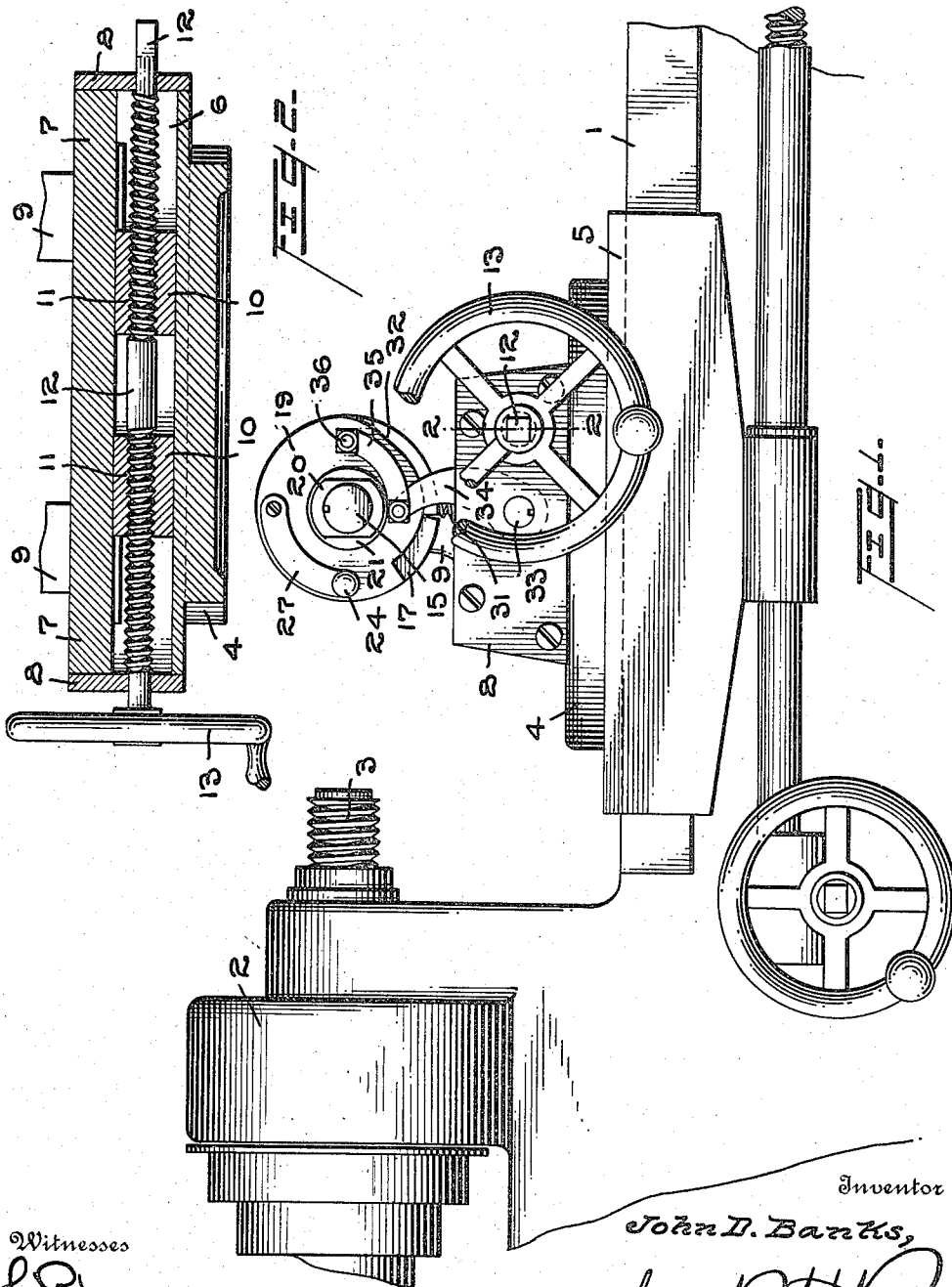


J. D. BANKS.
 LATHE CHUCK.
 APPLICATION FILED APR. 26, 1915.

1,173,159.

Patented Feb. 29, 1916.
 3 SHEETS—SHEET 1.



Witnesses

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C. R. Ziegler

Inventor

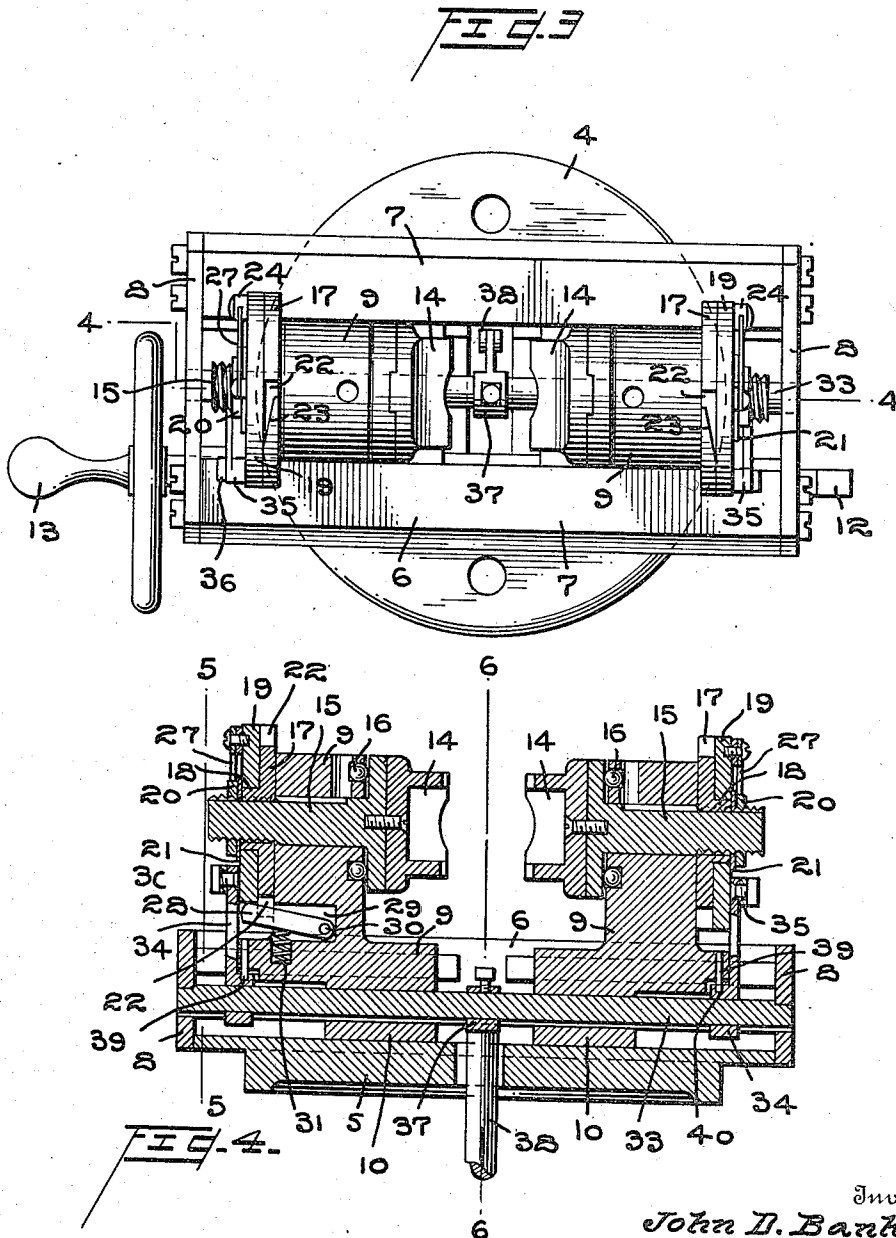
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FIG. 5.

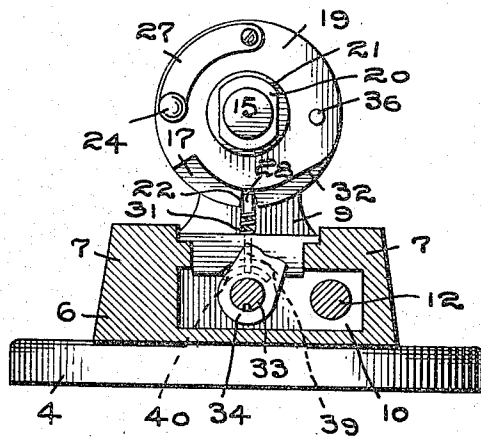


FIG. 6.

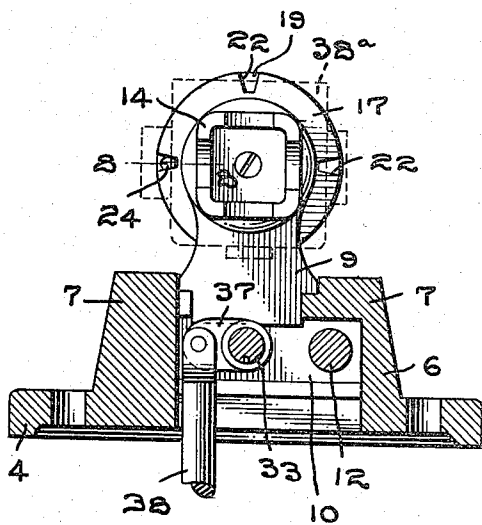


FIG. 7.

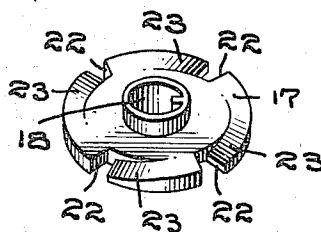
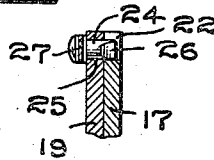


FIG. 8.



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UNITED STATES PATENT OFFICE.

JOHN D. BANKS, OF PHILADELPHIA, PENNSYLVANIA.

LATHE-CHUCK.

1,173,159.

Specification of Letters Patent.

Patented Feb. 29, 1916.

Application filed April 26, 1915. Serial No. 23,919.

To all whom it may concern:

Be it known that I, JOHN D. BANKS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Lathe-Chucks, of which the following is a specification.

My invention relates to improvements in lathe chucks, the object of the invention being to provide a chuck of the character stated which supports the work and which is capable of a step by step rotary movement so as to hold the work in various positions, and enable the same to be operated upon from many sides without removing the same from the chuck.

A further object is to provide a chuck in which the two jaws are operated simultaneously to partially rotate them, and permit the turning of the work to present various sides thereof to the tool carried by the drill spindle.

A further object is to provide improved means for imparting a partial rotary movement to the jaws of the chuck, and which operating means permits the positive locking of the chuck members at each position of adjustment.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1 is a fragmentary view in side elevation illustrating my improved chuck in position on the bed of an ordinary lathe. Fig. 2 is a fragmentary view in transverse section on the line 2—2 of Fig. 1. Fig. 3 is a top plan view of my improved chuck. Fig. 4 is a view in longitudinal section on the line 4—4 of Fig. 3. Fig. 5 is a view in transverse section on the line 5—5 of Fig. 4, a portion of the mechanism being broken away for clearness of illustration. Fig. 6 is a view in section through the center of the chuck, the view being taken on the line 6—6 of Fig. 4, and in addition the work is indicated in dotted lines. Fig. 7 is a perspective view of one of the disks 17, and Fig. 8 is a fragmentary view in section on the line 8—8 of Fig. 6.

1 represents the bed of an ordinary lathe

having the ordinary headstock 2 from which the spindle 3 projects.

4 is the supporting table of my improved chuck which is secured to the ordinary lathe carriage 5, and is supported on the bed 1 in line with the spindle 3. On the table 4, a relatively heavy base 6 is formed, and may be cast integral with the table as desired. This base constitutes parallel side members 7 connected at their ends by cross bars 8. Two sliding members 9, 9, are guided in the base 8, and have lateral extensions 10 made with oppositely screw-threaded openings 11 which engage the threaded portions of an adjusting screw 12. It is to be understood that this screw 12 is held against longitudinal movement in the base, and is adapted to receive a crank wheel or other similar device 13 at either end to turn the same and adjust the two sliding members 9 of the chuck toward and away from each other. Each sliding member is provided with a work gripping jaw 14, and each jaw 14 is secured to a horizontal arbor 15 mounted to turn in member 9, and preferably having ball bearings 16 as shown. The arbors 15, at their outer ends, have disks 17 fixed thereto. The disks 17 are illustrated as having outwardly projecting hubs 18, and said hubs are keyed onto the threaded ends of the arbors forming a tight and secure juncture therewith. Movable disks 19 are located on the hubs 18, and are positioned beside the disks 17, and nuts 20 are screwed onto the threaded ends of the arbors 15, and washers 21 are interposed between the nuts and the disks 19, so that the latter are securely held but permitted a turning movement. The disks 17, one of which is shown in perspective in Fig. 7, are provided in their peripheries with recesses 22, and with beveled faces 23 communicating with the walls of the recesses. The disks 19 are provided with spring-pressed pawls 24 which project through openings 25 in the disks 19, and have beveled ends 26 to engage in the recesses 22, and to ride the beveled faces 23 as will be hereinafter explained. While, of course, the invention is not limited to any particular number of such pawls, I have shown but a single pawl on each disk 19, and have connected each pawl with a flat spring 27, tending to force the pawl inwardly into the recess 22.

One of the disks 17 is normally held against rotary movement by a locking dog

28, which is mounted in a recess 29 in one member 9, and pivotally connected at its inner end by a pin 30. The free end of the dog 28 is pressed upwardly by a coiled spring 31 into a recess 22 of disk 17 so as to positively lock the disk and the chuck jaw against rotary movement. The disk 19, adjacent dog 28, is provided with a cam surface 32 which, when the disk is turned in one direction, operates to force the dog 28 out of the recess 22, which operation will be more fully hereinafter explained. A horizontal shaft 33 is mounted in the base 6, and is provided adjacent its ends with crank arms 34. These crank arms 34 are connected by links 35 with crank pins 36 on the disks 19. A crank arm 37 is fixed to the center of shaft 33, and an operating rod 38 is connected to the crank arm 37. I have illustrated no particular means for moving the rod 38, but it is to be understood that any suitable mechanism may be so connected that the rod has to cause the same to reciprocate and impart an oscillating movement to the shaft 33 whenever desired to shift the position of the chuck.

An oscillating movement of the shaft 33 imparts an oscillating movement to the disks 19, and hence for convenience of description to distinguish the disks 17 and 19, I shall hereinafter refer to the disks 19 as "oscillating disks", and shall refer to the disks 17 as "jaw carried disks", as they are secured to turn with the jaws of the chuck.

In Fig. 6, I illustrate the work 38^a in dotted lines which is supported between the jaws of the chuck. This work is provided with a plurality of screw-threaded portions which are adapted to be engaged by the tool of the lathe, and as this particular work has four operating face portions or faces, I have provided the jaws with four positions of adjustment, but it is of course to be understood that any number of positions of adjustment may be had in accordance with the work.

When the parts are in normal position, the work 38^a is clamped between the jaws 14, and the dog 28 securely locks the parts against rotary movement. When it is desired to shift the position of the chuck, shaft 33 is oscillated by means of the rod 38, and this oscillation is imparted to the oscillating disks 19.

The first movement of one of the disks 19 by reason of the cam surface 32 operates to depress the dog 28 from the recess 22. This same movement of the disks 19 moves the pawls 24 out of the recesses 22 along the beveled surfaces 23 until they spring into the next recesses 22. This last-named movement of the disks 19 is a retrograde movement, and is instantly followed by a forward movement which, by reason of the engagement of the pawls 24, in the recesses 22,

will turn disks 17 and the chuck jaws a quarter turn or in other words, a movement equal to the length of movement of the oscillating disks, and as I have shown the disk 17 with four recesses 22, there will be a quarter turn imparted at each operation. As soon as the movement is completed, the dog 28 will spring into the next notch 22, and securely hold the parts against accidental movement. The pawls 24 in their operation constitute ratchet means, and hence I would have it understood that I may employ other forms of ratchet means to connect the disks.

In order that the crank arms 34 may have always the same position relative to the shaft 33 and the disks 19, I have splined the crank arms to slide on the shaft 33, and have provided the members 9 with pins 39 which project into segmental grooves 40 in the hub portions 41 which slide on the shaft 33, and compel the crank arms and members 9 to move together.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

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

1. A chuck of the character described, comprising a support, rotary jaws mounted in the support, a pair of parallel shafts located below the jaws, means operated by one of said shafts for moving the jaws toward and away from each other, and means operated by the other shaft for turning the jaws, substantially as described.

2. A chuck of the character described, comprising a support, rotary jaws mounted in the support, a pair of parallel shafts located below the jaws, means operated by one of said shafts for moving the jaws toward and away from each other, means operated by the other shaft for turning the jaws, and means locking the jaws against turning movement, substantially as described.

3. A chuck of the character described, comprising a support, rotary jaws mounted in the support, a pair of parallel shafts located below the jaws, means operated by one of said shafts for moving the jaws toward and away from each other, disks fixed to turn with the jaws, oscillating disks adjacent the first-mentioned disks, pawls on the oscillating disks engaging the first-mentioned disks, crank arms on the other of said shafts, and links connecting the crank arms and oscillating disks, substantially as described.

4. A chuck of the character described, 130

comprising a support, rotary jaws mounted in the support, a pair of parallel shafts located below the jaws, means operated by one of said shafts for moving the jaws toward and away from each other, disks fixed to turn with the jaws, oscillating disks adjacent the first-mentioned disks, pawls on the oscillating disks engaging the first-mentioned disks, crank arms on the other of said shafts, and links connecting the crank arms and oscillating disks, said arms splined to slide on the shaft, substantially as described.

5. A chuck of the character described, comprising a support, rotary jaws mounted in the support, a pair of parallel shafts located below the jaws, means operated by one of said shafts for moving the jaws toward and away from each other, disks fixed to turn with the jaws, oscillating disks adjacent the first-mentioned disks, pawls on the oscillating disks engaging the first-mentioned disks, crank arms on the other of said shafts, links connecting the crank arms and oscillating disks, means normally holding the jaws against movement, said last-mentioned means released by the movement of the oscillating disks, substantially as described.

6. A chuck of the character described, comprising a support, rotary jaws mounted in the support, a pair of parallel shafts located below the jaws, means operated by one of said shafts for moving the jaws toward and away from each other, disks fixed to turn with the jaws, oscillating disks adjacent the first-mentioned disks, pawls on the oscillating disks engaging the first-mentioned disks, crank arms on the other of said shafts, links connecting the crank arms and oscillating disks, said arms splined to slide on the shaft, means normally holding the jaws against movement, said last-mentioned means released by the movement of the oscillating disks, substantially as described.

7. A chuck of the character described, comprising a support, rotary jaws mounted in the support, a pair of parallel shafts located below the jaws, means operated by one of said shafts for moving the jaws toward and away from each other, disks fixed

to turn with the jaws, oscillating disks adjacent the first-mentioned disks, pawls on the oscillating disks engaging the first-mentioned disks, crank arms on the other of said shafts, links connecting the crank arms and oscillating disks, a spring-pressed locking dog engaging one of the first-mentioned disks and holding the same against movement, and one of said oscillating disks having a cam thereon engaging and releasing the dog when the disk is oscillated in one direction, substantially as described.

8. A chuck of the character described, comprising a support, rotary jaws mounted in the support, a pair of parallel shafts located below the jaws, means operated by one of said shafts for moving the jaws toward and away from each other, disks fixed to turn with the jaws, oscillating disks adjacent the first-mentioned disks, pawls on the oscillating disks engaging the first-mentioned disks, crank arms on the other of said shafts, links connecting the crank arms and oscillating disks, said arms splined to slide on the shaft, a spring-pressed locking dog engaging one of the first-mentioned disks and holding the same against movement, and one of said oscillating disks having a cam thereon engaging and releasing the dog when the disk is oscillated in one direction, substantially as described.

9. A chuck of the character described, comprising a support, two members mounted to slide on the support, rotary jaws carried by the members, an oscillating shaft mounted in the support, oscillating disks carried by the members, means operated by the disks to turn the jaws, links connected to the disks, crank arms connected to the links and having grooved hubs splined to slide on the shaft, and pins on the members projecting into the grooves of the hubs compelling the crank arms to move with the members, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN D. BANKS.

Witnesses:

MARIE JACKSON,
CHAS. E. POTTS.