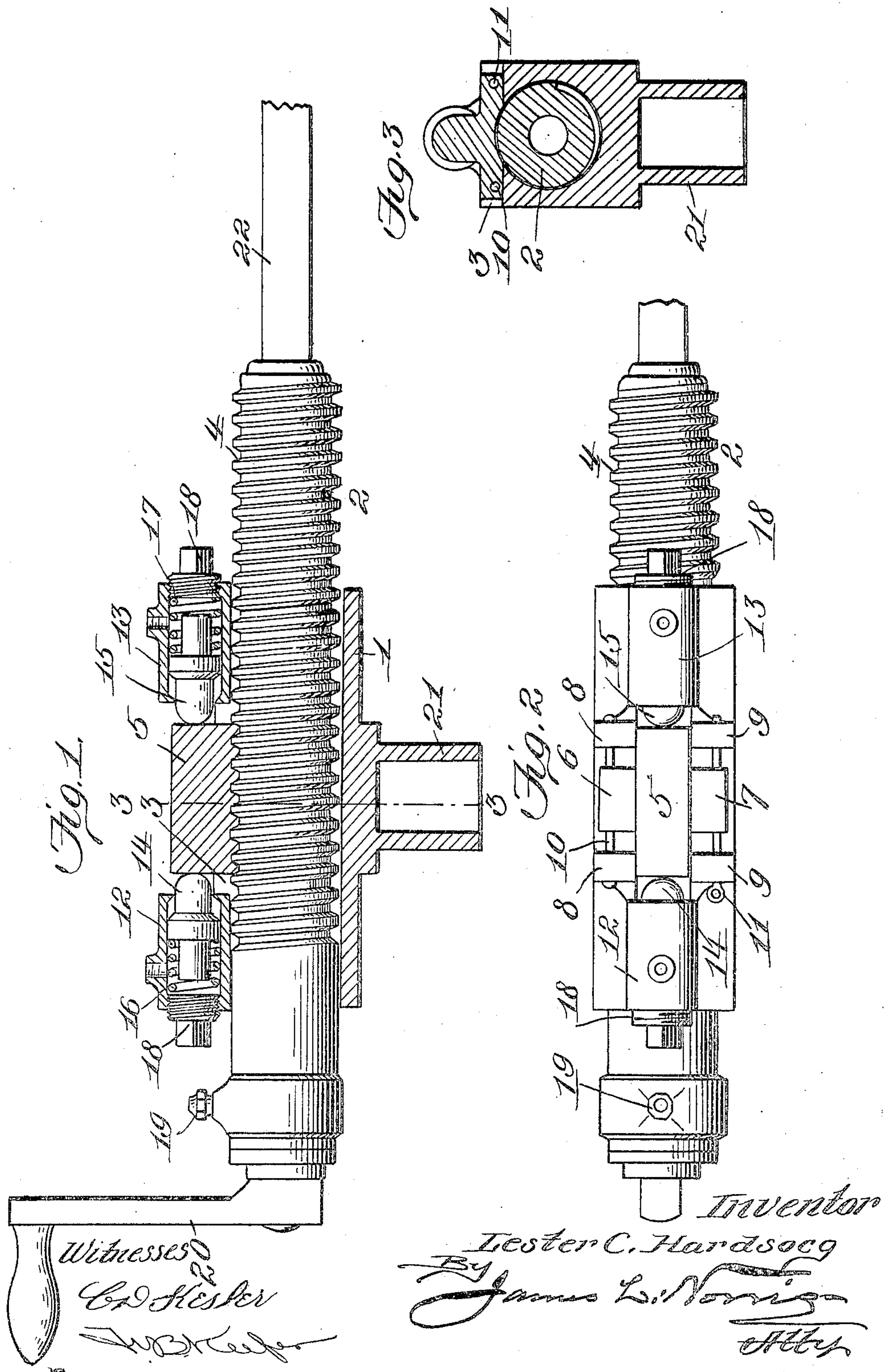


No. 808,837.

PATENTED JAN. 2, 1906.

L. C. HARDSOEG.
ROCK AND COAL DRILL.
APPLICATION FILED MAY 17, 1905.



UNITED STATES PATENT OFFICE.

LESTER C. HARDSOCK, OF OTTUMWA, IOWA.

ROCK AND COAL DRILL.

No. 808,837.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed May 17, 1905. Serial No. 260,786.

To all whom it may concern:

Be it known that I, LESTER C. HARDSOCK, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have invented new and useful Improvements in Rock and Coal Drills, of which the following is a specification.

This invention relates to certain new and useful improvements in rock and coal drills of the pneumatic type, and has for its objects to provide a novel manner of mounting the hammer to permit the same to rebound, to provide a novel means for cushioning the hammer in its movements in either direction, and generally to provide a drill which shall combine simplicity of structure with strength and with reliability in operation.

In order that the invention may be understood, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a view in sectional elevation of a drill constructed according to my invention. Fig. 2 is a top plan view of the same, and Fig. 3 is a section on the line 3 3 of Fig. 1.

Referring now to these drawings, 1 indicates a housing, which is provided with a cylindrical smooth bore for slidably receiving a hammer 2 and has in its upper side an opening 3 for a purpose to be described. The hammer 2 is screw-threaded on its outer side, as indicated at 4, and the screw-threads of the hammer are adapted to be engaged by corresponding threads on the under side of a block 5. The block 5 is substantially rectangular in shape and has projecting from its opposite sides extensions 6 7. Formed integral with the housing 1 on its upper side are lugs 8 9, arranged on opposite sides of the housing, and the block 5 is pivotally mounted on the upper side of this housing by means of a pintle 10, which is secured in the lugs 8 and passes through a suitable aperture in the extension 6. The block 5 may be swung out of engagement with the threads of the hammer 2 on the pintle 10 as a pivot, as will be understood. The said block when in position has its threads held in engagement with the threads of the hammer by means of a pin 11, which is passed through suitable apertures in the lugs 9 and the extension 7. The pintle 10 and the pin 11 also serve as guides for the block 5, the apertures in the extensions 6 and 7 being of a size to permit said extensions to slide freely over the pin and pintle and the lugs 8 and 9, respectively, being located a sufficient distance from each other

longitudinally of the housing to permit of a suitable movement of the block 5 in either direction on the said pintle and pin as guides.

On the upper side of the housing 1 at opposite ends of the block 5 are short cylinders 12 and 13, formed integral with the housing, in each of which is mounted a plunger 14 15, held by coiled springs 16 17 in normal engagement, respectively, with opposite ends of the block 5 when the latter is in its operative position. The tension of the springs 16 and 17 is regulated by nuts 18, screwed into the outer ends of the respective cylinders 12 13.

19 indicates the air connection for the hammer, 20 the crank-handle for turning the hammer to bring the drill up to the work, and 21 a cylindrical socket formed integral with the housing 1 on the under side for receiving the ordinary standard supporting the drill, said standard not being shown.

22 indicates the drilling-tool.

In operation as the drill 22 is forced outward by the blow from the piston in the hammer 2 under the pressure of air admitted at 19 in the ordinary manner the rebound of the hammer, due to impact of the piston with the drill, will be taken up by the plunger 14, controlled by the spring 16, the block 5, which is in engagement with the hammer 2, sliding on the pintle 10 and pin 11 in this operation. At the same time the forward movement of the hammer, such as would occur if the drill entered a hole and met no resistance, would be cushioned by the plunger 15, controlled by the spring 17. It will readily be apparent, however, without further description that the construction permits of the rebound of the hammer and that the hammer is cushioned in its movement in either direction and, furthermore, that these objects are attained by an exceedingly simple construction and arrangement of parts. Furthermore, my invention permits a quick change of drills without dismounting the machine or pulling it out of range with the hole. By simply throwing the block 5 out of engagement with the threads 4 and removing the hammer the drills can be passed through the housing 1.

In place of the springs 16 and 17 I contemplate employing compressed air in the cylinders 12 and 13 as the buffer agency for the plungers 14 and 15, and such modification is to be distinctly understood as being comprised within the purview of my invention.

I do not wish to be understood as limiting myself to the use of the pin 11 for locking the

block 5, as various other ways of locking said block may be employed without departing from the spirit of my invention.

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

1. In a drill of the class described, a housing, a longitudinally-movable block, a hammer mounted in said housing and movable with and adjustable with respect to said block, and means for cushioning the movement of said block in either direction.

2. In a drill of the class described, a housing, a hammer mounted therein, a block mounted to move longitudinally of the drill and having a screw-threaded engagement with said hammer, and buffers for receiving opposite end impacts of said block.

3. In a drill of the class described, a housing, a hammer mounted therein and provided with exterior screw-threads, a slidably-mounted block having screw-threaded engagement with said hammer, means for cushioning said block and means for turning said hammer.

4. In a drill of the class described, in combination with a housing, a hammer mounted therein, a hinged block slidably mounted on the housing having screw-threaded engagement with said hammer, and means for turning said hammer.

5. In a drill of the class described, a hous-

ing, a hammer mounted therein and provided with exterior screw-threads, a slidably-mounted block having screw-threaded engagement with said hammer, resilient buffers located at opposite ends of said block, and means for turning said hammer.

6. In a drill of the class described, a housing, a hammer mounted therein and provided with exterior screw-threads, a slidably-mounted block having screw-threaded engagement with said hammer, spring-controlled plungers located at opposite ends of said block for cushioning the movements of the same, and means for turning said hammer.

7. In a drill of the class described, a housing, a hammer mounted therein and provided with exterior screw-threads, a slidably-mounted hinged block having screw-threaded engagement with said hammer, spring-pressed plungers located at opposite ends of said block for cushioning the movements of the same, means for adjusting the tension of the springs of said plungers, and means for turning said hammer.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LESTER C. HARDSOCK.

Witnesses:

J. L. GRAHAM,
W. H. FARMER.