

(No Model.)

J. T. FINK.
DRILL CHUCK.

No. 546,761.

Patented Sept. 24, 1895.

Fig. 1.

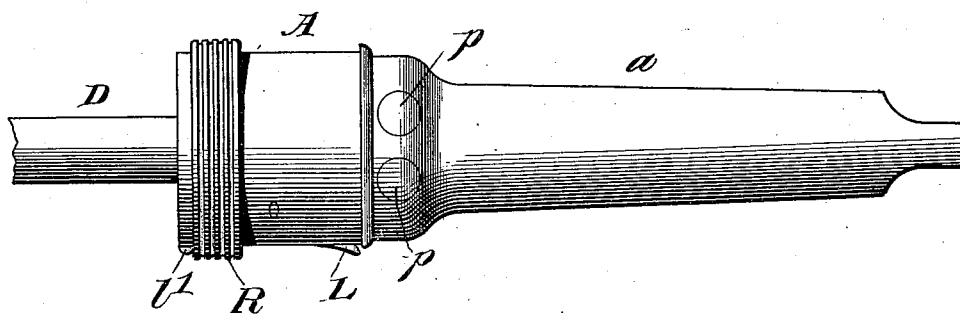


Fig. 2.

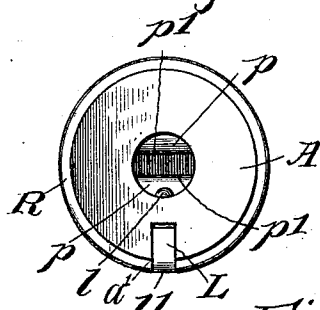
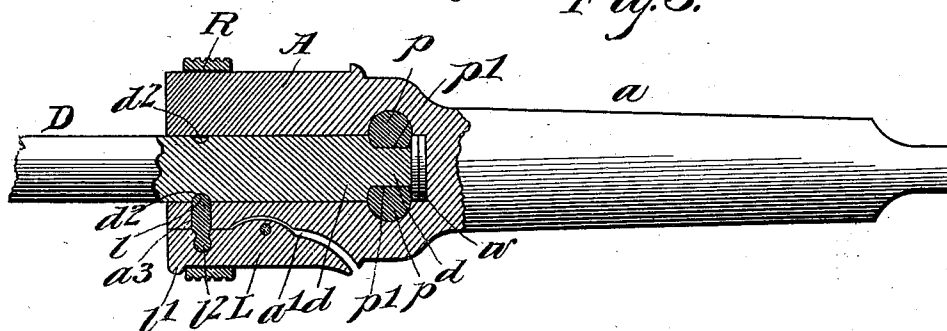


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES T. FINK, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO
HIMSELF AND ALBERT STEPHAN, OF SAME PLACE.

DRILL-CHUCK.

SPECIFICATION forming part of Letters Patent No. 546,761, dated September 24, 1895.

Application filed March 1, 1895. Serial No. 540,172. (No model.)

To all whom it may concern:

Be it known that I, JAMES TEXTER FINK, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Drill Chucks or Stocks; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has relation to drill-chucks, and it has for its object certain improvements whereby the efficiency and durability of the chuck are materially enhanced and the construction thereof simplified and cheapened, as will now be fully described, reference being had to the accompanying drawings, in which—

Figures 1 and 2 are side and end views, respectively, and Fig. 3 a longitudinal central sectional view, of a drill-chuck embodying my invention.

The chuck comprises, as usual, a head A and a taper-shank *a*, flattened at its outer end. The head A has a cylindrical axial bore for the reception of the cylindrical shank *d* of the drill D, said shank having its outer end *d'* flattened to fit a bearing formed between two cylindrical steel pins *p p*, driven through the chuck-head A at the inner end of the bore thereof, said pins having their proximate faces *p'* within the bore of the chuck-head A flattened to form the bearing above referred to for the correspondingly-flattened end *d'* of the drill D, the said pins performing the function of a driver, in that they lock the drill to and cause it to revolve with the chuck, and at the same time take up the whole of the torsional strain of the drill D, as will be readily understood.

The drill D is locked in its seat in the chuck-head A against endwise motion by means of a two-armed or centrally-pivoted locking dog or lever L, having a nose or pin *l*, adapted to project into a suitable notch or hole *d²* in the shank *d* of the drill D, said lever L being pivoted in a longitudinal slot *a'*, formed in the

head A of the chuck. The upper face of the lever is concave, or substantially so, and it is provided at its outer end with an upwardly-projecting lip *l'*, acting as a stop for an actuating-ring R, that slides freely on the head A. The relative arrangement of the locking-lever L is such that its ends will project sufficiently above the periphery of the head A as to adapt the actuating-ring R to tilt the lever L sufficiently in one or the other direction to bring its pin *l* into or out of engagement with the notch *d²* in the drill-shank, according as said ring is moved toward the front or rear end of the said lever, as will be readily seen from an inspection of Fig. 3.

In practice I preferably provide the lever L with a detachable pin *l*, having a substantially-cylindrical head *l'*, fitting a corresponding seat in the lever, said pin being held against lateral movement in its seat by the proximate walls of slot *a³* in head A, as will be readily understood, so that in case the pin should accidentally be broken another may be substituted.

In order to protect the chuck against wear due to thrusts of the drill, I provide one or more steel washers *w* at the inner end of the bore in rear of the driver-pins *p p*, that may also serve to firmly hold said washers in place. In practice the pins *p p* are simply driven into suitable holes in the chuck-head A, so that they can readily be removed when this becomes necessary from any cause—as, for example, when it becomes necessary to remove a worn-out washer to be replaced by a new one, or when it becomes necessary to remove one or both pins when worn out for the substitution of others.

I am aware that chucks have before my invention been provided either with pivoted gripping-jaws or with a locking-lever adapted to be actuated by a sleeve movable on the head of the chuck. In all such constructions, however, the tool-holding device or devices are also made to perform the function of drivers—that is to say, they not only prevent the tool from falling out of the chuck, but also lock it thereto, so as to revolve therewith, the whole of the torsional strain of the tool being taken up by such devices. When serrated gripping-jaws are employed, they are

apt to slip, and they are rapidly cut away under the thrust of the tool, while if the latter is simply locked to the chuck by a pin on a locking-lever the torsional strain alone, especially in power-drills, is generally sufficient to wrench the pin from the lever, as it is not possible to provide room for a sufficiently strong lever and pin to resist such strain without increasing the dimensions of the chuck to such an extent as to render it practically unavailable for use. There is, however, another factor that contributes to the rapid destruction of the locking-pin—namely, the thrust, because a comparatively slight wear of the inner end wall of the bore in the chuck-head will result in sufficient endwise play of the tool or drill as to cause the latter to hammer on the pin.

All of the above-recited difficulties are avoided by my invention, which has the further advantage of admitting of a compact construction, which is at the same time very simple, and admits of making all the parts that are liable to wear of steel. In fact the entire chuck can be made of this metal without materially increasing the cost of its construction beyond that of the best chucks now made. On the other hand, should a drill break it can readily be removed and another substituted without stopping the machine, which is also a great advantage, in that considerable time is saved.

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

1. A drill chuck provided in its head with a cylindrical bore and with a bearing therein for the reception of the flattened end of the shank of a drill, adapted to hold the latter against rotation without interfering with its endwise motion, and a ring R of the same interior diameter throughout as the exterior diameter of the head of the chuck and adapted to slide thereon, in combination with the lever L pivoted in a slot in the head of the chuck and of greater length than the width of the aforesaid ring, said lever provided with a pin adapted to engage the shank of the drill, with a lip *l'* at its outer end forming an abutment

for and limiting the movement of the ring in one direction, and with a tail adapted to project into the plane of motion of said ring when the latter holds the forward end of the lever down, substantially as and for the purpose set forth.

2. A drill chuck provided in its head with a cylindrical bore, and with a bearing formed by two spaced pins near the inner end of said bore and adapted to receive between them the flattened end of the shank of a drill and hold the latter against rotation without interfering with its endwise movement, a thrust or wear plate or plates at the inner end of the bore held against displacement by the aforesaid pins, and the lever L pivoted in the head of the chuck and provided with a pin adapted to engage the shank of the drill and hold the latter against endwise motion, in combination with the ring R of the same interior diameter as the exterior diameter of the head of the chuck, said ring adapted to slide on said head and move the lever into and out of its operative position, substantially as and for the purpose set forth.

3. A drill chuck provided in its head with a cylindrical bore and with a bearing formed by two removable pins having proximate flat faces within the bore and adapted to receive between them the flat end of the shank of a drill and hold the same against rotation without interfering with its endwise motion, a thrust or wear plate or plates at the inner end of the bore, held against displacement by the aforesaid pins, and the lever L pivoted in the head of the chuck and provided with a removable pin adapted to engage the shank of the drill and hold the same against endwise motion, in combination with the ring R of the same interior diameter as the exterior diameter of the head of the chuck, said ring adapted to slide on said head and move the lever into and out of its operative position, substantially as and for the purpose set forth.

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Witnesses:

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