

Niels  
Hub

Johnson's  
Boring Machine

PATENTED  
MAR 3 1868

75167

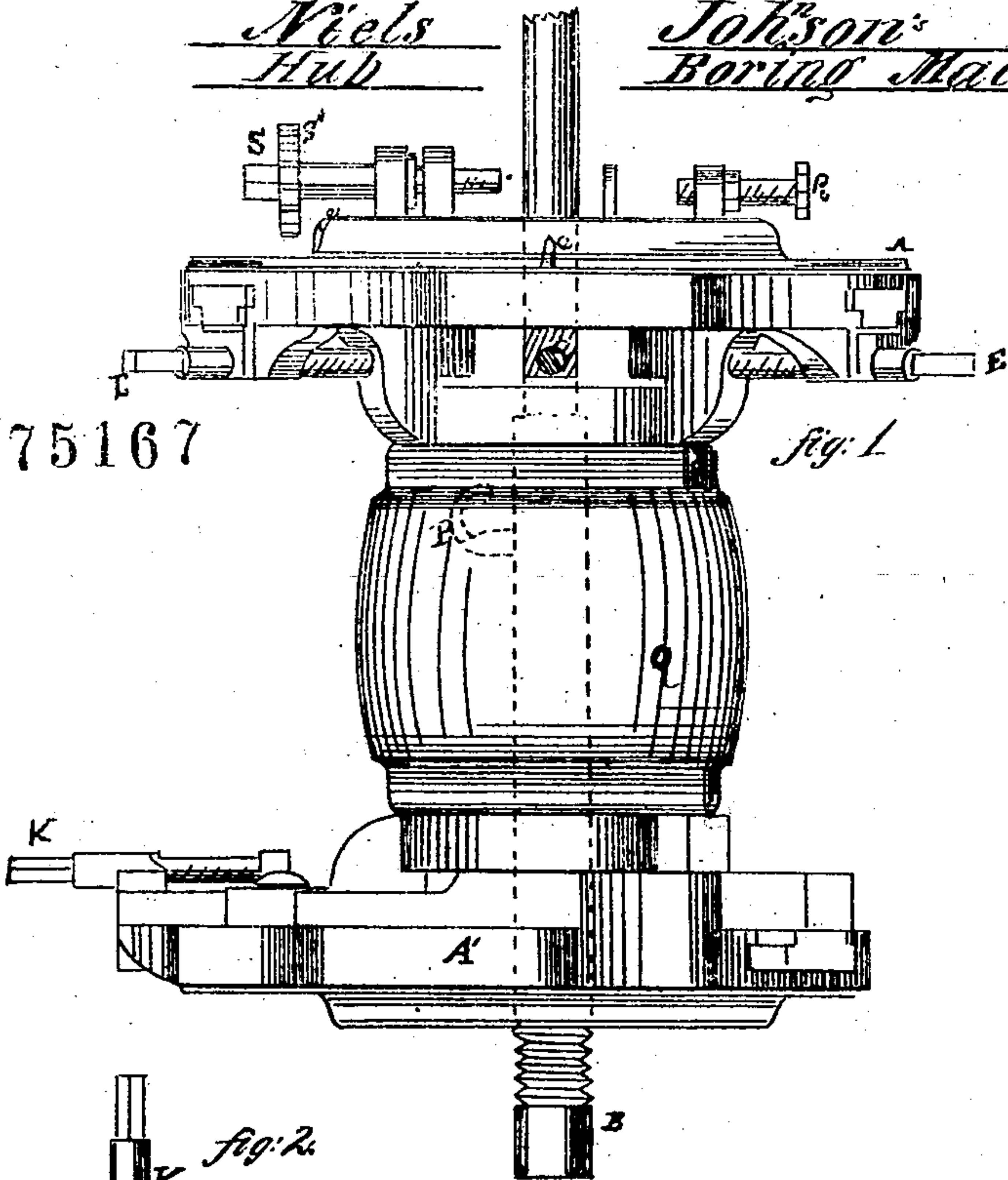


fig. 1

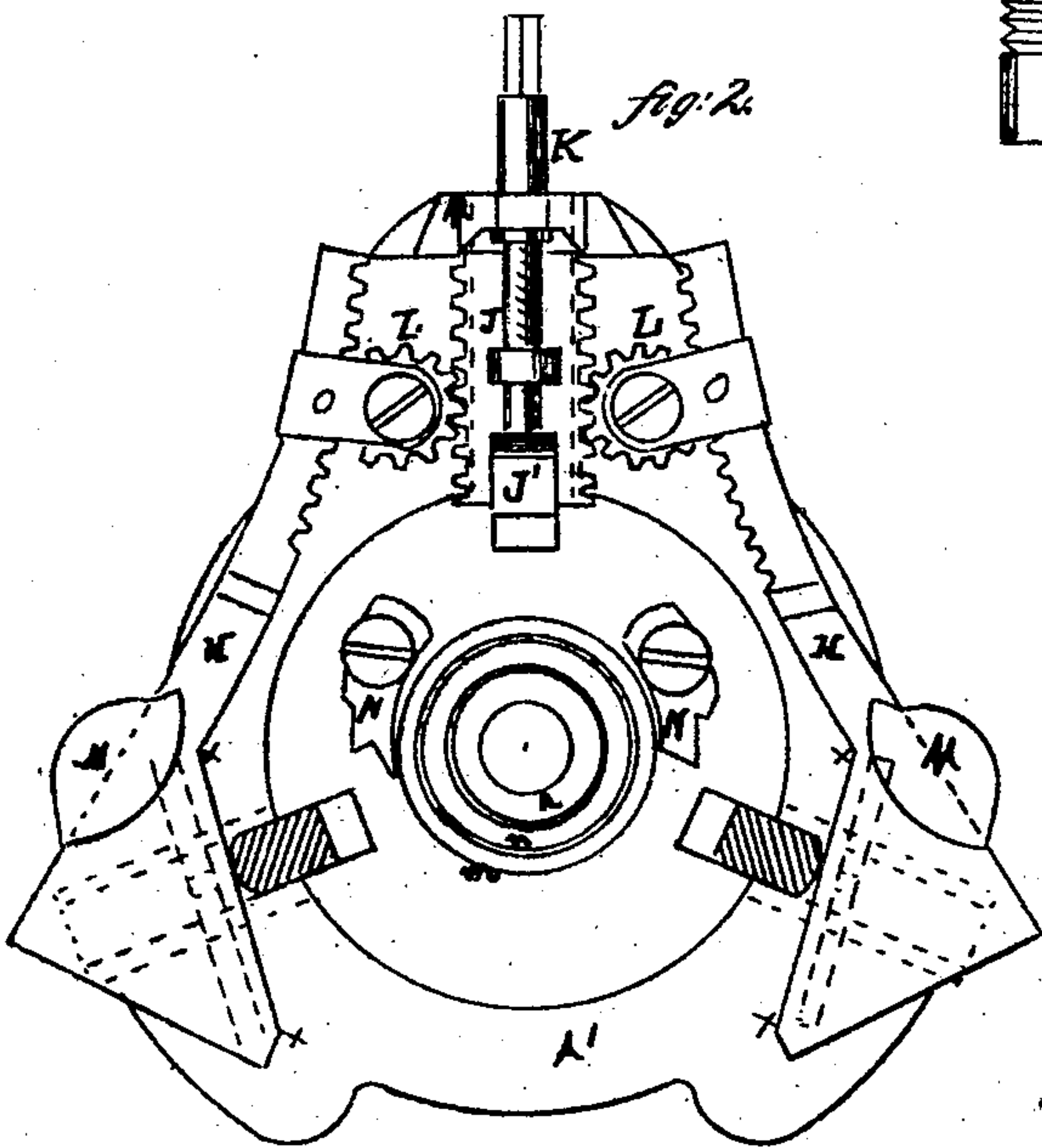


fig. 2

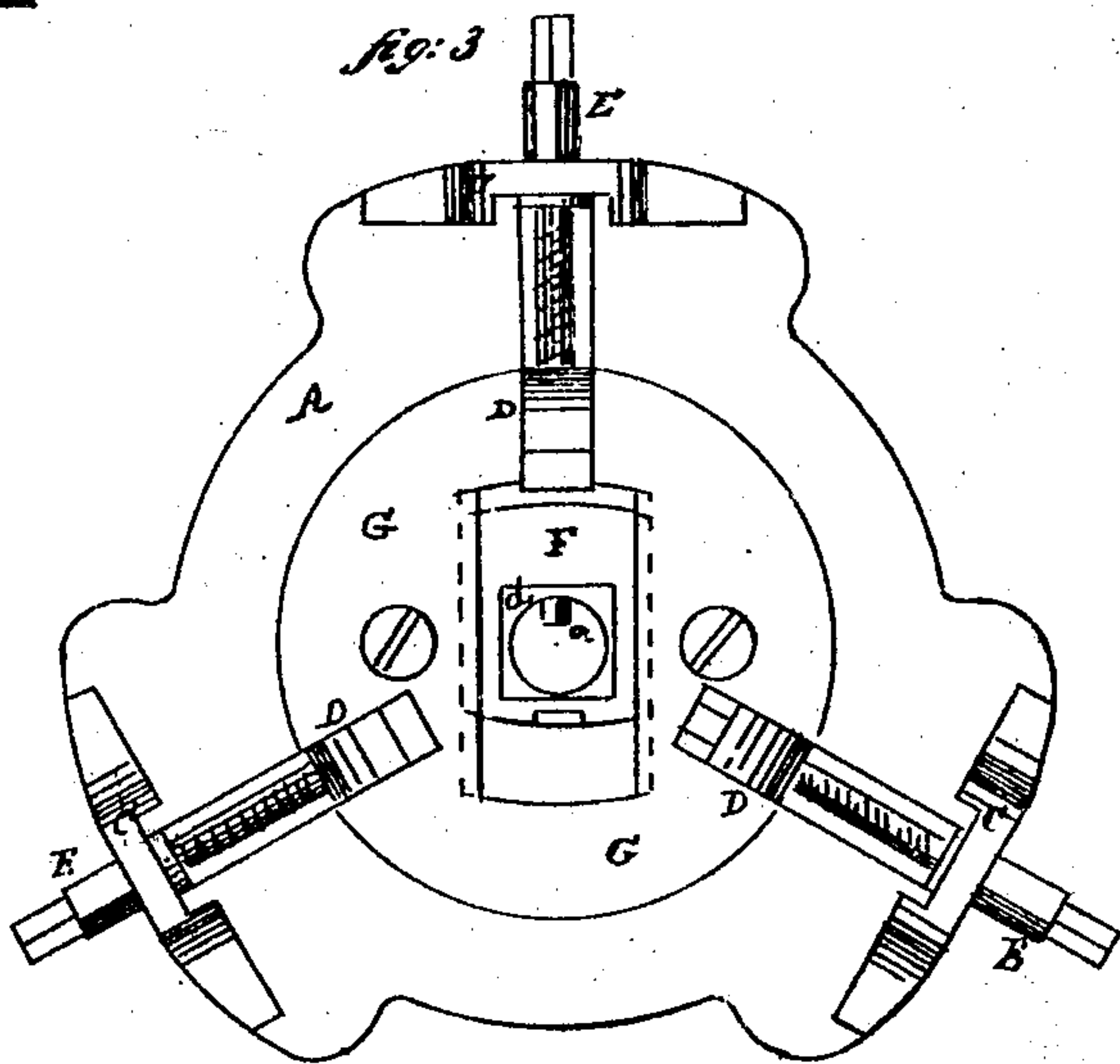


fig. 3

Witnesses

*A. A. Treatman,*  
*Charles B. Lee*

Inventor

*Niels Johnson*  
*per*  
*Alexander Murray*  
*Att.*



# United States Patent Office.

NIELS JOHNSON, OF BERLIN, WISCONSIN.

Letters Patent No. 75,167, dated March 3, 1868.

## IMPROVEMENT IN MACHINES FOR BORING HUBS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, NIELS JOHNSON, of Berlin, in the county of Green Lake, and in the State of Wisconsin, have invented certain new and useful Improvements in Hub-Boring Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to accompanying drawings, and to the letters of reference marked thereon.

In the annexed drawings, making part of this specification, A and A' represent two cast-metal heads, which can be made either annular or triangular, or any other suitable shape, and which, when in use, are to be firmly fastened in a lathe or other machine where hubs can be bored.

The head, A, has an annular opening cut through its centre, and in this opening is fitted a disk or wheel, G. This disk is so secured in the opening that, although it is allowed to revolve freely, it cannot be removed without moving the devices which hold it in place.

The disk G is provided with a slot, which is a little less in length than the diameter of the disk; and in this slot is placed a slide, F, said slide having tongues or ways, which take into grooves in the sides of the slot.

The slide has two ears or lugs on its outer face. A set-screw, S, passes through one of these ears, while the end of a set-screw, R, butts against the other, when desirable, for stationing the slide at any particular point.

In the centre of the slide F is fitted a square box, d, which has an annular opening through its centre to receive one end of the feed-shaft B. That end of the feed-shaft which passes through this box is provided with a longitudinal groove; and a pin, a, upon the box d, takes into this groove, in order to keep the shaft from revolving in the box. The box is not fitted tightly in the slide, but so that it will play a little, it having trunnions on two opposite sides, which fit in suitable holes or recesses in the slide.

C C C represent three flanges on the inner face of head A, and D D D represent three sliding clamps, which lie in grooves in the inner face of the head. E E represent set-screws, which pass through the flanges and into the clamps. The clamps are equidistant from each other, and are moved toward or from the centre of disk F by means of the set-screws E.

The outer end of the set-screw S is made square, and receives upon it a pinion, S', with a square hole through its centre, made to fit the screw.

Upon the outer face of the head, A, are three pins, e e, which are equidistant apart, and are so placed that, when the disk G revolves, the pinion S' may be made to pass over them, and, as it passes, each pin causes the pinion to partially-revolve one tooth, thus slightly moving the slide F, and, with it, the feed-shaft B.

A' represents the other head, which has the flanges M M M cast upon its inner face.

K represents a set-screw, passing through one of the flanges M, and also through a lug or ear on a double rack-bar, J.

On the inner end of the rack-bar is formed a clamp, J'; and upon each side of said bar are pivoted the pinions L L, in such position that they mesh into its teeth.

By revolving the set-screw K, the rack-bar J with its clamp is moved toward or from the centre of head A', and, at the same time, the pinions are caused to revolve.

H H represent two bars, which are provided on their inner edges, near one end, with teeth to correspond with those of the pinions L L. These bars H have their other ends made triangular, as seen. The backs of these bars rest and work against two of the lugs M M, while the hypotenuse of the triangle works against and operates the sliding clamps I I.

When the pinions L revolve in one direction, they draw the bars H H endwise, causing them, with their triangular ends, to move the clamps I I inward. The clamps are moved outward by a reverse motion of the bars. N represent rests for the inner ends of the clamps. These clamps slide in grooves in the inner face of the head, similarly to those before mentioned in head A.

m n r represent concentric metallic rings, each having trunnions. The outer or larger ring, m, is fitted in an annular opening at the centre of the head, A'. The trunnions of these rings are so placed that the inner ring plays in a universal joint.

Through the centre of the inner ring, r, is an opening to receive the feed-shaft; and in this opening a thread is cut, to fit the threads of a screw upon the shaft B.

P, seen in Figure 1 in dotted line, represents a curved knife or cutter, which is secured to the shaft B.

The hub Q is clamped in the two heads A A', and the shaft B is inserted in an opening in the centre of the hub. When the shaft B is revolved, its screw causes it to pass through the hub, carrying with it the knife, which cuts the opening as large as necessary.

Either a straight or a tapering opening can be cut through the hub with this machine. When the parts are all properly centred and made rigid, the shaft will cut with its knife a straight opening. Should a tapering one be required, the slide F is carried by the set-screw S so that the shaft is out of centre. The pinion S' is then set so it will catch, as it revolves, upon the pins e e. Then, when the shaft B revolves, the knife cuts eccentrically, and, at each revolution, the said shaft is moved by set-screw S' near the centre of the head. As the shaft approaches the centre of the head, the taper diminishes.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The bars H H, clamps I and J', pinions L L, rack-bar J, and set-screw K, for forming a universal clamp for hubs, substantially as set forth.

In testimony that I claim the foregoing, I have hereunto set my hand, this 3d day of December, 1867.

NIELS JOHNSON.

Witnesses:

JOHN YOUNG,

STEPHEN V. HACKETT.