

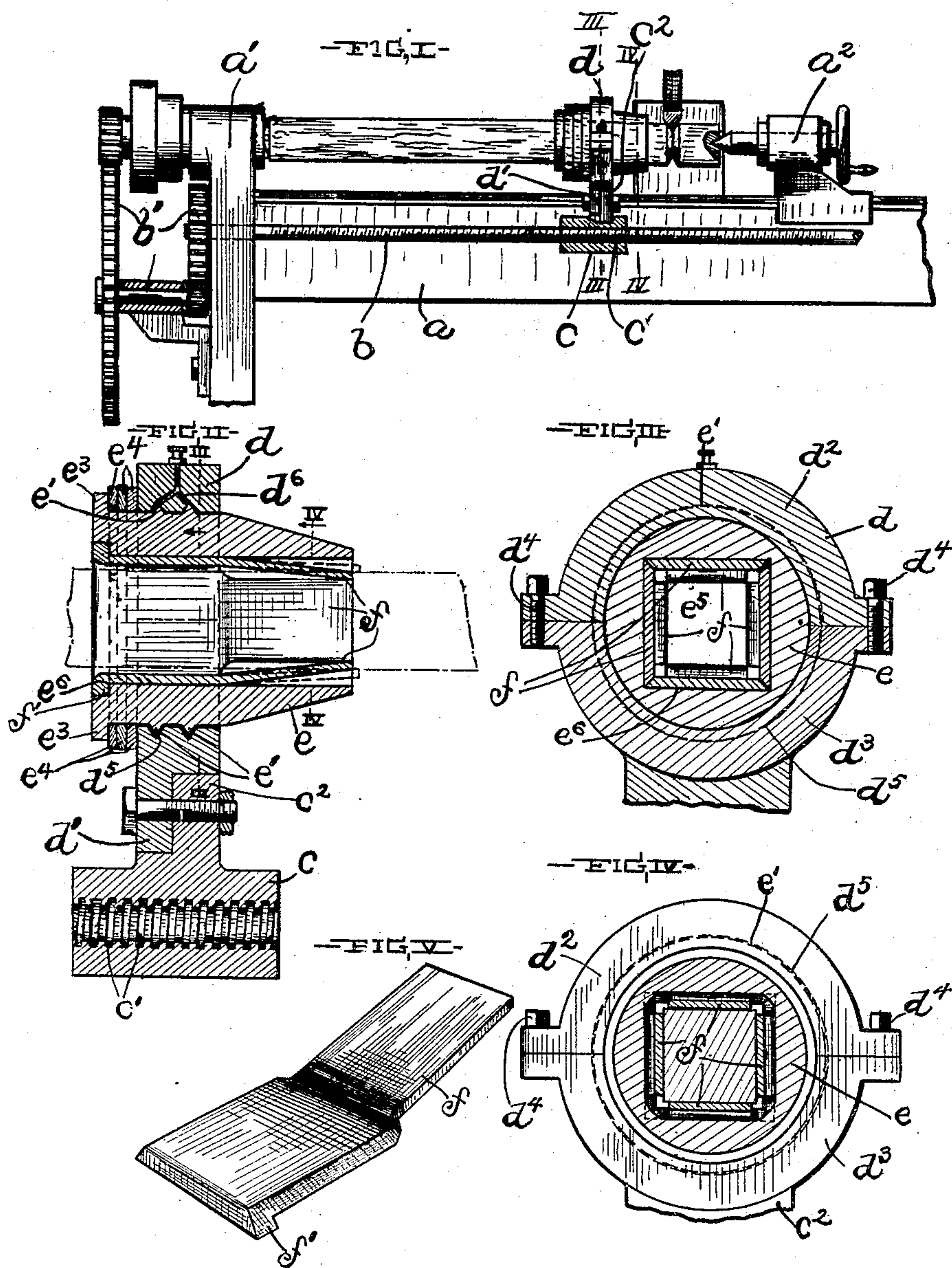
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J. F. BEHRINGER.
CENTERING DEVICE FOR LATHES.

APPLICATION FILED FEB. 15, 1902.

NO MODEL.



WITNESSES:

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JOHN F. BEHRINGER, OF CLEVELAND, OHIO.

CENTERING DEVICE FOR LATHES.

SPECIFICATION forming part of Letters Patent No. 767,326, dated August 9, 1904.

Application filed February 15, 1902. Serial No. 94,278. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. BEHRINGER, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Centering Devices for Lathes; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to improvements in centering devices for lathes.

The object of this invention is to provide a new and improved device for supporting and centering a spindle while it is being operated upon while on a lathe.

My invention therefore consists in providing a centering device arranged to receive spindles of different sizes and provided with means for centering the spindle and preventing it from chattering.

My invention further consists in the features of construction and combination of parts as illustrated in the drawings and hereinafter described in the specification and pointed out in the claim.

In the accompanying drawings, Figure I represents a portion of a lathe provided with my improved device. Fig. II represents a central section of my device. Fig. III is a section on lines III III, Fig. I. Fig. IV is a section on lines IV IV, Fig. I. Fig. V represents one of the spring-jaws of my device detached.

Again referring to the drawings, *a* represents the bed of a lathe which is provided with the usual head-stock and tail-stock *a'* and *a''*, respectively. In the bed *a* of the lathe is arranged an endless screw *b*, which extends longitudinally of the bed. This screw is operatively connected with the driving mechanism of the head-stock by means of gear *b'* in the usual manner. On the screw *b* is arranged a carriage comprising the block *c*, which is provided with an internal screw-thread *c'*, adapted to engage with the screw *b*, so that the turning of the screw will cause the carriage to move back and forth on the lathe-bed. On the top of the block *c* is formed a lug *c''*. An annular bracket or support is

arranged above the lathe-bed and has its axis in line with the axis of the head-stock and the tail-stock. This support comprises a ring *d*. A lug *d'* is formed integral with the ring *d* and is rigidly secured to the lug on the block *c*. The ring *d* comprises two semicircular sections *d''* and *d'''*, which are secured together by means of bolts *d''''*. On the interior surface of the ring *d* are formed grooves *d''''*, preferably two in number. Oil-ducts *d''''''* are preferably formed in the ring *d*.

e represents a chuck-head which is arranged to fit within the ring *d* and turn freely therein. On the outer surface of the chuck-head are formed annular ridges *e'*, which are arranged to fit into the grooves *d''''*, formed on the interior surface of the ring *d*. The engagement of the ridges *e'* with the grooves *d''''* lock the chuck-head of the ring *d*. Of course the chuck-head is mounted in the ring before the semicircular sections *d''* and *d'''* are secured together.

On the rear end of the chuck *e* is formed an annular flange *e''*, and between this flange *e''* and the adjacent side of the ring *d* are arranged three washers *e'''*, preferably formed of steel. In the chuck-head *e* is formed a square bore *e''''*, which extends from end to end thereof. The chuck-head *e* is recessed at its rear end to form a seat *e''''''* around the bore *e''''*. Within the bore *e''''* and at the respective sides thereof are arranged four plates *f*, preferably formed of steel. These plates are arranged to fit snugly in the bore *e''''*, and the edges of each plate abut against its neighboring plates, so that each plate is held in position by the frictional engagement with its neighboring plates. At the rear end of said plates *f* is formed a flange *f''*, adapted to fit into the seat *e''''''*. The plates *f* taper toward their front ends and are also somewhat reduced in thickness in order to make them flexible. The front ends of the plates are sprung or bent in so that they normally stand away from the side of the bore *e''''* and form jaws which engage the sides of the spindle when it is introduced into the chuck-head. The plates *f* are readily removed from the head *e*, and plates of a greater or less curvature may be arranged in the bore *e''''*, as desired.

The operation of this device is as follows:

Before the machine is started the carriage carrying the chuck-head is moved down toward the tail-stock. The spindle is then shoved through the bore in the chuck-head, 5 and its ends are secured in the usual way in the head-stock and tail-stock. The cutting-tool is then arranged to operate upon the spindle at a point between the tail-stock and the chuck-head, and as the machine is oper- 10 ated the carriage will move toward the head-stock, drawing the chuck-head along on the spindle, and the flange e^3 , bearing against the side of the ring d , takes the strain which would otherwise be on the ridges e' , as it takes con- 15 siderable power to overcome the friction between the jaws or plates f and the spindle, as these jaws are arranged to grip the spindle with a pressure in the neighborhood of twelve hundred pounds in order to hold the spindle perfectly rigid while it is being operated on. The 20 washers e^4 lessen the friction between the surfaces and the flange e^3 and the surfaces of the ring d .

By providing a chuck which precedes the 25 tool in the same relative position it will be obvious that the stock will be prevented from wobbling, and consequently any chattering on the stock caused by the tool will be obviated. Prior devices, so far as I am aware, embrace 30 supports which are stationary during the operation of the tool, and naturally when the carriage carrying the tool has reached the support while traveling either by hand or screw-feed on the bed of the lathe it is neces- 35 sary to stop the operation of the carriage and tool until the support is moved farther along the bed in the direction the carriage is traveling. In my device this is entirely obviated, since the chuck or work-support at all times 40 moves with the tool and in the same relative position thereto, which has the further advantage of steadying the stock at all times, since the tool with relation to the position of the 45 chuck does not vary.

With the old style of centering and sup-

porting devices great care has to be exercised in selecting the stock before it is introduced into the centering and supporting device, for if the stock be too small in cross-section the spindle will wobble and chatter, making it 50 impossible to produce a regular design and frequently resulting in injury to the operating-tool. Therefore in order to avoid this danger the stock introduced into the support- 55 ing and centering device is made to fit so close that if there be the slightest enlargement at the opposite end to the end first introduced it will result in splitting the centering device.

When using my improved device much less 60 care has to be used in selecting the stock, as my device will accommodate a considerable variation in the size of the stock, and also a great saving can be accomplished, as irregular 65 sizes of stock can be worked up which would otherwise have to be discarded.

What I claim is—

A device of the type set forth comprising in combination with a support a chuck-head 70 arranged within said support and adapted to rotate therein, a square bore extending from end to end of the said chuck-head, a seat formed in the rear end of said chuck-head around the said bore, and spring-plates arranged within 75 the said bore at each side thereof, said plates being provided with flanges at their rear ends adapted to fit into the seat at the rear end of the said chuck-head, said plates fitting against 80 the walls of the chuck-head bore, and having their side edges in abutting engagement, substantially as described and for the purpose set forth.

In testimony whereof I sign the foregoing specification, in the presence of two witnesses, 85 this 25th day of January, 1902, at Cleveland, Ohio.

JOHN F. BEHRINGER.

Witnesses:

VICTOR C. LYNCH,
DANIEL E. DALY.