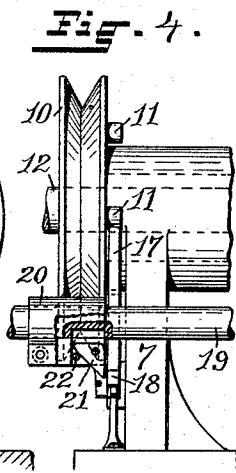
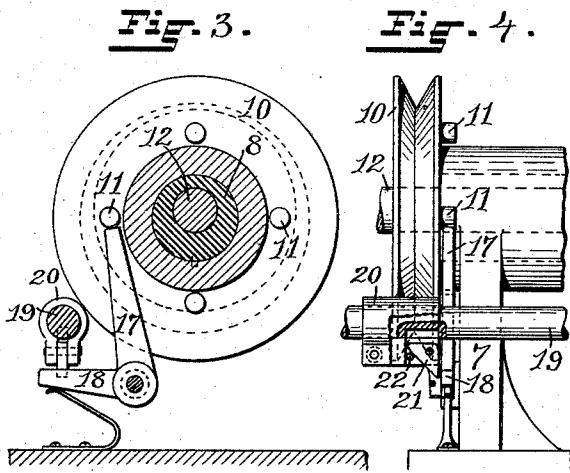
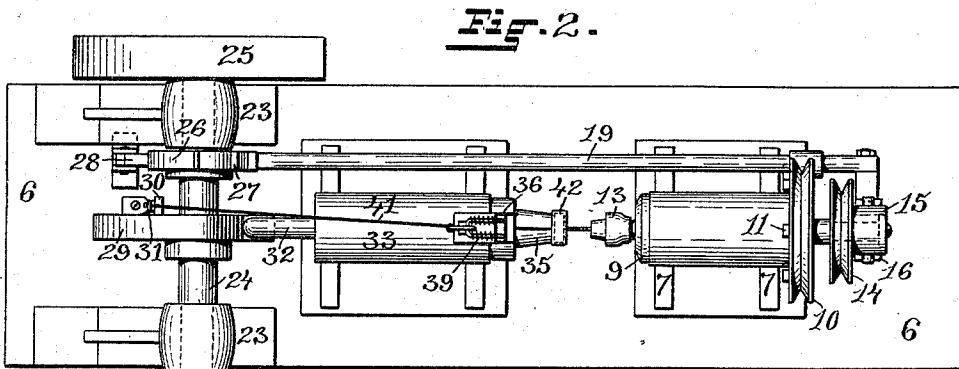
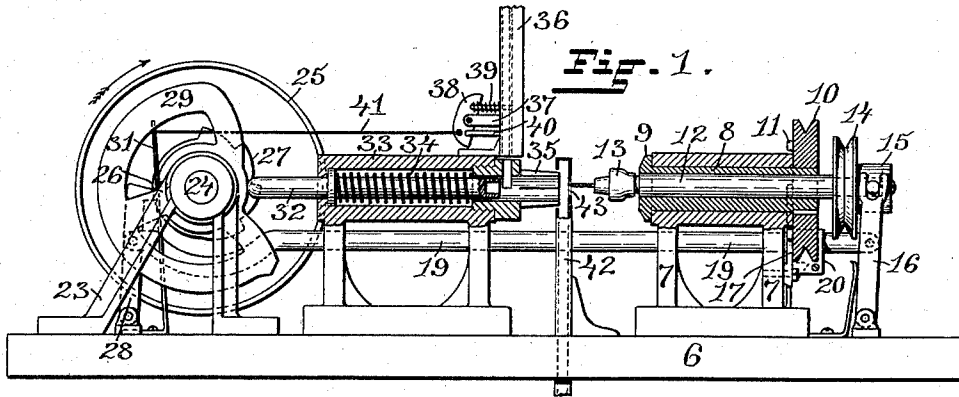


(No Model.)

R. D. CLAPP.
DRILLING MACHINE.

No. 527,321.

Patented Oct. 9, 1894.



WITNESSES:

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UNITED STATES PATENT OFFICE.

RICHARD DEXTER CLAPP, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO
J. P. CARL WEIS, OF PROVIDENCE, RHODE ISLAND.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 527,321, dated October 9, 1894.

Application filed December 29, 1892, Serial No. 456,620. (No model.)

To all whom it may concern:

Be it known that I, RICHARD DEXTER CLAPP, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Drilling-Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference particularly to improvements in machines for drilling buttons.

The object of the invention is to produce a drilling-machine which may be operated to successively present the drill opposite different portions of the article to be drilled.

The further object of the invention is to produce a drilling-machine by which the blanks may be automatically presented to the drill and removed from the machine after drilling.

Still further the object of the invention is to produce a drilling-machine in which the drill is reciprocated automatically as the blank is presented thereto.

The invention consists in the peculiar construction of the drill-support and in the means for operating the same.

The invention also consists in the combination with the drilling-device of the blank presenting and removing mechanism, together with such other peculiar features of construction and combination of parts as will hereinafter be more fully described and pointed out in the claims.

Figure 1 represents an elevation of my improved grinding machine, partly in section, to show its construction and operation. Fig. 2 represents a plan view of the same. Fig. 3 represents an enlarged view, partly in section, to show the construction of the bearing-sleeve for the drill-shaft and the pulley for rotating the same, together with the stop and latch for locating the drill and the means for operating the stop and latch. Fig. 4 is a side view of these portions partly broken away.

Similar numbers and letters of reference designate corresponding parts throughout.

In the drawings 6 indicates the base on which the machine is mounted.

7 is a standard-bracket which is secured to the base 6 and has, at its upper end, a tubular-bearing in which the sleeve 8 is free to rotate. The forward end of this sleeve has a shoulder 9 to prevent the backward movement thereof, and to the rear end is secured the band-pulley 10 furnished in one face with two or more sockets in which the stop-pins 11—11 are screwed. The sleeve 8 has a bore which is more or less off of the axial-center of the sleeve, and in this bore is journaled the drill-shaft 12 having at the forward end the clutch 13 for holding the drill and near the rear end a driving-pulley 14. The distance at which the axial-center of the shaft 12 is set off from the axial-center of the sleeve 8 determines the distance from the center of the blank at which the drill is to operate.

The rear end of the drill-shaft 12 is furnished with a swivel-bearing 15 from each side of which extends a pin. These pins are engaged in slots in the upper ends of the yoke-piece 16 which is pivoted to the base 6 and is pressed backward by a spring.

Pivoted to the rear standard of the bracket 7 is a stop-arm 17 having a finger 18 which is continually pressed upward by a spring to throw the stop-arm over the face of the pulley 10 to engage one of the stop-pins 11—11 and prevent the rotation of the pulley and the sleeve 8.

The shaft 19 is free to reciprocate in suitable bearings and is pivoted to the yoke-piece 16. Clamped to this shaft, near the rear end, is a strap 20 between the ends of which the triangular latch-plate 21 is pivoted, and between the ends of the strap is also secured the pin 22 on which the upper end of the latch-plate bears. As the shaft 19 moves backward, the inclined edge of the plate 21 rides over the finger 18 of the arm 17 depressing the same against the spring-pressure, thus disengaging the stop-arm 17 from the pin 11 and allowing the pulley 10 to be partially rotated by a loose belt. As the latch-plate is carried by the finger 18, the spring is allowed to act to throw the stop-arm into position to engage the next stop-pin 11 to again stop the rotation of the pulley while another hole is being drilled. On the forward move-

ment of the shaft 19 the plate 21 turns on its pivot and easily passes over the finger 18.

On the end of the base 6, opposite to that on which the drilling-mechanism is located, are secured the brackets 23 in bearings in which is journaled the shaft 24 to one end of which is secured the drive-pulley 25. Mounted on this shaft is the drilling-cam 26 having a number of gradually-inclined steps 27 which depends on the number of holes to be drilled in each blank. This end of the shaft 19 is curved to extend beneath the shaft 24 and is pivoted to the stop-arm 28 which is pivoted at its lower end to the base 6 while its upper end bears against the face of the cam 26. The thrust-cam 29 is also mounted on the shaft 24 and rotates therewith. One side of this cam is furnished with a pin 30 which at every revolution strikes the spring-arm 31 secured to the base 6 and bends the same backward. The plunger 32 is partially contained within the case 33 which is suitably supported and is thrust back against the face of the cam 29 by the coiled-spring 34, its reciprocation, therefore, being governed by the conformation of the cam. At the forward end this plunger has a socket to receive the end of the drill after it passes through the blank.

On the forward end of the casing 33 is secured the spring-chuck 35 having a vertical slot in its upper portion and directly above this slot is mounted a chute 36 by which the blanks are fed to the machine. Extending from this chute is an arm 37, to the end of which is pivoted the member 38, the upper end of the member being furnished with the pivoted-pins 39 surrounded by coiled-springs for forcing this end of the member away from the chute. The lower end of the member is also furnished with pivoted-pins 40 and is connected by the wire 41 with the upper end of the spring-arm 31. In operation the pins 39 and 40 are alternately thrust forward through perforations in the chute to regulate the movement of the blanks.

Located directly in front of the chuck 35 and having an orifice into which the end of the chuck extends is a removing-chute 42 which has a perforation 43 in the wall opposite to that into which the chuck extends, this perforation being sufficiently large to allow the revolution of the drill in the circle in which the holes are to be drilled, but still small enough to prevent the egress of the blank when, at the finish of the drilling, it is kicked from the chuck by the shoulder A of the cam 29 passing on the end of the plunger 32.

As the shaft 24 is rotated the shaft 19 will be drawn forward by the stop 28 riding over the cam-steps 27, and as the end of each of these steps is reached by the head of the stop the spring-operated arm 16 will be allowed to act to draw the shaft 19 as well as the drill-shaft 12 back into place. At the same time the pulley 10 will be released from the stop-

arm 17 and will be rotated by its loose belt until this arm engages the next stop-pin, this reciprocation of the drill-shaft being continued until the predetermined number of holes have been drilled. The blank will then be thrown into the chute 42 and the plunger 32 will recede to the position shown in Fig. 1 of the drawings ready to be moved forward by the cam 29 to present another blank between the ends of the chuck and to hold it there while being drilled.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a drilling-machine, in combination, a rotatable-bearing journaled in a frame, a rotating-device secured thereto, a device for interrupting the rotation thereof, and a rotatable drill-shaft eccentrically journaled therein and free to reciprocate, as described.

2. In a drilling-machine, the combination with a rotatable-bearing, a driving-pulley mounted thereon and stop-pins secured thereto, of a drill-shaft eccentrically journaled in said bearing, free to reciprocate therein, and a device adapted to be operated by the reciprocation of the drill-shaft to engage said stop pins.

3. In a drilling-machine, the combination with a rotatable-bearing, a driving pulley mounted thereon, a drill-shaft eccentrically journaled therein and free to reciprocate independently thereof, of a pivoted-bar adapted to reciprocate said drill-shaft, and a cam-controlled shaft adapted to vibrate said bar, as described.

4. In a drilling-machine, the combination with a plunger-case, a chuck having an entrance-slot mounted thereon, a spring-plunger free to reciprocate therein, and a cam mounted on a shaft for operating the plunger against the spring, of a removal-chute 42 having the perforation 43 and located immediately in front of the chuck, as described.

5. The combination with a frame, the sleeve-bearing 8 journaled therein, the pulley-wheel 10 secured to said sleeve and furnished with stop-pins, the drill-shaft 12 having the pulley 14 eccentrically journaled in said sleeve and free to reciprocate therein, the swivel-bearing 15 mounted on the end of the drill-shaft, the spring-operated pivoted-arm 16 engaging this bearing, and the spring-operated stop-arm 17 having the finger 18 pivoted to the frame, of the shaft 19 pivoted to the arm 16 and to the pivoted stop-arm 28, the strap 20 clamped to the shaft 19 and carrying the pivoted-pawl 21, and a cam 26 mounted on a shaft and having steps as 27 for operating the arm 28, as described.

In witness whereof I have hereunto set my hand.

R. DEXTER CLAPP.

Witnesses:

HENRY J. MILLER,
M. F. BLIGH.