

No. 762,647.

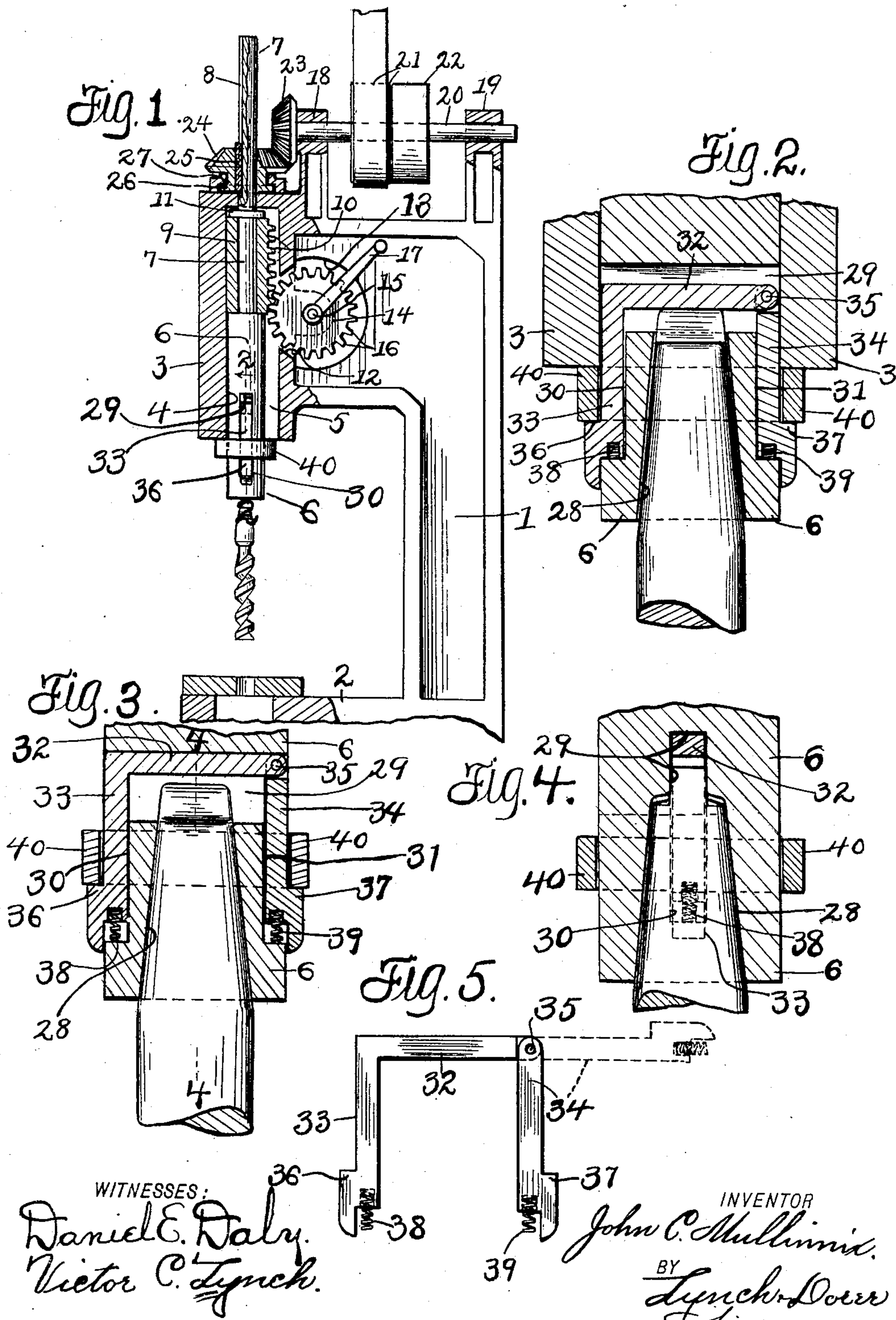
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J. C. MULLINNIX.

DRILL PRESS.

APPLICATION FILED DEC. 29, 1902.

NO MODEL.



UNITED STATES PATENT OFFICE.

JOHN C. MULLINNIX, OF CLEVELAND, OHIO.

DRILL-PRESS.

SPECIFICATION forming part of Letters Patent No. 762,647, dated June 14, 1904.

Application filed December 29, 1902. Serial No. 136,960. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. MULLINNIX, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Drill-Presses; and I 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 pertains to make and use the same.

This invention relates to improvements in drill-presses.

The object of this invention is to provide means whereby the drill may be disengaged from the chuck-head by a continuation of the same operation which raises the drill from the work.

My invention therefore consists in providing a device arranged in the chuck-head and adapted to come in contact with a portion of the frame of a drill-press when the drill is raised, and thereby exert a downward pressure on the upper end of the drill.

My invention also consists in certain features of construction and combination of parts hereinafter described in the specification, pointed out in the claims, and illustrated in the drawings.

In the accompanying drawings, Figure 1 is a central vertical section of a drill-press embodying my improvement. Fig. 2 is a detail view, principally in section, on line 2 2, Fig. 1. Fig. 3 is a detail view, principally in section, showing the position of the parts when the chuck-head is in its lowest position. Fig. 4 is a section on line 4 4, Fig. 3. Fig. 5 shows the disengaging device detached from the chuck-head.

Again referring to the drawings, 1 represents a standard which is rigidly mounted on the table 2, which supports the work. On this standard 1 is arranged a head 3, which is preferably formed integral therewith. This head 3 forms a support for the chuck-spindle and also constitutes an abutment which coöperates with the mechanism hereinafter described for expelling the tool from the chuck-head. In the head 3 is formed a vertical guideway 4, and in the side wall of the guideway 4 is formed a longitudinally-extending

groove 5. In the head 3 is arranged the chuck-head 6, in the upper end of which is secured the chuck-spindle 7, which extends upwardly through and above the top of the head 3. In the end of the chuck-spindle 7, which projects above the head 3, is formed a longitudinally-extending groove 8. On the chuck-spindle 7, within the head 3, is arranged a sleeve 9. A rack 10 is formed integral with the sleeve 9 and is arranged so that the teeth thereof extend into the groove 5. A collar 11 is secured on the chuck-spindle 7 above the sleeve 9. Extending through the side of the head 3 and communicating with the groove 5 is formed a slot 12. The standard 1 is cut away in the vicinity of the slot, as at 13, and a small arm 14 is formed on the side of the head 3 at the side of the said slot 12. In this arm 14 is secured a stud 15, on which is rotatably mounted a gear-wheel 16 of sufficient size to extend through the slot 12 and mesh with the teeth of the rack 10. A crank-arm 17 is rigidly secured to the gear 16, by means of which the said gear-wheel may be revolved. It will readily be seen that by turning the crank-arm in one or the other direction the spindle and the chuck-head secured thereto will be raised and lowered in the head *a*.

On top of the standard 1 in suitable bearings 18 and 19 is journaled a shaft 20, on which are mounted driving-drums 21 and 22. At one end of the shaft 20 is rigidly secured a gear-wheel 23, which is arranged to mesh with a gear-wheel 24, which is arranged on the upper end of the spindle 7. This gear 24 is operatively secured on the spindle 7 by means of a feather 25, which is secured to the gear and extends into the groove 8, formed in the said spindle 7, and this arrangement allows the end of the spindle 7 to travel up and down through the gear while operatively connected therewith. An annular flange 26 is formed on the gear 24 and engages lugs 27, formed on the head 3, so as to hold the said gear in its operative position and prevent the upward displacement thereof. When the shaft 20 is actuated by means of some motive power, (not shown,) the motion is communicated through the medium of the gears 23 and 24 to the

spindle 7, and consequently the chuck-head is turned so as to drive the tool into the work or remove it therefrom, according to the direction in which the shaft 7 is being actuated.

5 In the lower end of the chuck-head 6 is formed a conical-shaped socket 28 for receiving the head of the tool. A horizontal slot 29 is formed in the chuck-head 6, extending from side to side of the said chuck-head and
10 passing through the top of the socket 28. Two vertical grooves 30 and 31 are formed in the surface of the chuck-head at diametrically opposite sides of the said chuck-head and extend from the said groove 29 to within a
15 short distance of the lower end of the said chuck-head. In the slot 29 is arranged a rigid bar 32, having a cross-section less than the cross-section of the said slot, so that the said bar will be free to move vertically in the
20 said slot. From one end of the bar 32, and preferably formed rigid therewith, a leg 33 extends down, forming a right angle with said bar 32, and is arranged to fit in the groove 30, so that its outer surface will be flush with
25 the outer surface of the chuck-head. At the opposite end of the bar 32 is secured a second leg 34, which is preferably secured thereto by means of a pivot-pin 35. The leg 34 is arranged to fit into the groove 31, so that its
30 outer surface will be flush with the outer surface of the said chuck-head. On the lower ends of the legs 33 and 34 are formed lugs 36 and 37, arranged to project beyond the surface of the chuck-head. Springs 38 and 39
35 are arranged in the lower ends of the respective grooves 30 and 31 under the ends of the legs 33 and 34, so as to press the bar 32 against the top of the slot 29. Around the lower end of the chuck-spindle and above the
40 lugs 36 and 37 is arranged a collar 40, which is free to move up and down on the said chuck-spindle.

It will readily be seen that my improvement may be applied to the ordinary style of
45 drill-presses by making a comparatively slight change in the chuck-head, which consists in slightly enlarging the horizontal slot 29, which is now made in all chuck-heads for this class of machines, and then milling or otherwise
50 forming the vertical grooves 30 and 31, which are formed in the outside surface of the chuck-head. The bar 32 is then arranged in the chuck-head by swinging the leg 34 into position shown by the dotted lines in Fig. 5 and
55 then inserting it into the horizontal slot 29 and then folding the said leg down into the slot 31. The collar 40, which has first been placed around the chuck-head is then allowed to slide down until it rests on the lugs 36
60 and 37. In order to disengage the tool from the chuck-head, it is only necessary to turn the crank-arm 17, so as to raise the chuck-head until the collar 40 comes into contact with the abutment formed by the lower part
65 of the head 3, which will cause the collar 40

to press down on the lugs 36 and 37, drawing down the bar 32 until it comes in contact with the inner end of the tool-head, and a continued upward movement of the chuck-head will result in forcing the tool-head from the socket
70 in the said chuck-head.

What I claim is—

1. The combination with a spindle having a movement toward and away from the work, of an abutment, a chuck-head provided with
75 a socket for receiving the head of the tool and having a slot extending from side to side and passing through said socket, a bar arranged in said slot and means operatively connected with said bar and arranged to come in con-
80 tact with said abutment when the spindle has been moved a predetermined distance.

2. In a drill-press the combination of a frame, a chuck-spindle operatively arranged in said frame, means for raising and lowering
85 said chuck-spindle, a chuck-head secured to said chuck-spindle, a socket formed in said chuck-head for receiving the head of a tool, a horizontal slot extending from side to side of said chuck-head and passing through the
90 said socket, a rigid bar having a cross-section less than the cross-section of the said horizontal slot arranged in said slot and capable of moving vertically therein, means for normally holding said bar in its upper position
95 in said slot and means for causing an engagement between the said bar and the said frame so as to cause the said bar to move down in the said slot when the chuck-head is raised a predetermined distance in the said frame.
100

3. In a drill-press, the combination of a frame, a chuck-spindle operatively arranged in said frame, means for raising and lowering
105 said chuck-spindle, a chuck-head secured to said chuck-spindle, a socket formed in the said chuck-head for receiving the head of a tool, a horizontal slot extending from side to side of said chuck-head and passing through said
110 socket, two vertical grooves formed in the outer surface of the said chuck-head, at diametrically opposite sides and extending down from said horizontal slot, a rigid bar arranged in said horizontal slot, legs secured to the
115 ends of said rigid bar and extending down in the respective grooves, lugs secured to the ends of said legs and arranged to come into contact with a stationary portion of the machine when the chuck-head is raised a predetermined distance.

4. In a drill-press, the combination of a
120 frame, a chuck-spindle operatively arranged in said frame, means for raising and lowering said chuck-spindle, a chuck-head secured to said chuck-spindle, a socket formed in said
125 chuck-head for receiving a tool, a horizontal slot extending from side to side of the chuck-head and passing through said socket, a rigid bar having a cross-section less than the horizontal cross-section of said slot arranged in
130 said slot, vertical grooves arranged in the

outer surface of the said chuck-head, at diametrically opposite sides, and extending down from said horizontal slot, a leg rigidly secured at one end of said rigid bar and extending
 5 down in one of the said vertical slots, a leg pivotally secured at the opposite end of said rigid bar and extending down in the other of the said vertical slots and lugs formed on the respective ends of said legs and arranged to
 10 come in contact with the frame of the machine when the chuck-head is raised a predetermined distance.

5. In a drill-press the combination of a frame, a chuck-spindle operatively arranged
 15 in said frame, means for operating said spindle, a chuck-head secured to said chuck-spindle, a socket formed in said chuck-head for receiving the head of the tool, a horizontal slot extending from side to side of said head
 20 and passing through said socket, a rigid bar having a cross-section less than the cross-section of said horizontal slot arranged in said slot, two vertical grooves formed in the outer
 25 surface of said chuck-head at diametrically opposite sides and extending down from said horizontal slot, legs secured to the ends of said rigid bar and extending down in the re-
 30 spective vertical grooves, lugs secured to the ends of said legs and arranged to come into contact with a stationary portion of the machine when the chuck-head is raised a prede-
 35 termined distance, and a spring arranged in each of the said vertical slots beneath the lower ends of the respective legs, substantially as described and for the purpose set forth.

6. In a drill-press the combination of a frame, a chuck-spindle operatively arranged
 40 in said frame, means for operating said spindle, a chuck-head secured to said chuck-spindle, a socket formed in said chuck-head for receiving the head of the tool, a horizontal slot extending from side to side of said head and
 45 passing through said socket, a rigid bar having a cross-section less than the cross-section of said horizontal slot arranged in said slot, two vertical grooves formed in the outer sur-
 50 face of said chuck-head at diametrically opposite sides and extending down from said horizontal slot, legs secured to the ends of said rigid bar and extending down in the re-

spective vertical grooves, lugs secured to the ends of said legs and a ring arranged on said chuck-head and resting on the said lugs, substantially as described and for the purpose set forth.

7. In a drill-press the combination of a frame, a chuck-spindle operatively arranged
 55 in said frame, means for operating said spindle, a chuck-head secured to said chuck-spindle, a socket formed in said chuck-head for receiving the head of a tool, a horizontal slot
 60 extending from side to side of said head and passing through said socket, a rigid bar having a cross-section less than the cross-section of said slot arranged in said slot, two vertical
 65 grooves formed in the outer surface of said chuck-head at diametrically opposite sides and extending down from said horizontal slot, a rigid bar arranged in said slot, a leg rigidly
 70 secured to one end of said rigid bar and extending down in one of said vertical grooves, a leg pivotally secured at the opposite end of said rigid bar and extending down in the other
 75 of the vertical grooves, lugs formed on the respective ends of the respective legs, a spring arranged in each of the said vertical grooves beneath the lower ends of the respective legs
 80 and a ring arranged on said chuck-head and resting on said lugs, substantially as described and for the purpose set forth.

8. In a drill-press the combination of a frame, a chuck-spindle having a movement to-
 85 ward and away from the work, a chuck-head secured to said chuck-spindle and provided with a socket for receiving the head of a tool and having a slot extending from side to side
 90 and passing through said socket, a bar arranged in said slot and means for causing said bar to travel in said slot so as to come in contact with the head of the tool when the chuck-
 spindle is moved a predetermined distance from the work, for the purpose set forth.

In testimony whereof I sign the foregoing specification, in the presence of two witnesses,
 this 20th day of December, 1902, at Cleveland, Ohio.

JOHN C. MULLINNIX.

Witnesses:

VICTOR C. LYNCH,
 GERTRUDE M. HAYES.