No. 819,744. PATENTED MAY 8, 1906.

S. A. EIERMANN.

DRILL CHUCK.

APPLICATION FILED JULY 6, 1905.

Fig. 1.

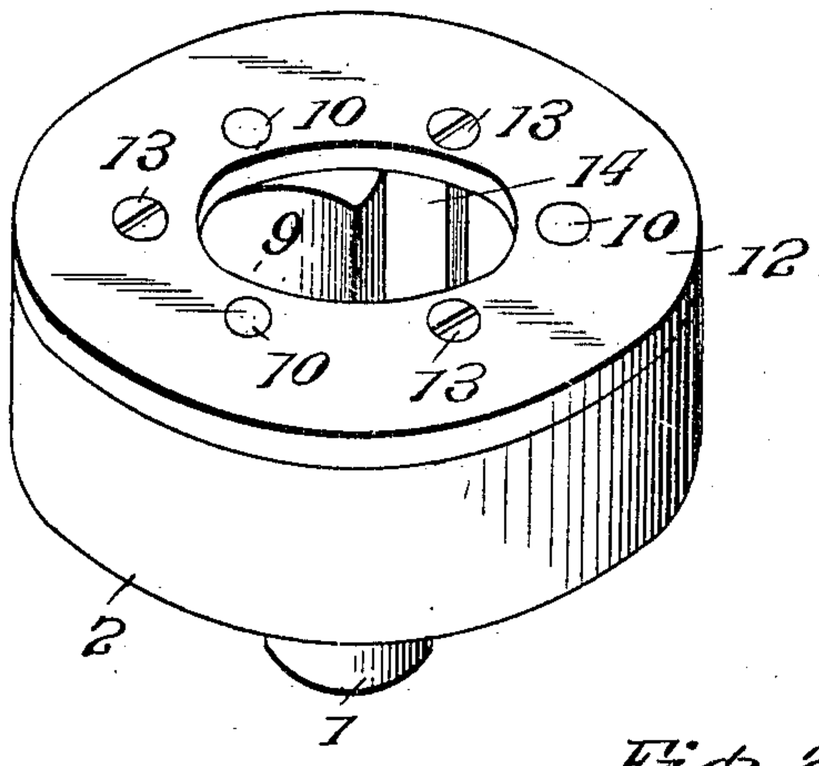


Fig. 3.

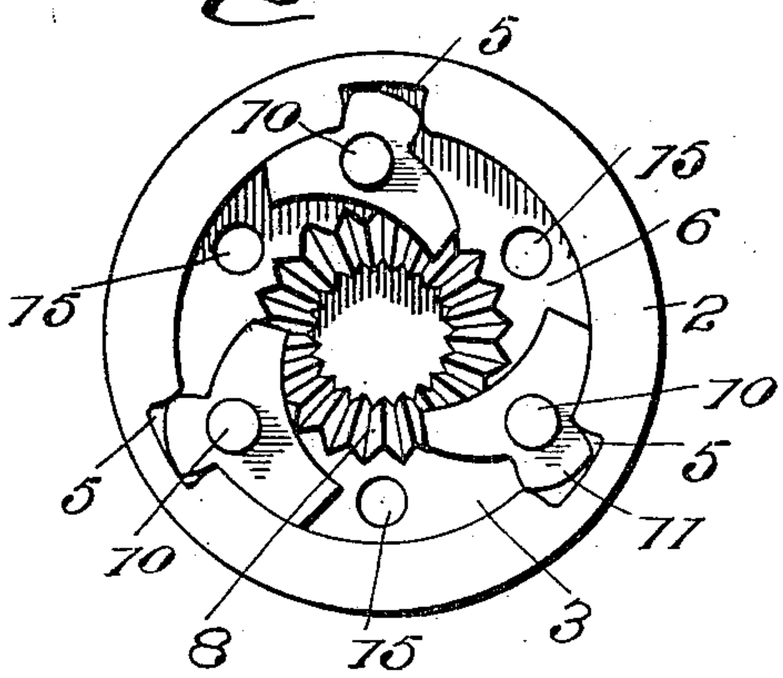


Fig. 2.

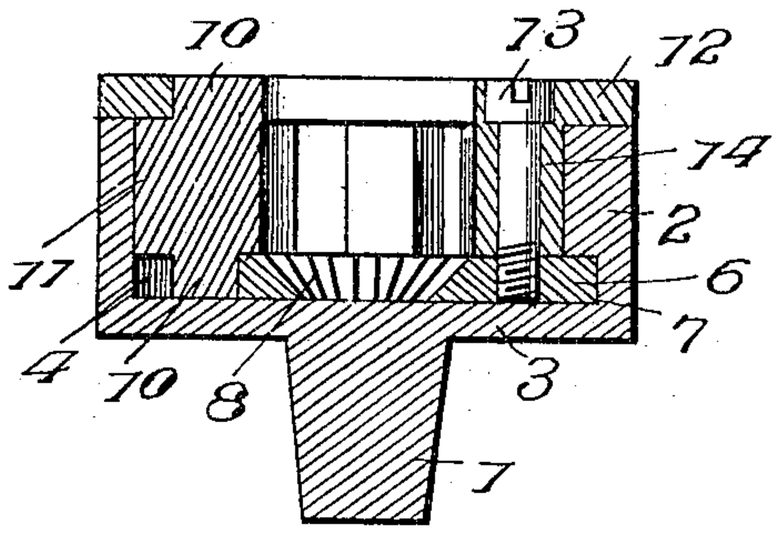


Fig. 4.

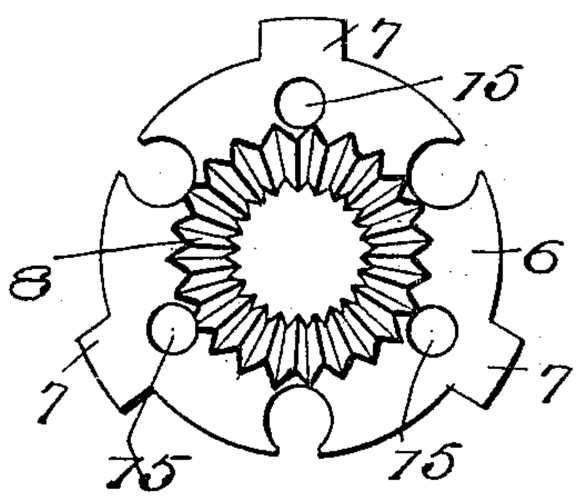
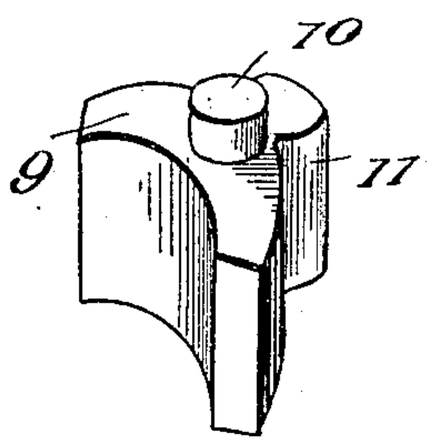


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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DRILL-CHUCK.

No. 819,744. Specification of Letters Patent. Patented May 8, 1906.

Application filed July 6, 1905. Serial No. 268,295.

To all whom it may concern:

Be it known that I, SOPHUS A. EIERMANN, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Drill-Chucks, of which the following is a specification.

This invention aims to provide a chuck of novel structure for holding drills and kindred tools desired to be quickly and securely held and to be instantly released and removed from the chuck.

The invention consists, essentially, of the peculiar formation of the casing and the adjunctive parts, whereby the working elements may be quickly and conveniently assembled and easily removed to admit of repairs being made or to provide for cleaning, inspecting, of other purpose.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a chuck embodying the invention. Fig. 2 is a vertical central sectional view thereof. Fig. 3 is a top view, the cap-plate being removed. Fig. 4 is a plan view of the inner plate. Fig. 5 is a detail perspective view of one of the dogs.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The body of the chuck is provided with a shank 1, which may be of any form to admit of fitting the chuck to a rod or other part to which it is to be attached. The body comprises a shell or rim 2 and an end wall 3, the parts 1, 2, and 3 being preferably of integral formation. An annular groove 4 is formed in the inner wall of the shell or rim 2 adjacent to the end wall 3, and longitudinal grooves 5 intersect therewith. The longitudial grooves 5 are equidistant from one another and have a parallel arrangement. A plate 6 is loosely fitted within the shell or rim 2 and is rotatable therein, being prevented from outward displacement by lugs 7, which enter and operate in the annular groove 4, said lugs being adapted to pass through the longitudinal grooves 5 when the plate 6 is adjusted to bring said lugs in registry with said grooves 5. The plate 6 is formed with a central opening around which is arranged a series of teeth 8.

The dogs or gripping-jaws are double ended and comprise a curved body 9, a hub 11, and trunnions 10. The end portions of the body are similarly formed to provide like gripping-jaws, and the hub 11 is centrally disposed. When the dogs are in position, their hubs snugly fit the respective longitudinal grooves 5, and the trunnions 10 are journaled in openings formed in the inner plate 6 and a companion outer plate 12. The two plates 6 and 12 are connected together by means of machine-screws 13 or like fastenings, which will admit of ready separation of the plates when it is required to gain access to the interior of the chuck for any purpose.

The outer plate 12 corresponds in diameter with the diameter of the shell or rim 2, so as to come about flush therewith at its outer periphery. The edge of the outer plate 12 is preferably milled, knurled, or otherwise roughened to enable the operator to obtain a firm grip thereon when it is required to return the plate for operating the chuck either to release or to secure the tool when placed in position. The plate 12 is formed with a central opening of a size to admit of the end of the drill or like tool being inserted into the chuck so as to be engaged by the jaws of the dogs or gripping elements. Projections 14 extend from the inner side of the plate 12 between the dogs and constitute spacers, at the same time assisting in making the device a solid structure. The outer edges of the projections 14 are preferably hollow or inwardly grooved to provide a close fit and to prevent scales from collecting so as to interfere with the proper working of the different parts.

When assembling the parts, the inner plate 6 is slipped into the shell or rim 2, its lugs 7 passing through the longitudinal grooves 5, after which said plate is turned to throw the lugs 7 out of registry with the grooves 5, whereby the plate is held in position. The dogs are next placed in position with their inner trunnions fitted into openings 15 of the

plate 6 and with their hubs 11 seated in the longitudinal grooves 5. The outer or cap-plate 12 is next placed in position with the projections 14 coming between the dogs and with the outer trunnions of said dogs fitted into openings thereof. The machine screws or fastenings 13 are next placed in position and connect the plates 6 and 12, thereby completing the chuck. Rotation of the plate 12 in one direction or the other causes oscillation of the dogs, whereby one or the other of their ends is thrown into operative position so as to grip the tool inserted in the chuck.

My improved chuck is designed principally to be used on stay-bolts for boiler-work, but is of course applicable for holding other work and also tools. When the stay-bolt or the shank of the tool is inserted through the central aperture or opening in the chuck, the end of the bolt or tool shank is brought tight against the toothed or roughened surface of the inner plate 3, and then when the chuck is rotated in the lathe or the like the friction caused by the end of the bolt or shank bearing against the toothed surface of the plate 3 will cause the latter to be retarded in its movement relative to the other parts of the rotating chuck, and this it will be seen will result in binding the dogs or jaws 9 tightly against the bolt or shank and assist in holding the same securely in place.

Having thus described the invention, what is claimed as new is—

1. In a chuck, the combination of a shell having an annular groove and equidistant longitudinal grooves in its inner walls, an inner plate having lugs at its periphery to pass through said longitudinal grooves and enter said annular groove, an outer plate connected to the inner plate for synchronous movement therewith, and dogs arranged between the two plates and journaled thereto, and having hubs fitted in the longitudinal grooves of the shell.

2. In a chuck, the combination of a shell, clutching-pawls mounted therein, and a rotatable plate in the shell connected with said pawls to lock the same into engagement with the work, the outer face of said plate being roughened as and for the purpose set forth.

3. In a chuck, the combination of a shell having an annular groove and equidistant longitudinal grooves, an inner plate having lugs at its periphery to pass through said longitudinal grooves and enter said annular groove whereby said plate is mounted to rotate within the shell, dogs or pawls mounted upon said plate and provided with hubs seated in said longitudinal grooves whereby the rotation of the plate with respect to the shell will actuate said pawls, and an outer plate mounted on the shell to connect with the first-named plate, the outer face of the first-named plate being roughened or toothed as and for the purpose set forth.

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

SOPHUS A. EIERMANN. [L. S.]

Witnesses:
ROBERT E. ALLEN,
SAM H. FARNSWORTH.