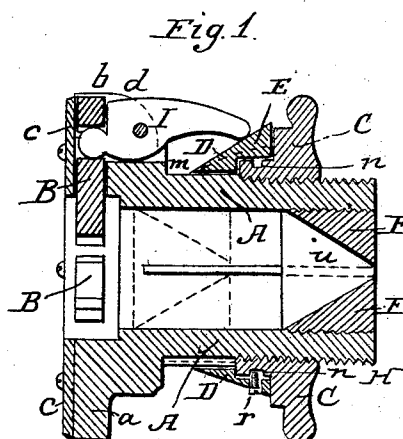
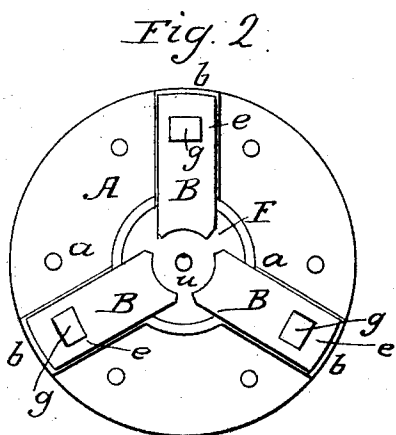


I. SMITH.

Chuck.

No. 56,330.

Patented July 10, 1866.



Witnesses:
J. W. Coombs
L. Holmes

Inventor:
Isaac Smith

UNITED STATES PATENT OFFICE.

ISAAC SMITH, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND WM. H. HAIGHT, OF SAME PLACE.

IMPROVEMENT IN CHUCKS.

Specification forming part of Letters Patent No. 56,330, dated July 10, 1866.

To all whom it may concern:

Be it known that I, ISAAC SMITH, of the city, county, and State of New York, have invented certain new and useful Improvements in Chucks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central longitudinal section of a chuck constructed according to my invention. Fig. 2 is an end view of the same, with the annular plate that covers the forward end removed.

Similar letters of reference indicate corresponding parts in both figures.

This invention relates to that class of chucks which are employed for concentrically holding drills or other tools with shanks of different sizes, and for holding wires or rods during the operation of turning the same; and it consists in a novel combination of a screw, inclined planes, and levers for operating the dogs of the chuck, whereby a very powerful gripping action is exerted upon the article held therein.

The invention further consists in a novel arrangement of parts, whereby the chuck is rendered very strong and compact, and whereby the most efficient operation of the said screw, inclined planes, and levers is effectually obtained.

To enable others skilled in the art to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawings.

A represents the tubular body of the chuck, upon the front or forward end of which is formed a rim or flange, *a*, and in the front surface of this flange *a* are formed three recesses, *b*, which radiate from the center or axis of the body A and are covered by an annular plate, *c*, which is securely fastened by screws, rivets, or other suitable means to the front surface of the said flange *a*, so that the recesses just mentioned constitute radiating slots, which extend from the interior of the body A to the exterior surface of the flange *a*, and in which are placed the sliding gripping or holding dogs B.

Formed upon the flange immediately in rear of each dog B is a suitable bearing, *d*, in which is pivoted a lever, I, the foremost end of which is rounded, as shown at *g*, and is placed in a

slot, *e*, formed transversely in the outer end of the dog B in such manner that when the rearmost ends of the said levers *d* are moved outward they will move the sliding dogs B inward toward the center or axis of the tubular body A, as will be hereinafter more fully set forth. The outer surface of the rearmost end of the body A is provided with a screw-thread, as at H.

C represents a collar, the interior of which constitutes a female screw, which is screwed upon the threaded rearmost portion, H, of the body A, as shown in Fig. 1. The forward part, *i*, of this collar C is cylindrical, and of less circumference than the rear portion thereof, and has a groove, *n*, formed concentrically upon and around its circumference. Placed upon the body A, in front of this collar C, is a sliding collar, D, the rear portion of which is placed over and upon the forward part, *i*, of the collar C, and is attached thereto by means of a short pin or screw, *r*, which passes through one side of the collar D, with its inner end situated in the groove *n*.

The sliding collar C is prevented from turning around upon the body A by means of a small longitudinal rib or feather, *m*, which works in a longitudinal groove in the inner circumference of the said collar C.

Formed upon the outer circumference of the collar C, and in contact with the rearmost ends of the levers I, are three inclined planes, E, which slope forward and inward, as shown in Fig. 1, in such manner that when they are moved forward they will force the rearmost ends of the levers I outward, to slide the dogs D toward the center or axis of the body A to grasp the drill or other article, and when moved backward will allow the said dogs to recede from such axis to allow the drill or other article to be removed from the chuck.

F is a short cylindrical block, which has a deep conical cavity or recess, *u*, in its forward end. This block F is placed within the body A, to center the rearmost end of the drill or other comparatively short article held in the chuck, but may be taken out when it is desired to pass a rod or other similar article entirely through the body A in holding it to be turned.

The drill, rod, or other article which it is desired to hold in the chuck is inserted to the re-

quired distance into the forward end of the tubular body A, and the collar C is then turned or rotated in such a manner as to move forward upon the threaded rearmost portion, H, of the said body, thus forcing the inclined planes E forward underneath the rearmost or long arms of the levers I and forcing them outward, so that the levers I slide the dogs B inward to clasp the drill or other article between them with a very powerful gripping or holding action, while by turning the collar C in the opposite direction it is caused to move backward toward the rearmost end of the body A, and, drawing back the sliding collar D with it, moves the inclined planes E back under the rearmost arms of the levers I, thus allowing the said arms to move inward and bring the sliding dogs B outward and release the drill or other article from their grasp.

By making the sliding collar D sufficiently conical in form the same result will be accom-

plished as when the inclined planes E are made to project beyond the circumference of the said collar.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the screw-collar C, sliding collar D, inclined planes E, and levers I, substantially as herein set forth, for the purpose specified.

2. The arrangement of the rotating collar C, sliding collar D, and levers I with reference to each other and to the sliding gripping-dog B and body A, substantially as herein set forth, for the purpose specified.

3. The internally-conical centering device F, applied within the body A of the chuck, in the manner substantially as herein specified.

ISAAC SMITH.

Witnesses:

J. W. COOMBS,
A. LE CLERC.