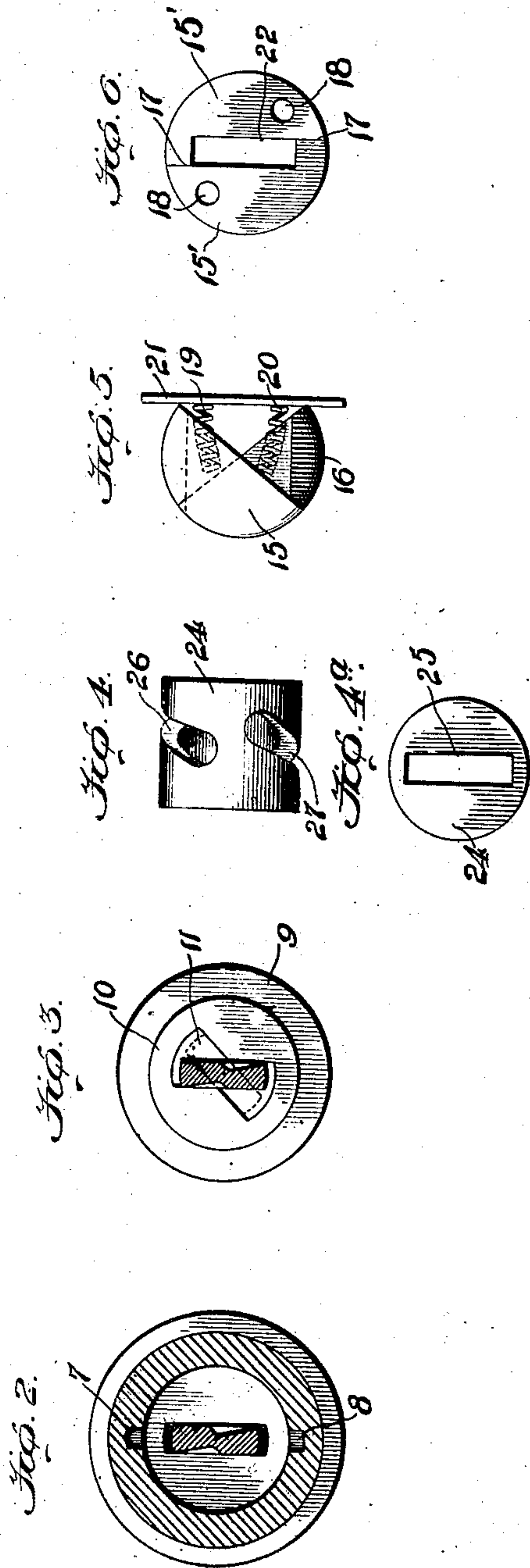
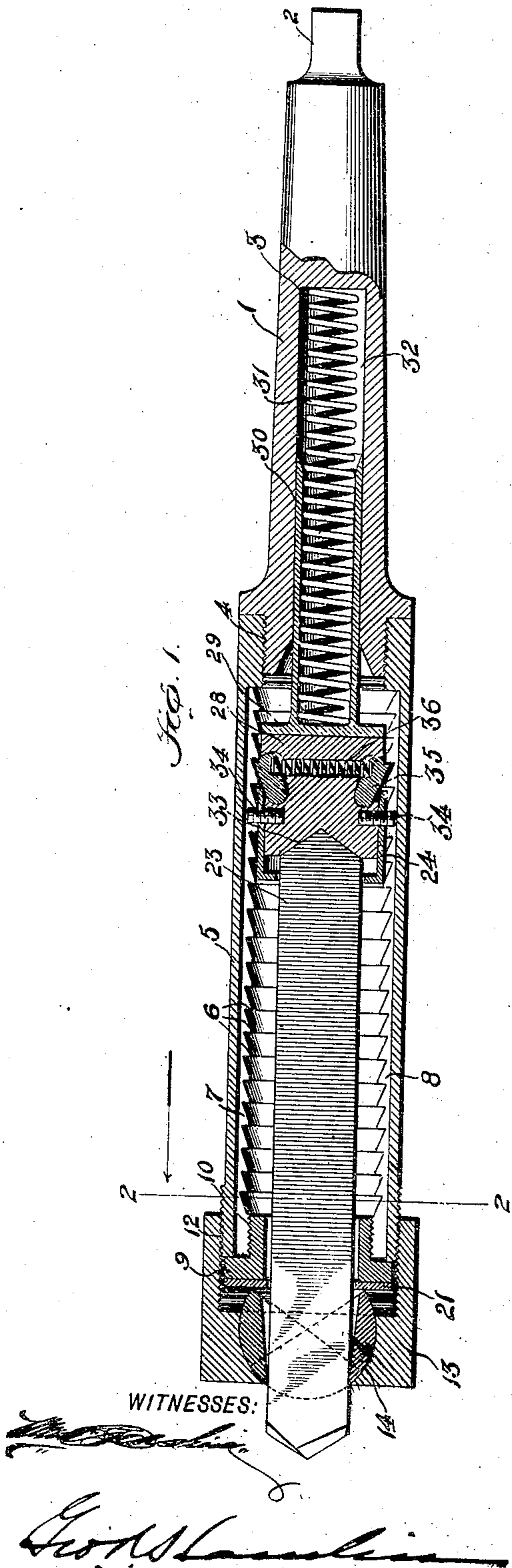


J. O. REYNOLDS.
CHUCK FOR HIGH SPEED DRILLS.
APPLICATION FILED DEC. 10, 1906.

928,700.

Patented July 20, 1909.



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UNITED STATES PATENT OFFICE.

JAMES O. REYNOLDS, OF EVANSVILLE, INDIANA.

CHUCK FOR HIGH-SPEED DRILLS.

No. 928,700.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed December 10, 1906. Serial No. 347,222.

To all whom it may concern:

Be it known that I, JAMES O. REYNOLDS, a citizen of the United States, residing at Evansville, county of Vanderburg, and State of Indiana, have invented certain new and useful Improvements in Chucks for High-Speed Drills, of which the following is a specification.

This invention relates to chucks for high speed drills.

The object of the invention is the provision of an improved chuck of the character set forth adaptable for use with either short or long drills, wherein a novel construction of yielding spring-actuated drill holder is provided, in connection with novel locking means or catches and other improved parts, whereby the drill may be turned and the locking means quickly released or positioned for engagement with a series of engaging devices to hold the drill in different positions.

The invention also contemplates the provision of novel means for supporting or guiding the drill which acts as an automatic self-centering guide and dirt excluder.

The adjustable drill holder and locking means enable the drill to be lengthened or shortened at the will of the operator.

The construction of the invention and the functions of its parts find full explanation in the following specification, and the novel features are recited in the appended claims.

In the accompanying drawings: Figure 1 is a longitudinal section of the invention showing the large spring partly compressed and the drill locked; Fig. 2, a cross-section on line 2—2 of Fig. 1; Fig. 3, a detail view showing the drill in section, looking toward the driving bushing in the direction of the arrow of Fig. 1; Fig. 4, a detail view of the cam sleeve; Fig. 4^a, an end view of the cam sleeve; Fig. 5, a detail side view of the self-centering guide; and Fig. 6, a face view of the self-centering guide.

The shank 1 of the tool is provided with a tang 2 to fit in the drill spindle and it is bored out or hollow at 3 and provided with a reduced screw-threaded part 4.

My improved chuck has a hollow or tubular shell or casing 5 provided on its interior with a series of annular teeth 6, each of which has a shoulder and an inclined part, these teeth being arranged in parallel circular rings as integral parts of the shell 5 and having diametrically opposite grooves or channels 7 and 8. Bearing against the outer

end of the shell or casing 5 is a driving bushing 9 (shown in detail in Fig. 3) which has a reduced screw-threaded part 10 screwed into the end of the shell or casing 5, and there extends through this driving bushing, an opening 11, which is composed of diametrically opposite and merging sector-shaped parts. Screwed onto the outer end of the casing 5, at 12, is a retaining and clamping cap 13, which has a semi-spherical concave or recess 14, which forms a socket for corresponding guide-sections 15 and 16, each of which forms a quarter-sphere, which are adapted to play side by side, said sections 15 and 16 being duplicates and each having flat faces 17 where they are juxtaposed and provided with flat bases 15' which have pockets 18 that receive coil springs 19 and 20, which bear against a washer 21 lying against the driving bushing 9, but the adjacent faces 17 of the guide-sections 15 and 16 are cut out, as shown at 22, to form an opening which is just large enough to easily receive the drill 23, the washer 21 having a slot through which the drill passes and said drill also passes through the opening 11.

The numeral 24 represents a cam sleeve which has one end solid with the exception of a slot 25 which receives the drill 23, said cam sleeve having opposite cam slots 26 and 27. Received within the cam sleeve is a lock-block 28, against which bears the head 29 of a tubular presser bar 30, which is urged by a catch spring 31, said presser bar 30 sliding in the hollow part 32 of the shell 1. The lock-block 28 has a conical concave 33, against which the end of the drill 23 abuts. Secured to the lock-block 28 are screw-pins 34, which lie in the cam slots 26 and 27 and are received in the grooves 7 and 8.

The numerals 35 represent locking dogs lying in concavities in opposite sides of the lock-block 28 and spread or urged apart by catch spring 36 lying in a diametrical opening in said lock-block.

In using the chuck, the shank 1 is first inserted in the machine spindle and the flat drill (whether short or long, narrow or broad) 23 is inserted through the slots 22 and 25 and seated in the concave 33, and pressed in so far, (the lock block and cam sleeve retreating against the pressure of the spring 31) that only the desired extent of the drill protrudes from the chuck. By turning the drill to the right, the cam sleeve 24 is turned and the locking dogs released and they then engage

the nearest of the teeth 6 and lock the parts against further inward movement. The cap 13 is then tightened and the engagement of the parts 15 and 16 of the guide with the washer 21 causes said parts 15 and 16 to grip and lock the outer part of the drill so the spring 31 cannot project said drill. On loosening the cap 13 and turning the drill to the left, the cam sleeve will engage and retract the locking dogs 35 and the drill can then be positioned as desired. The sections 15 and 16 constitute a self-centering and dust-excluding clamping guide for the drill.

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

1. In a drill chuck, the combination with a casing, of a drill holder movable freely lengthwise of the casing, and a releasable locking device carried by and movable with the drill holder which is adapted for securing the drill holder to the casing at different desired positions thereof.

2. In a drill chuck, the combination with a casing, of a drill holder movable freely lengthwise of the casing, and means for locking the drill holder in different desired positions comprising a plurality of teeth on the casing, and releasable locking means on the drill holder for engaging said teeth.

3. In a drill chuck, the combination with a casing having a plurality of successive annular teeth at different points along its length, of a drill holder movable lengthwise in the casing, locking means for engaging the teeth aforesaid, and means for disengaging the locking means from the teeth.

4. In a drill chuck, the combination with a

casing having a plurality of successive annular teeth at different points along its length, of a drill holder movable freely lengthwise in the casing, locking means carried by the drill holder for engaging or disengaging the teeth aforesaid, and means operated by independent movement of the drill for disengaging the locking means from the teeth.

5. In a drill chuck, the combination with a shell or casing, of a drill holder movable therein, releasable locking means for securing the drill holder at different points of the casing and adapted for disengagement from the casing when shifting the drill holder, and means operated by independent movement of the drill for operating the releasable locking means aforesaid.

6. In a drill chuck, the combination with a shell or casing having a plurality of teeth disposed at different points along the length thereof, of a rotatable drill holder sleeve having cams, a lock-block having pins cooperating with the cams on the sleeve, means on the casing engaging the pins, and a locking member carried by the lock-block and engageable with the teeth and sleeve.

7. In a drill chuck, the combination with a shell or casing, of an outwardly spring-actuated drill holder, and releasable means for locking the drill holder at different desired positions.

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

JAMES O. REYNOLDS.

Witnesses:

PERCY C. HOPKINS,
F. C. GORE.