(No Model.)

A. SAUNDERS.

CHUCK.

No. 265,639. Patented Oct. 10, 1882.

Fig. 1.

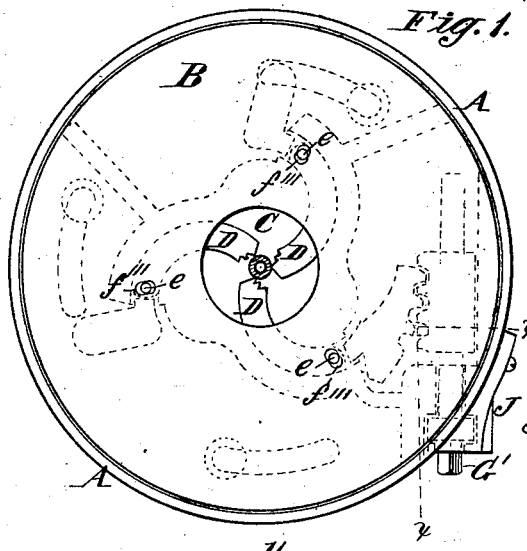


Fig. 2.

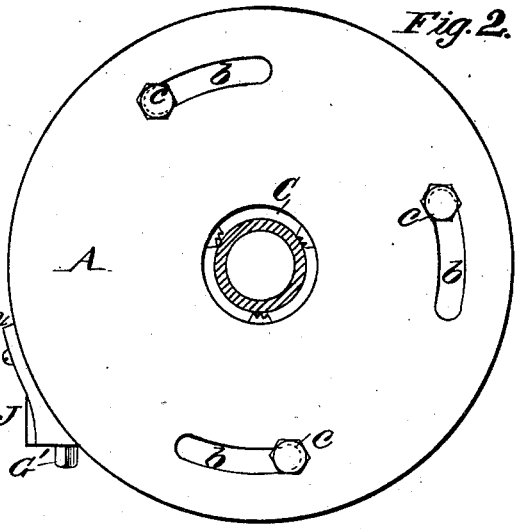


Fig. 3.

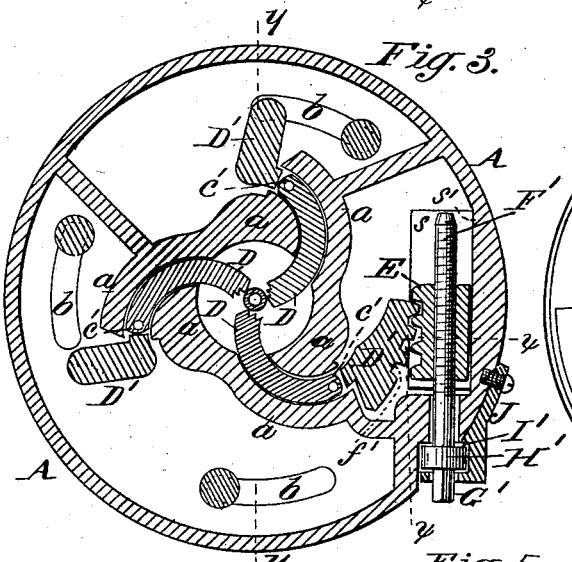


Fig. 4.

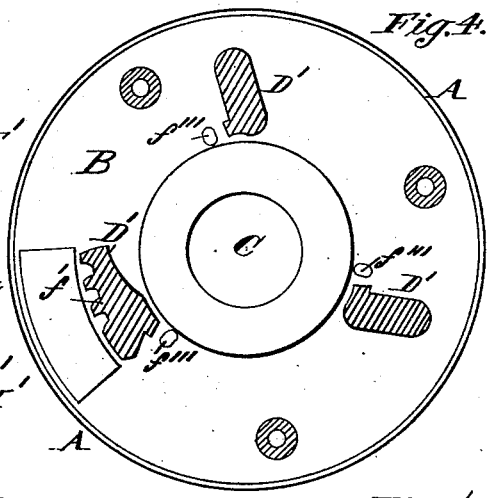


Fig. 5.

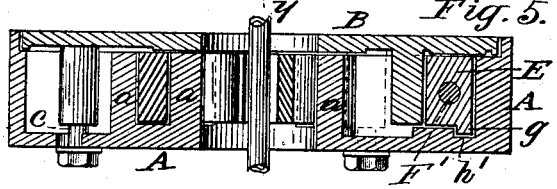


Fig. 6.

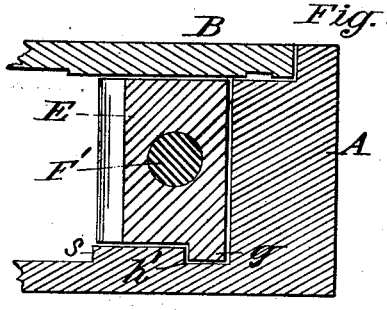
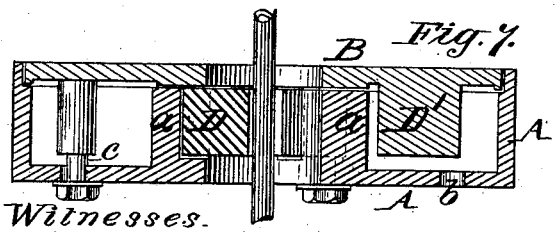


Fig. 7.



Witnesses.
Robert W. Matthews
Thomas E. Crossman

Inventor.
Andrew Saunders.
per James A. Whitney Atty.

UNITED STATES PATENT OFFICE.

ANDREW SAUNDERS, OF YONKERS, NEW YORK, ASSIGNOR TO D. SAUNDERS' SONS, OF SAME PLACE.

CHUCK.

SPECIFICATION forming part of Letters Patent No. 265,639, dated October 10, 1882.

Application filed April 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, ANDREW SAUNDERS, of Yonkers, in the county of Westchester and State of New York, have invented certain Improvements in Chucks, of which the following is a specification.

This invention relates to certain improvements in the apparatus shown and described in Letters Patent of the United States No. 204,254, issued to me May 28, 1878; and my present invention comprises a certain novel combination of parts for actuating the gripping-jaws of the chuck, whereby greater strength, durability, and non-liability to accidental derangement of the parts are secured.

Figure 1 is a side view of a chuck made according to my invention with certain of the internal parts thereof represented in dotted outline, and Fig. 2 is a similar feature of the opposite side. Fig. 3 is a central transverse sectional view of said chuck. Fig. 4 is an inside view of the cap-plate of the chuck. Fig. 5 is a transverse sectional view of the chuck in a plane at right angles to Fig. 3. Fig. 6 is a transverse sectional view, on a larger scale taken in a plane parallel with that of Fig. 5, and in the line *x x* with Figs. 1 and 3. Fig. 7 is a transverse sectional view taken in the line *y y* of Fig. 3—that is to say, in a line at right angles to Fig. 5.

A is the flat circular shell of the chuck, and B is the cap-plate fitted into the open side of the shell, as shown in Figs. 1 and 5. Formed on the inner surface of the flat side of the shell itself are guides *a*, and shaped on the arc of a circle which, if continued, would intersect the center or axis of the shell. It is of course to be understood that said shell, together with the cap-plate, has the usual central orifice or opening, C, into which the gripping-jaws of the device converge in the operation of the chuck.

The gripping-jaws are shown at D, and are of the arc shape represented in Figs. 1 and 3, being placed in the guides *a*, so as to move each on the arc of a circle, the several arcs intersecting at the center or axis of the shell. It is therefore manifest that the jaws being moved simultaneously inward upon a pipe or rod thrust into the opening C, the said pipe or rod will be gripped by the said gripping-jaws and held in a position axial to the chuck.

On the inner surface of the cap-plate B are provided shoulders D′, which, when the cap-plate is placed in position, project into the interior of the shell.

In the shell A are three slots, *b*, formed on arcs of circles concentric with the center or axis of the chuck. Extended through these slots are screws *c*, the heads of which retain the cap-plate upon the shell. The shoulders D′ correspond in number with the gripping-jaws, and each of said shoulders bears against the rounded rear end, *c′*, of one of said gripping-jaws. From the end *c′* of each gripping-jaw D projects a pin or stud, *e*, through a radial slot, *f‴*, in the adjacent part of the flat side of the cap-plate B. One of the shoulders D′ is constructed with a tooth-sector, *f′*, the curvature of the sector being substantially concentric with the circular circumference of the chuck.

E is a sliding tooth block or rack, which moves in a guide, *s*, the position of which is that of a chord of the circle described by the circumference of the chuck. In order that this block or rack E may not be displaced in an inward direction, it is constructed with a longitudinal rib or spline, *g*, which extends into and works within a guideway, *h′*. This block or rack E gears into the teeth of the sector *f′*, so that a longitudinal movement of the said rack will act upon the said sector to move or turn the cap-plate, so that the shoulders D′ of the latter will bear upon the outer extremities of the jaws to move the same inward or permit the same to move outward, as the case may be.

The requisite longitudinal movement of the said block or rack is secured by means of a screw, F′, the inner end of which fits into a nut formed internally and longitudinally in the block or rack E. The outer end of the said screw is squared, as shown at G′, to permit the application of the wrench throughout to turn the said screw in one direction or another, as the occasion may require. At the inner end of said square portion G′ the screw is provided with a circumferential collar or flange, H′. The inner edge of the said collar H′ rests against the bottom a^2 of a socket, I′, formed in the circumference of the circular shell A, and a bracket, J, has its end so fitted upon the outer side of the collar H′ of the screw as to pre-

vent the latter from moving upward, the said end of the bracket J, in conjunction with the bottom of the socket I′, preventing any endwise movement of the screw, and thereby enabling it to act upon the block or rack E to give a longitudinal movement thereto in one direction or another, according as the screw is turned one way or another, thereby giving a movement to the cap-plate B in one direction to cause the shoulders D′ to force inward the gripping-jaws D to grip or clutch the article for the holding of which the chuck may be employed, or, as the case may be, for turning the said cap-plate in a reverse direction to withdraw the shoulders D′ away from the outer ends of the gripping-jaws to permit the latter to recede so as to enlarge the available opening at the center of the chuck to receive the article to be gripped. The block or rack E has its rear or outer surface resting against the inner surface *s*′, and is prevented from moving inward against the sector *f*′ or to tend to bend the screw F′, inasmuch as the spline or rib *g* fits into the groove *h*′ of the shell, as hereinbefore set forth, while any lateral displacement of the sector is prevented by the fact that one of the sides rests against the flat inner surface of the shell A, while its opposite side in like manner rests against the flat inner surface of the cap-plate B.

By means of the several combinations of parts just hereinbefore described I am enabled to actuate the gripping-jaws in a speedy and effective manner.

The mechanism is strong and durable, and there is no undue or excessive wear on any one part of the apparatus, and the arrangement of the devices employed to give inward or gripping movement to the jaws D is rendered practically out of the question.

What I claim as my invention is—

1. The sliding block or rack E, the screw F′, and the jaws D, provided upon the part A of the chuck, in combination with the tooth-sector *f*′ and the shoulders D′ on the other part, B, all substantially as and for the purpose herein set forth.

2. The toothed block or rack E, constructed with a rib or spline, *g*, part A, constructed with a socket, I′, and carrying the jaws D, and toothed block or rack E, the screw F′, having the flange or collar H′, and the bracket-piece J, in combination with the part A, constructed with a tooth-sector, *f*′, to shoulder D′, all substantially as and for the purpose herein set forth.

ANDREW SAUNDERS.

Witnesses:

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