided lon-

gitudinally of the outer or feed sleeve as is usual on drill presses for reciprocating the tool and said sleeve is further provided at one side and near the top with an outstanding boss or bearing 30, for rotatably supporting a shaft 31. The inner end of this shaft carries a cam 32 which is secured to the squared inner end of the shaft as by means of a fastening screw 33 and operates in a chamber 34 in the inner sleeve, whereby, as the shaft is rotated through the medium of the handle 35, the cam will operate to force the sleeve downwardly against the action of the coiled springs whereby the tang or key 23 will engage the tool shank to force the same out of the socket. When the handle is released the springs will then operate against the hardened washer 25 to return the parts to their initial positions.

It will thus be seen that a drill press or chuck is provided which will efficiently serve for receiving and holding the desired tool and for feeding the same into the work through the medium of the rack 29 while the especial advantage obtained is the simplicity and ease by which the tool may be removed from its socket after having been caused to bind or wedge therein, due to the tapered formation of the socket while provision is also made for the use of a drift pin or wedge for removing the tool in more obstinate cases.

I claim:

1. The combination with a spindle of a drill press, said spindle having an enlarged head provided with a tapered socket for receiving the tapered shank of a tool; of a pair of sleeves mounted on the spindle, one of said sleeves being movable and the other being stationary relative to the spindle and supported by the enlarged head of the latter, a key longitudinally movable in the spindle and stationary sleeve and means for shifting the movable sleeve to cause the key to press the tool shank out of the socket.

2. The combination with a spindle of a drill press, said spindle having an enlarged head provided with a tapered socket for receiving the tapered shank of a tool; of a pair of sleeves mounted on the spindle, one of said sleeves being movable and the other being supported by the enlarged head of the spindle, a key longitudinally movable in the spindle and relatively stationary sleeve and means for shifting the movable sleeve to cause the key to press the tool shank out of the socket, said stationary sleeve having openings therethrough communicating with the socket for the insertion of wedge means to displace the tool.

3. The combination with a spindle of a drill press, provided with a socket for receiving the shank of a tool; of a pair of sleeves mounted on the spindle, one of said sleeves being movable and the other being stationary with relation to the spindle, a key movable longitudinally of the spindle and stationary sleeve, means for shifting the movable sleeve to cause the key to press against the tool shank for displacing the tool, and spring means normally urging the key and movable sleeve away from the tool.

4. In a drill press, a spindle having a threaded portion and an enlarged portion providing a shoulder, said enlarged portion having a tool socket and a transverse slot communicating therewith; of a feed sleeve engaged around the spindle and having an inwardly extended end contacting therewith, said sleeve having opposed recesses communicating with the slot, a tang movable in the slot and recesses, springs carried by the sleeve, a washer interposed between the springs and tang to hold the latter removed from the socket, an inner sleeve fitted on the spindle and within the first mentioned sleeve to engage the tang, means for shifting the inner sleeve against the springs and means engaged on the threaded portion of the spindle to secure the sleeves thereon.

In testimony whereof, I affix my signature, in the presence of two witnesses.

MORDUCK MERLISS.

Witnesses:
JACOB J. MILLER,
BESSIE ROSENZWEIG.

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