No. 755,246. PATENTED MAR. 22, 1904.

O. S. ROCKWELL & S. E. HORTON.

CHUCK.

APPLICATION FILED JULY 17, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

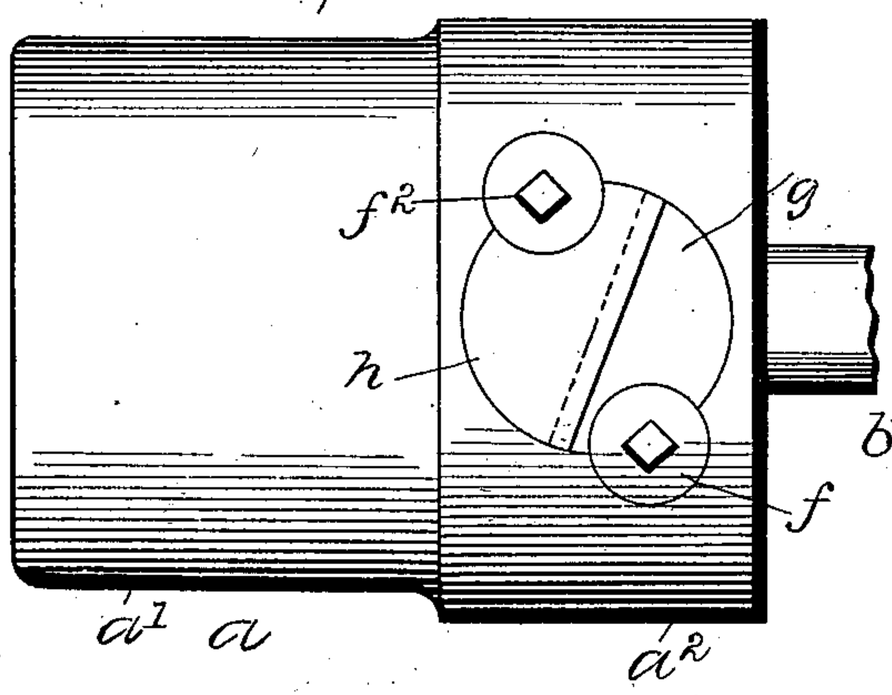


Fig. 2.

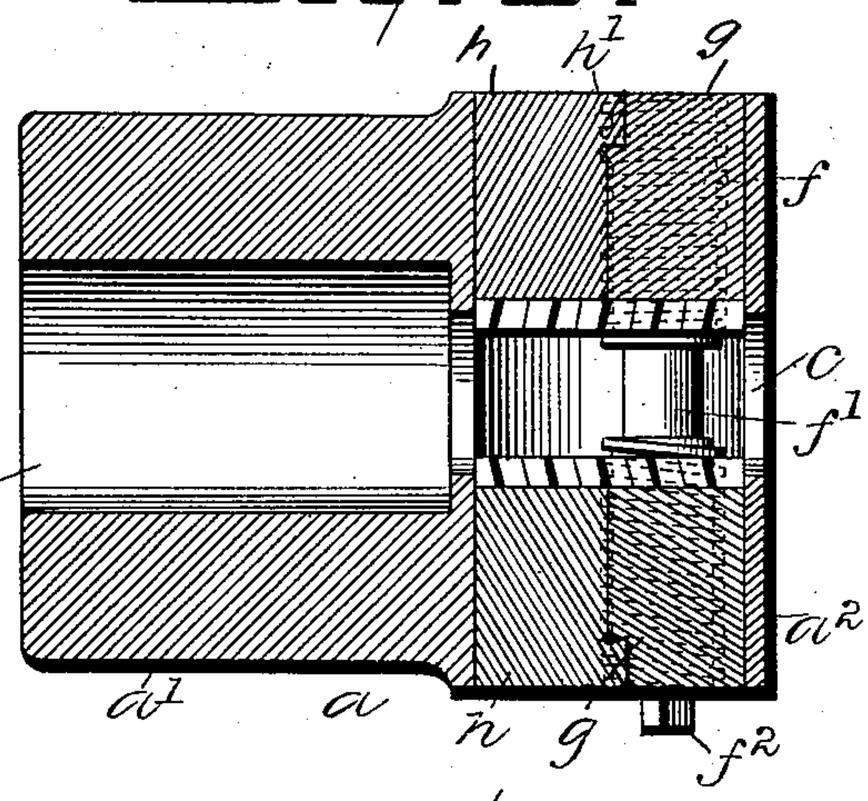


Fig. 3.

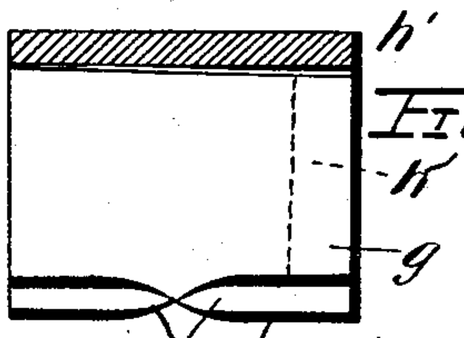


Fig. 4.

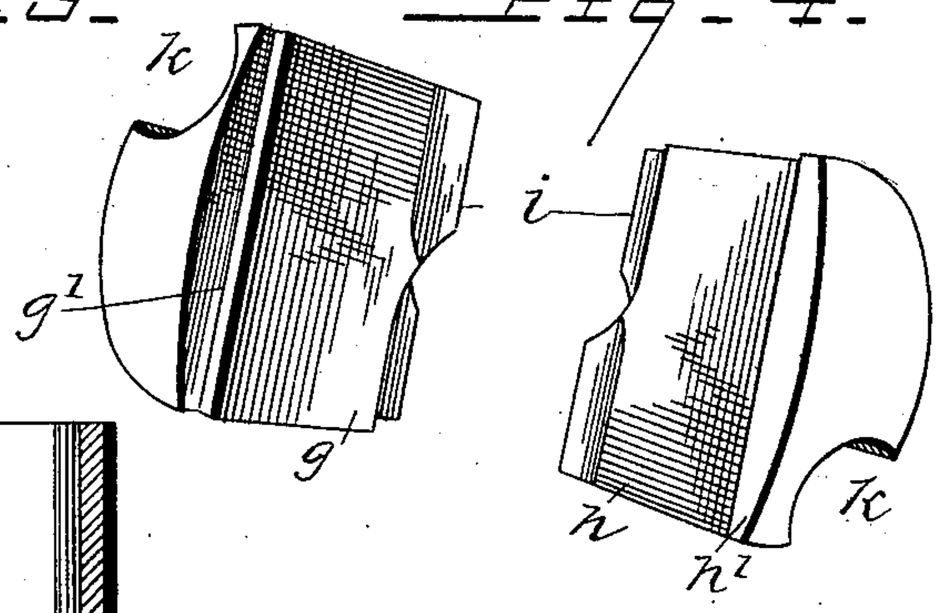
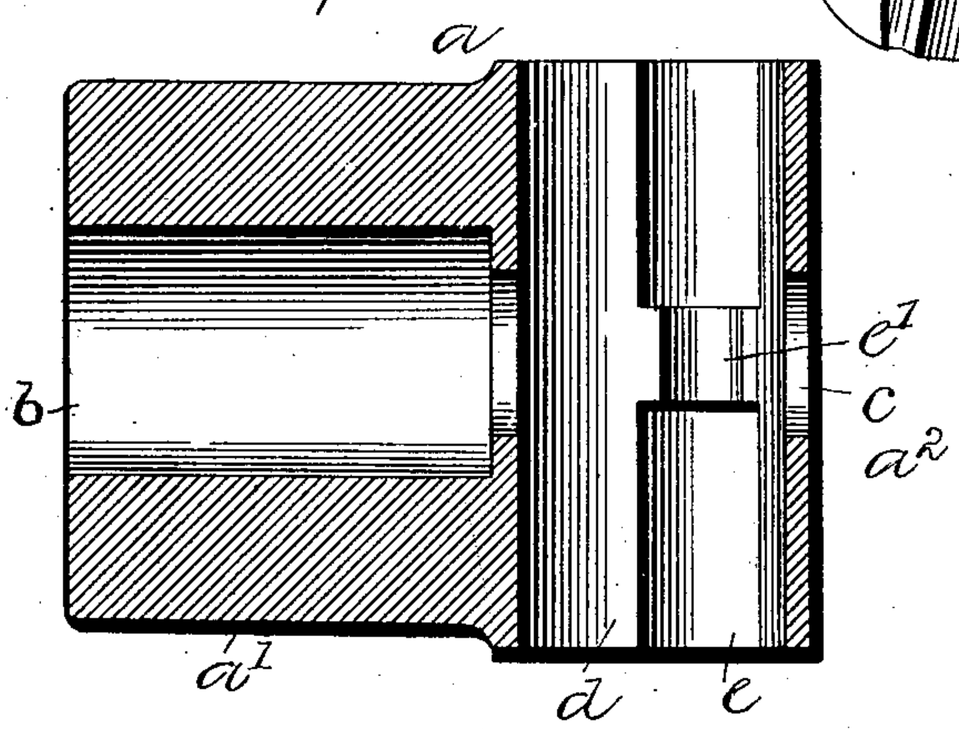
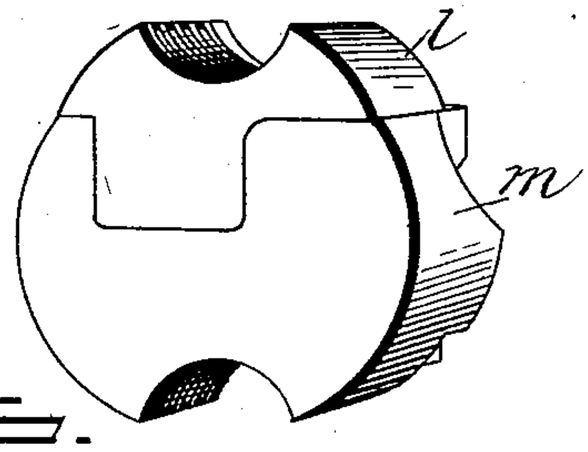


Fig. 5.





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No. 755,246. PATENTED MAR. 22, 1904.

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CHUCK.

APPLICATION FILED JULY 17, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 6.

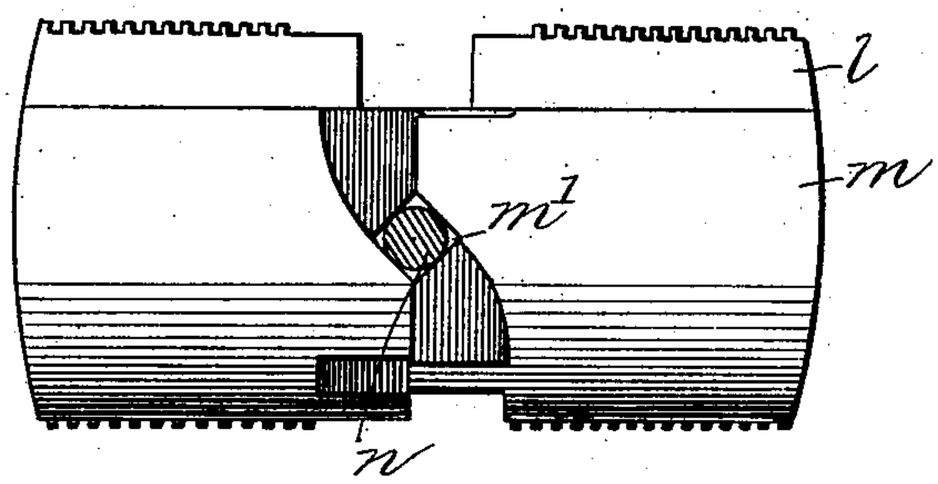


Fig. 7

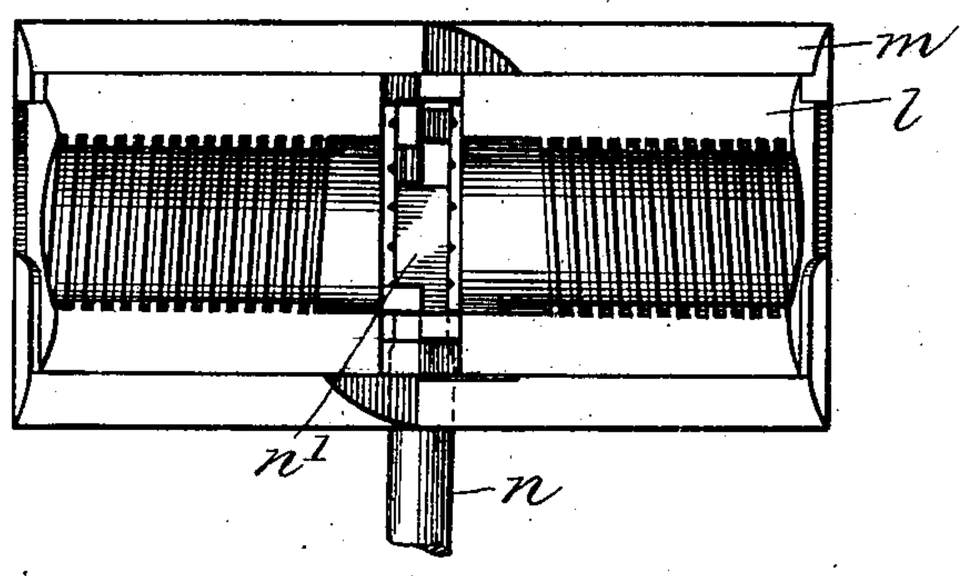
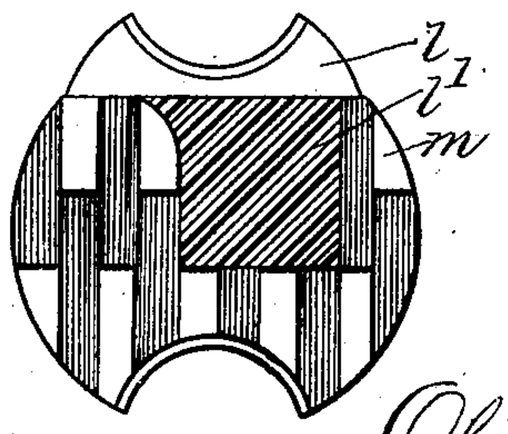


Fig. 8.



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No. 755,246. Patented March 22, 1904.

UNITED STATES PATENT OFFICE.

OLIN S. ROCKWELL, OF ENFIELD, AND SIDNEY E. HORTON, OF WINDSOR LOCKS, CONNECTICUT, ASSIGNORS TO THE E. HORTON & SON COMPANY, OF WINDSOR LOCKS, CONNECTICUT, A CORPORATION OF CONNECTICUT.

CHUCK.

SPECIFICATION forming part of Letters Patent No. 755,246, dated March 22, 1904.

Application filed July 17, 1903. Serial No. 165,935. (No model.)

To all whom it may concern:

Be it known that we, OLIN S. ROCKWELL, of Enfield, and SIDNEY E. HORTON, of Windsor Locks, both in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Chucks, of which the following is a specification.

Our invention relates to the class of devices used for holding the shank of a drill or similar tool or a piece of work while an operation necessitating the rotation of a part is being performed.

The object of our invention is to provide a device of this class that shall occupy but comparatively small space, while possessing the greatest degree of efficiency as to holding power, and at the same time shall be capable of exerting a positive or a frictional grip upon the part to be held. A form of device by means of which these objects may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a chuck embodying our improvement. Fig. 2 is a view in central lengthwise section through the chuck. Fig. 3 is a view in central lengthwise section through the body of the chuck with the jaws and operating parts removed. Fig. 4 is a view in perspective showing the improved form of jaws. Fig. 5 is a view showing a modified form of jaw. Fig. 6 is a view in side elevation of the form of jaw shown in Fig. 5, showing shank of a drill in place. Fig. 7 is a top view of the same, showing the positive grip upon the shank of a drill. Fig. 8 is a view of the gripping-face of one of the pairs of said jaws. Fig. 9 is a detail view in section through the lip of one of the jaws, showing to an exaggerated extent the position of the parts just before the lip exerts any force on the shoulder of the opposite jaw.

In the accompanying drawings the letter *a* denotes the body of the chuck, having an enlarged opening *b* extending centrally from one end and terminating at the other end in a smaller opening *c*. This body includes what may be termed a "shank" *a'* and a "head" a^2. The head a^2 is provided with a jaw-recess *d* and operating-screw recesses *e*, these recesses extending in a diametrical direction through the head and the latter being located in the wall of the former and preferably on diametrically opposite sides thereof. Operating-screws *f* are located in the recesses *e*, the central portion of the screws being reduced, as at *f'*, which reduced portion is located in the reduced portion *e'* of the recess, this construction preventing endwise movement of the screw, but allowing it rotative movement. Each screw is provided on opposite sides of the reduced portion *f'* with a thread extending in an opposite direction or oppositely formed to that on the opposite end of the screw. Each screw is also provided with a squared end f^2 or with similar means by which the screw may be turned. Jaws *g h* are located in the recesses *d*, two pairs, each consisting of a jaw *g* and a jaw *h*, being located one pair in each portion of the recess on opposite sides of the opening *c*. Each jaw is provided with a grip *i* and a recess *k* for the operating-screw. The members of each pair of jaws are nicely fitted together, so that the one shall have a bearing upon the other, and in the form of jaw shown in Fig. 4 a shoulder *g'* is provided on the member *g*, against which a lip *h'* on the jaw *h* abuts.

It will be seen from the construction above described that by rotating one of the screws *f* one member of each pair of jaws will be moved toward or away from the corresponding member of the opposite pair. In this form of construction a large amount of gripping power is provided, occupying but comparatively a small length of the chuck, and one member of each pair of jaws is backed up and supported by the opposite member.

One of the advantages derived from the improved construction is a gain in the grip-power of the jaws upon the article to be held therein. As one member of a pair of jaws is moved inward by the operating-screw and bears against the article to be held the force exerted by the screw and the resistance of the article causes that edge of the jaw located on the same side

as the screw to be forced slightly inward and the opposite edge slightly outward. This causes the jaw to be tipped slightly from normal position, as shown in Fig. 9 of the drawings. As the lip on the opposite member of the pair comes against the shouldered jaw the lip first strikes that edge of the shouldered jaw which has been forced outward by the action of the screw. The pressure of the lip upon the shoulder tends to restore the tipped jaw to its normal position. This manner of applying force to one edge of said jaw to restore it to normal position causes an increased bite or grip to be exerted upon the article to be held over that which could be had were the two members moved inward simultaneously without any tipping movement of one over the other and the application of force to restore the tipped member to its normal position.

In the form of the device shown in Figs. 5, 6, 7, and 8 the two members *l m* of each pair of jaws are mortised together, the operation, however, of the two forms of jaws described herein being in many instances practically the same. In the latter construction the oppositely-disposed jaws *m* form an angularly-shaped opening *m'*, extending laterally across and between the jaws within which the rounded part of the shank *n* of a drill or like tool is held with a frictional grasp. The two oppositely-disposed jaws *l* are formed on their meeting ends with the surface *l'*, formed practically parallel with each other, so that the angularly-formed end *n'* of a drill-shank is positively held against turning movement. This provides a construction in which in a comparatively short distance lengthwise of the chuck-body the drill-shank may be held by both a frictional and a positive grip, this result being effected within the space that would be occupied by a single set of jaws, the one arranged opposite the other. The jaws *m*, in fact, center the drill-shank, and the jaws *l*, being then closed together, assist in holding the shank, which is positively prevented from turning movement.

While we have shown and described herein a means of carrying out the invention, it is obvious that the form of construction shown may be departed from to a considerable extent and yet come within the spirit and scope of the invention, and we do not desire or intend to limit ourselves to the exact form herein illustrated, but intend to include and embody all forms which shall effect the desired result.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In combination in a chuck, a body part having an opening, a jaw-recess extending laterally of said opening, a pair of jaws having its members located both on one side of said opening and in said recess, and means whereby the jaws may be operated independently.

2. In combination in a chuck, a body part having an opening and a jaw-recess extending laterally of said opening, pairs of jaws arranged in said jaw-recess, the members of each pair being located side by side and bearing one upon the other, and means for independently operating the members of each pair of jaws.

3. In combination in a chuck including a body part having an opening and a jaw-recess extending laterally of said openings, pairs of jaws located in the jaw-recess, the members of each pair being located side by side and having a bearing upon each other, and screws for independently operating the members of each pair of jaws.

4. In a chuck, in combination, a body part having an opening and a jaw-recess located laterally of said opening, pairs of jaws oppositely arranged in the jaw-recess, the members of each pair being divided on a line extending lengthwise of the jaws whereby a sliding movement of the members one upon the other is permitted, and means for independently operating the jaws.

5. In a chuck, in combination with a body part having an opening and a jaw-recess located laterally of said opening, pairs of chuck-jaws oppositely arranged in said recess, the members of each pair being divided on a lengthwise line to provide an extended bearing-surface for the one upon the other, and means for independently operating the jaws.

6. In a chuck, in combination, a body part having an opening, a jaw-recess located on one side of said opening, a pair of jaws located in said recess, both on one side of said opening and having a bearing-surface the one upon the other, means appurtenant to said members for supporting each other against lateral movement, and means for independently operating the jaws.

7. In a chuck, in combination, a body part having an opening, a jaw-recess located on one side of said opening, a pair of jaws located in said recess, both on one side of said opening, one of the members of the pair having an overlapping part arranged to abut against and support the opposite member, and means for independently operating the jaws.

8. In a chuck, in combination, a body part having an opening and a jaw-recess located laterally of said opening, pairs of jaws oppositely disposed in said opening, each pair being divided on a lengthwise line and one member of each pair having an overlapping part to back up and support the opposite member, and an operating-screw for independently moving the oppositely-disposed members of each pair.

9. In a chuck, in combination, a body part having an opening, a jaw-recess located on one side of said opening, a pair of jaws having its members located side by side in said recess on one side of said opening, said jaws having fric-

tional and positive holding means for an article placed therein.

10. In combination in a chuck, a body part having an opening and a jaw-recess located on one side of said opening, pairs of jaws oppositely arranged in said jaw-recess, each on one side of said opening, the members of each pair being located side by side and bearing one upon the other, said jaws having frictional and positive holding means for an article placed therein, and means for independently operating the jaws.

11. In combination in a chuck, a body part having an opening and a jaw-recess extending laterally of said opening, pairs of jaws oppositely arranged in said jaw-recess, the members of each pair being located side by side, frictional holding means on two oppositely-disposed jaw members, and positive holding means on the other two jaws for holding an article with a positive grasp, and means for independently operating the jaws.

12. In combination in a chuck, a body part having an opening and a jaw-recess extending laterally of said opening, pairs of jaws oppositely arranged in said jaw-recess, each on one side of said opening, one member of each pair being mortised into the opposite member and sliding thereon, frictional and positive holding means between the oppositely-disposed members of each pair, and means for independently operating the jaws.

13. In combination in a chuck, a body part having an opening, a jaw-recess extending laterally of said opening, a pair of jaws having its members located side by side in said recess and bearing one upon the other, and means for independently moving the members of the pair in the same direction to clamp a piece of work.

14. In combination in a chuck, a body part having an opening, a jaw-recess extending laterally of said opening a pair of jaws located in said recess and means for independently moving the members of said pair of jaws.

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