

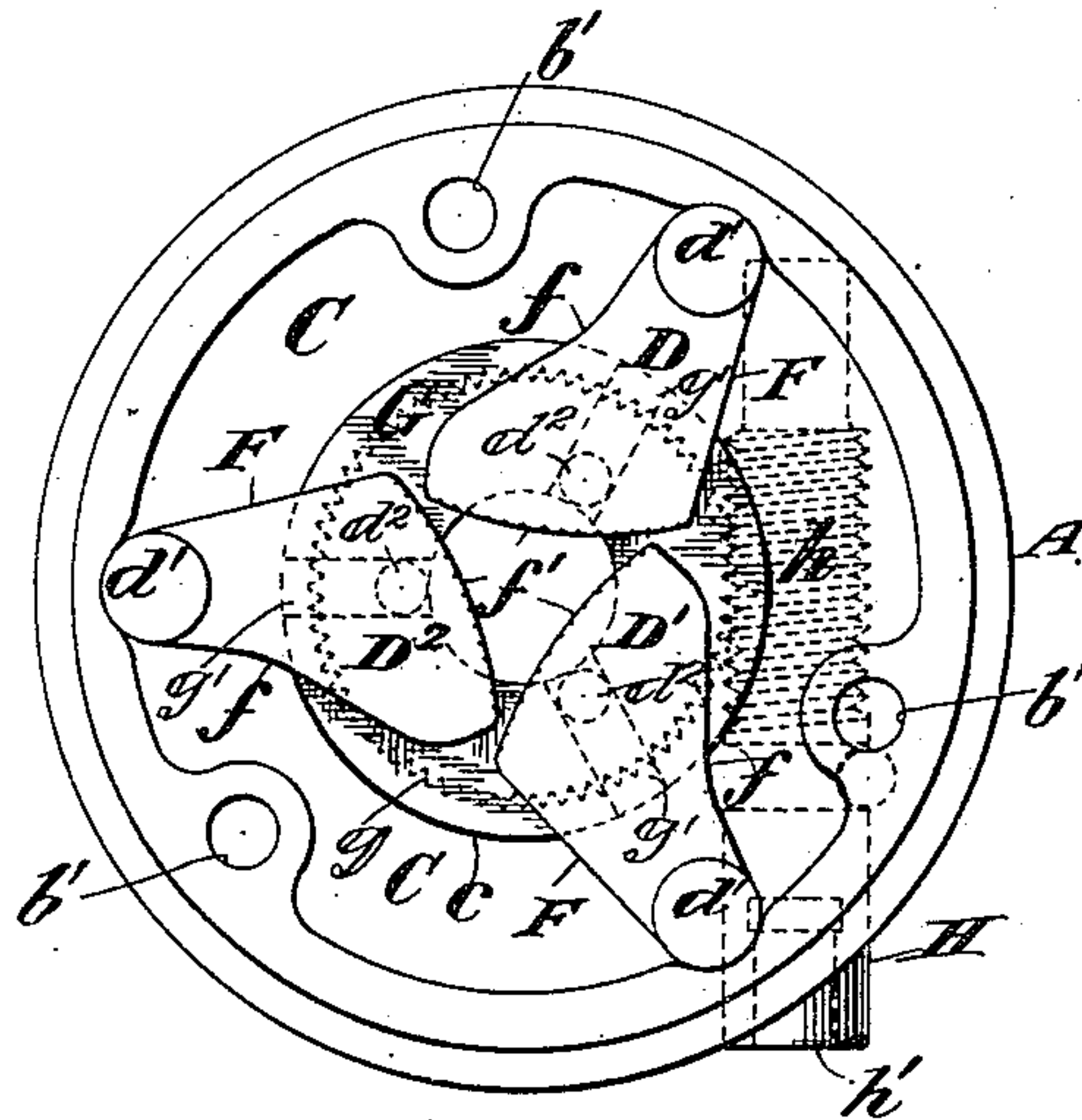
(No Model.)

J. CHASE.  
LATHE CHUCK.

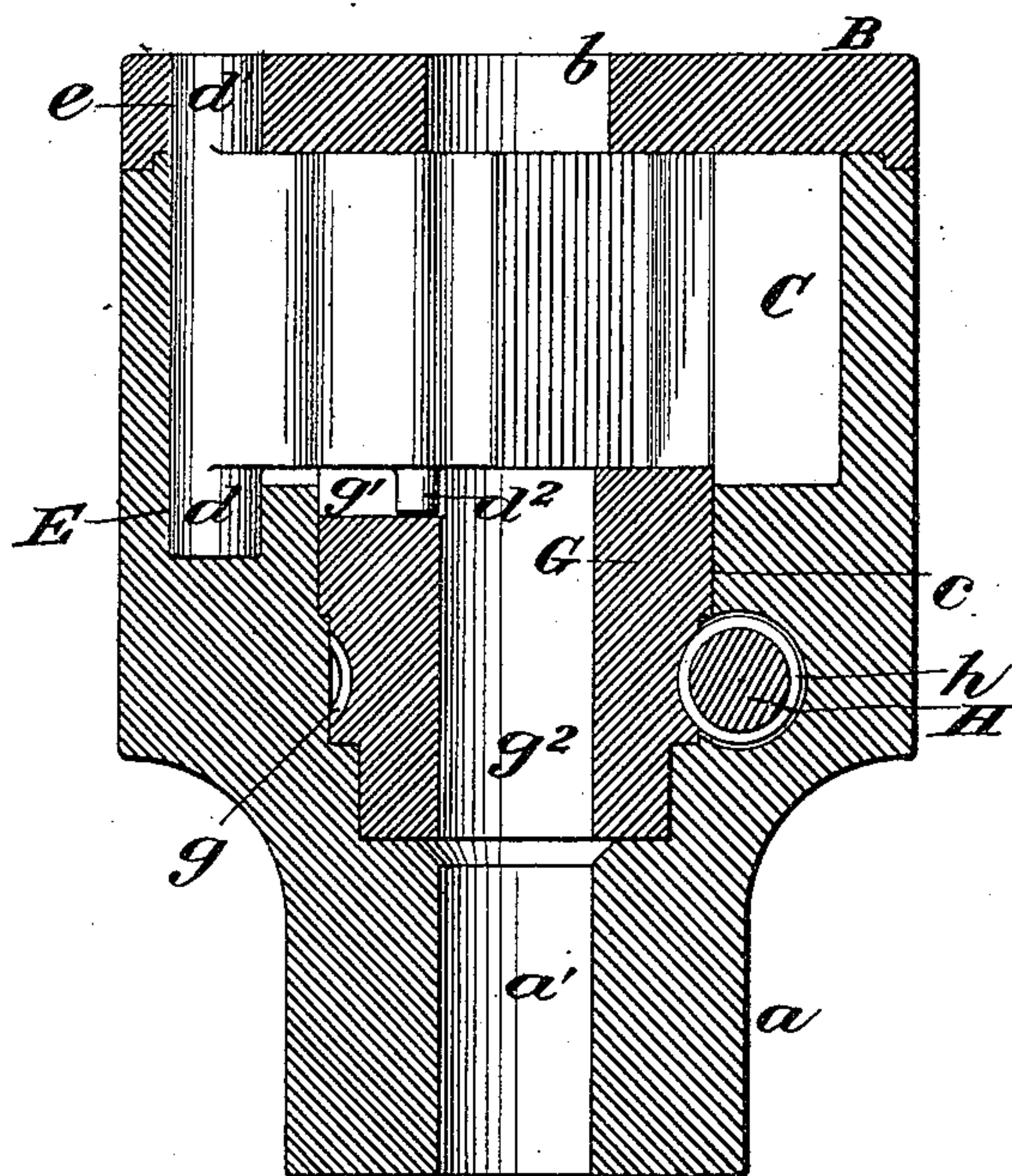
No. 464,009.

Patented Dec. 1, 1891.

*Fig. 1.*



*Fig. 2.*



*Witnesses:-*

*A. H. Raymond*

*C. Sundgren*

*Inventor:-*

*John Chase*  
*by attorneys*  
*Brown & Deward*



# UNITED STATES PATENT OFFICE.

JOHN CHASE, OF PATERSON, NEW JERSEY, ASSIGNOR TO ELLSWORTH HORTON, OF WINDSOR LOCKS, CONNECTICUT.

## LATHE-CHUCK.

SPECIFICATION forming part of Letters Patent No. 464,009, dated December 1, 1891.

Application filed April 30, 1891. Serial No. 391,090. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN CHASE, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful  
5 Improvement in Universal Chucks, of which the following is a specification.

My invention relates to an improvement in universal chucks in which a group of swinging holding-jaws are caused to simultaneously  
10 move in directions to either increase or diminish the holding-space circumscribed by their free swinging ends.

A practical embodiment of my invention is represented in the accompanying drawings,  
15 in which—

Figure 1 is a face view of the chuck, the face-cap being removed to show the positions of the holding-jaws; and Fig. 2 is a longitudinal section showing the face-cap in position.

20 The chuck-head is represented by A, and terminates at one end in a reduced shank portion *a*, while at its opposite end it is fitted with a face-plate B. The head is provided with an enlarged chamber C, extending from  
25 its face end inwardly, and with a smaller chambered portion *c* projecting centrally toward its shank from the end of the enlarged chamber C. Three swinging jaws D, D', and D<sup>2</sup>, of like structure, are each provided with a pair  
30 of journals *d d'*, extending in opposite directions from their outer ends and preferably formed integral with the jaws. The inner journals *d* are adapted to fit loosely within sockets E, formed in the head A at the inner  
35 end of the enlarged chamber C and spaced at equal distances apart around the periphery of the chamber. The outer journals *d'* of the jaws are adapted to enter sockets *e*, formed in the face-plate B and spaced apart to correspond with the sockets E in the head A.  
40 The opposite sides F and *f* of each of the jaws diverge from each other as they extend from the journals toward the free ends, one of the sides F being extended a greater distance from the axis of the journal than the opposite side *f*. It is intended that the distance from the axis of the journals *d d'* to the extremity of the longer side F of the jaw  
45 shall be about equal to the distance from the axis of the said journals to the center of the

chuck or to the center of the circle the circumference of which passes through the axes of the journals of the several jaws, and that the length of the shorter side F shall be considerably less than said distance. It is further intended that when the extremities of the longer side of one of the jaws and shorter side of the adjacent jaw come into alignment with the axes of the journals of the two adjacent jaws the said extremities shall be in proximity to each other, the space between them being sufficient to admit of the one swinging freely past the other. The gripping-faces *f'* of the several jaws are preferably serrated and curved, as shown, the curve being such that the extremity of the longer side of the one jaw will follow along in proximity to the face of the adjacent jaw as the jaws are simultaneously swung. From this construction it follows that when the jaws are  
60 simultaneously swung in the same direction it will either cause the extremities of the longer sides of the three jaws to approach each other at the center of the chuck or will cause the said longer sides to recede from each other away from the center of the chuck, according as they are swung in one direction or the opposite, and hence the triangular-shaped space circumscribed by the faces *f'* of the three jaws will be gradually diminished  
65 or increased, as the case may be.

The cylindrical block G is fitted to rotate within the small chamber *c* in the head A, and is provided on its periphery with worm-gear *g*, adapted to register with the worm *h* on a rotary plug H, seated transversely within the head A and provided with a squared socket *h'* or other well-known or suitable means for the engagement therewith of a key or wrench for rotating it. The outer end of the rotary block G, which is in effect a worm-wheel, is provided with radial recesses *g'*, one corresponding to each of the jaws D D' D<sup>2</sup>, and adapted to receive with an easy sliding fit studs *d<sup>2</sup>*, projecting from the inner ends of the said jaws and located in proximity to their free swinging ends. From this it follows that when the cylinder or wheel G is rotated; by turning the plug H it will simultaneously swing the free ends of each of the jaws D D' 100



$D^2$ , the studs  $d^2$  traveling outwardly and inwardly along the radial recesses  $g'$ , according to the direction in which the jaws are swung.

The face-plate B is provided with a central opening  $b$  in alignment with the central space between the gripping-faces of the jaws, for the reception of the thing to be held, and the cylinder or worm-wheel G and shank  $a$  are also provided with central perforations  $g^2$  and  $a'$ , respectively, in alignment with the said central space between the gripping-faces of the jaws. The cap-plate B may be held securely in position by screws extending through it into threaded perforations  $b'$  in the rim of the head A.

By the above construction and arrangement of parts I am enabled to center the thing to be held within the space circumscribed by the faces of the three jaws, producing simultaneously upon its sides equal pressures, while the operative parts are few and their range of adjustment to suit articles of different sizes is very extended. Furthermore, the grip is such that as the strain upon the thing held increases the grip is increased because of the tendency of the jaws to swing to bring longer radii toward the center.

I have mentioned the stud  $d^2$  as extending from the end of one of the jaws and the recess  $g'$  as formed in the cylinder or worm-

wheel G. It is obvious that the stud might project from the wheel G and the recess be formed in the jaw, such structure being a simple reversal of that herein shown. It is also obvious that other slight changes in the formation and arrangement of the several parts might be resorted to without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein shown and described; but

What I claim is—

The chuck comprising the swinging jaws pivotally secured at intervals near the margin of the supporting-head and having their free ends provided with gripping-faces which gradually approach the center of oscillation of the jaws, a worm-wheel for actuating the jaws, and a worm for actuating the worm-wheel, the worm-wheel and each jaw being provided the one with a stud or abutment and the other with a radial groove in which the stud or abutment is adapted to engage, the engagement of the groove with the stud or abutment being intermediate of the gripping-faces and center of oscillation of the jaw, substantially as set forth.

JOHN CHASE.

Witnesses:

FREDK. HAYNES,  
K. E. PEMBLETON.