

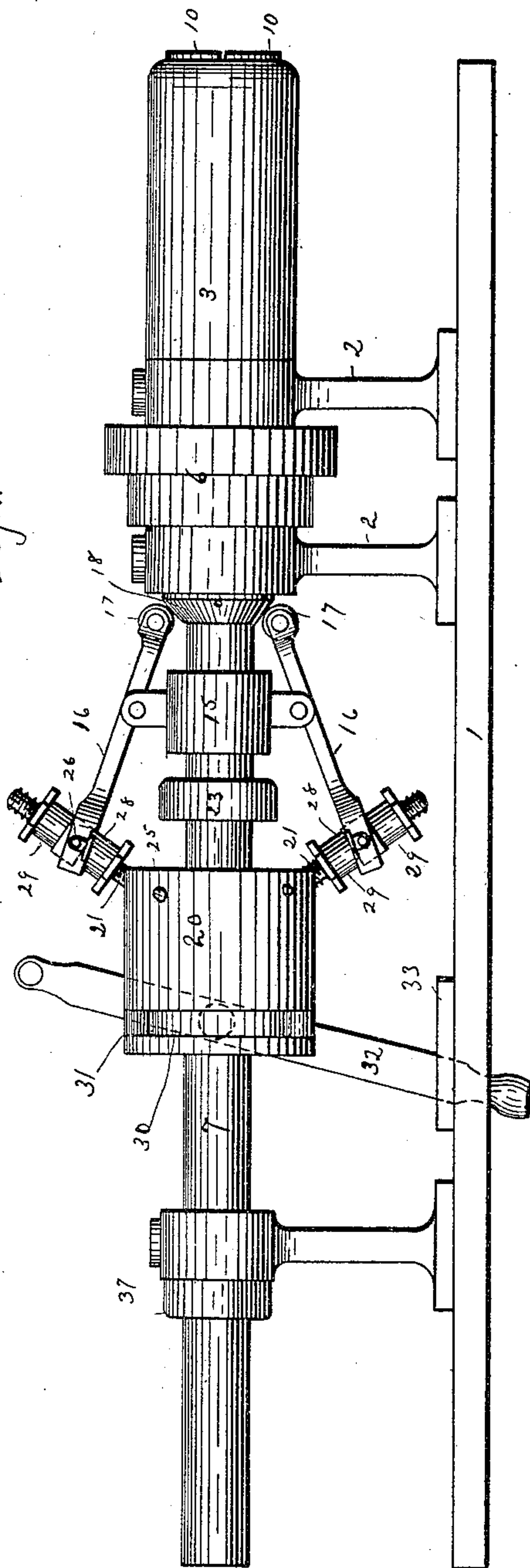
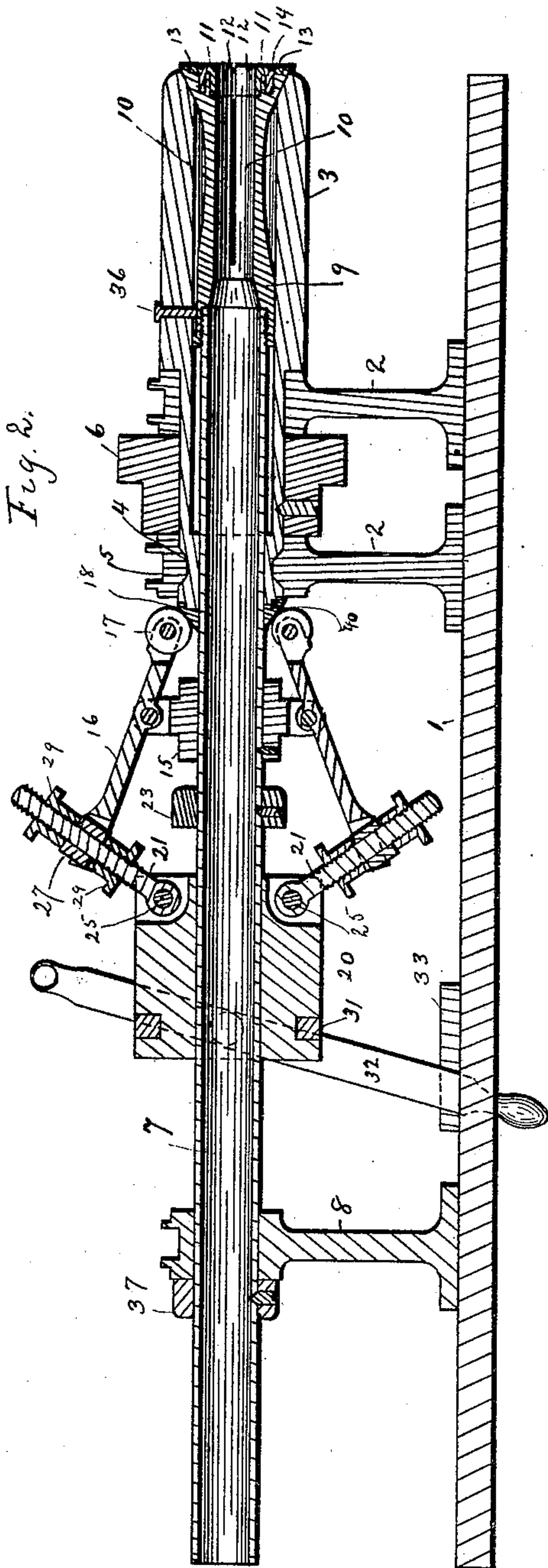
(No Model.)

2 Sheets—Sheet 1.

H. RUNG.
CHUCK FOR RODS OR TUBES.

No. 410,738.

Patented Sept. 10, 1889.



Witnesses
Willis B. Magnuder.
Aly. Scott

Inventor
Henry Rung
by Church & Church
his Attorneys

(No Model.)

2 Sheets—Sheet 2.

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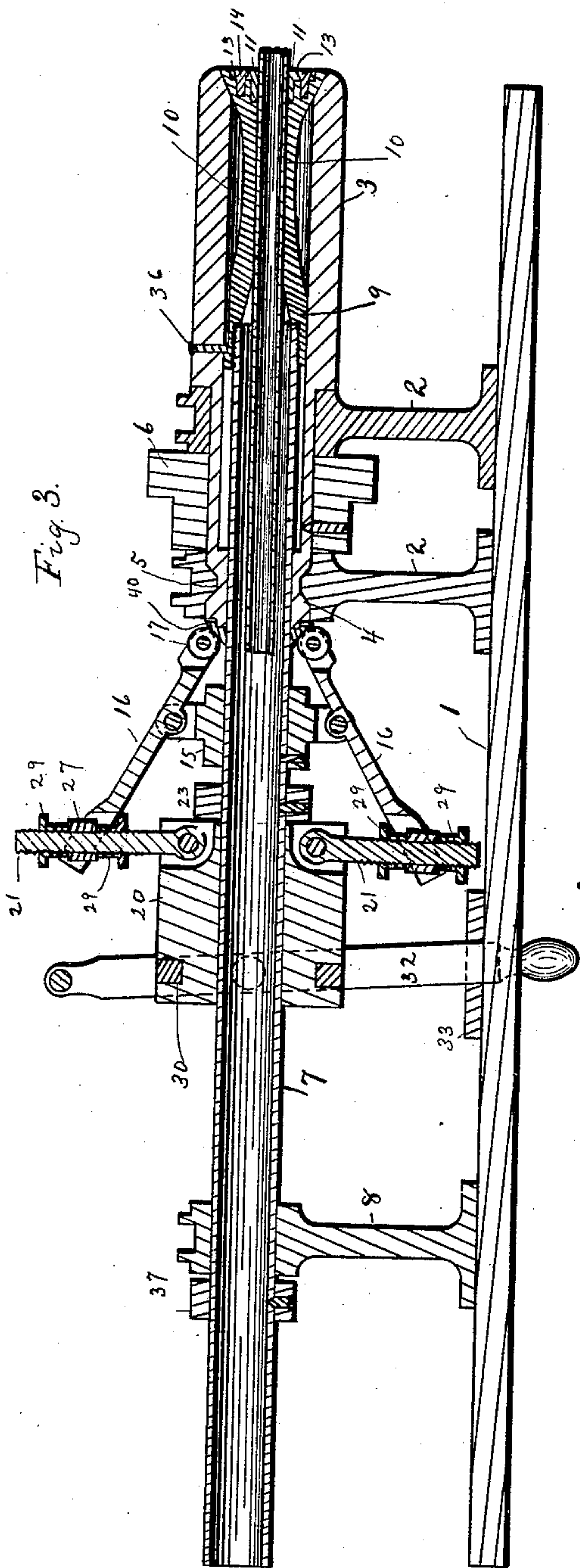


Fig. 3.

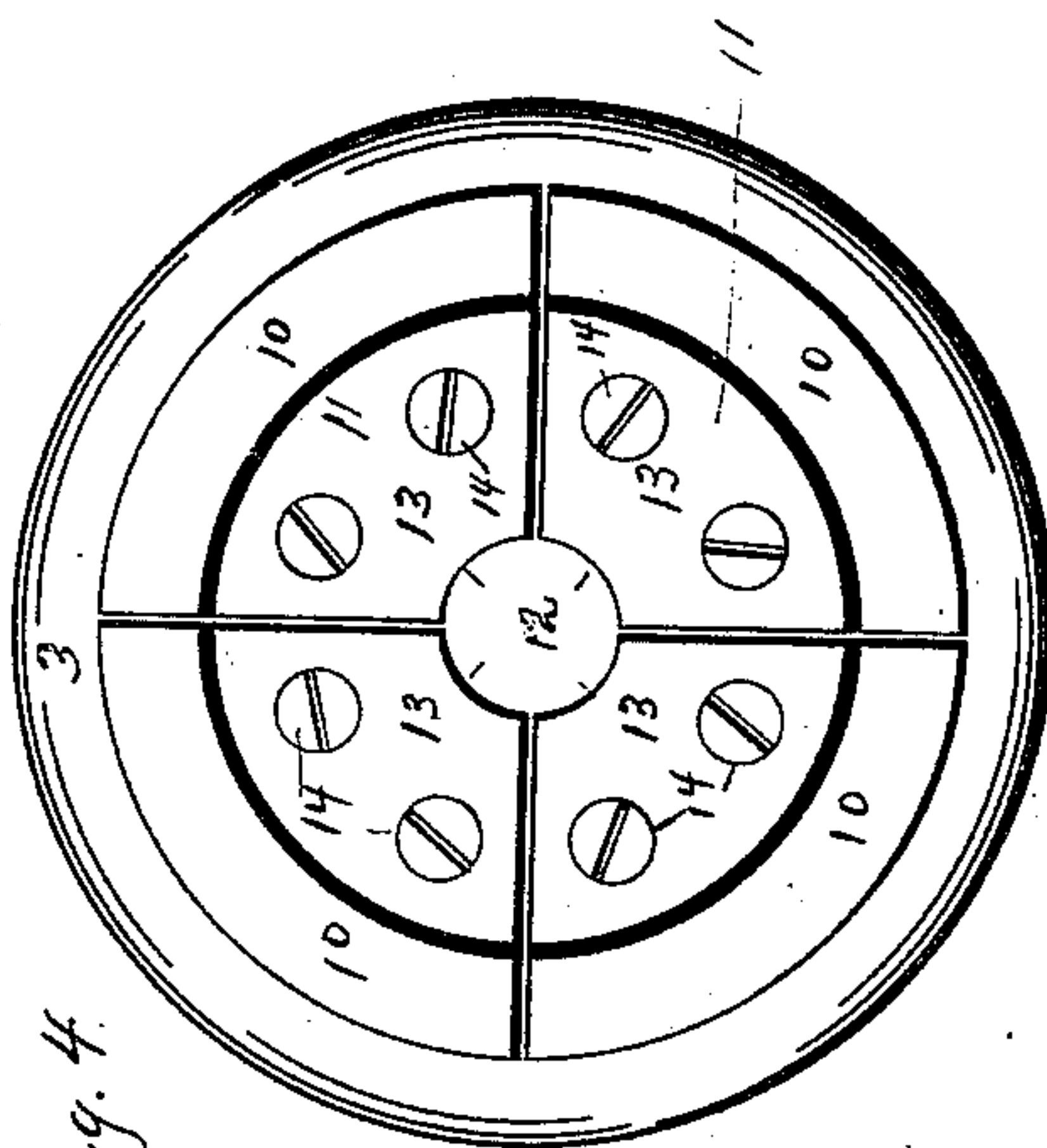
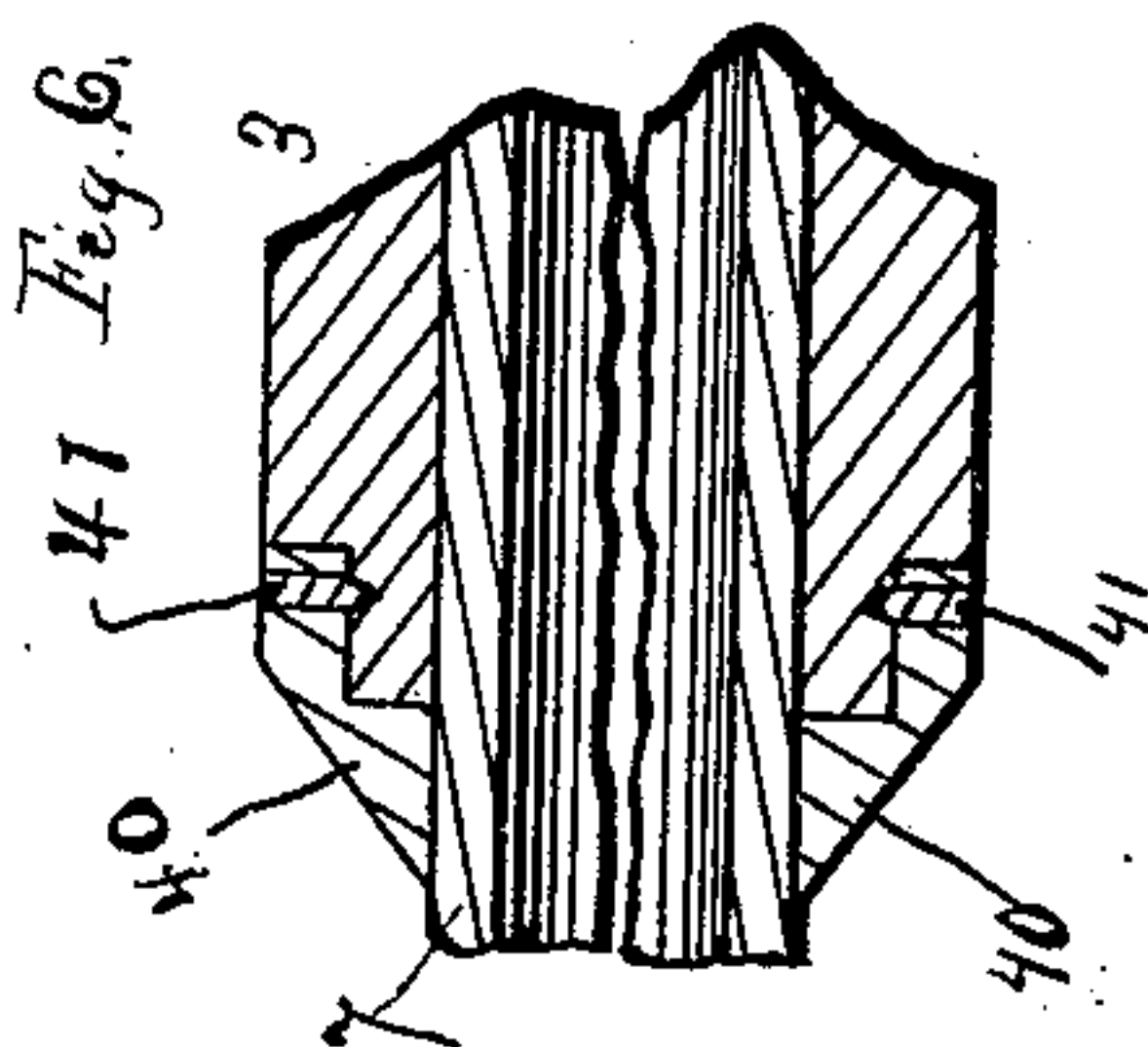


Fig. 4.



41 Fig. 6.

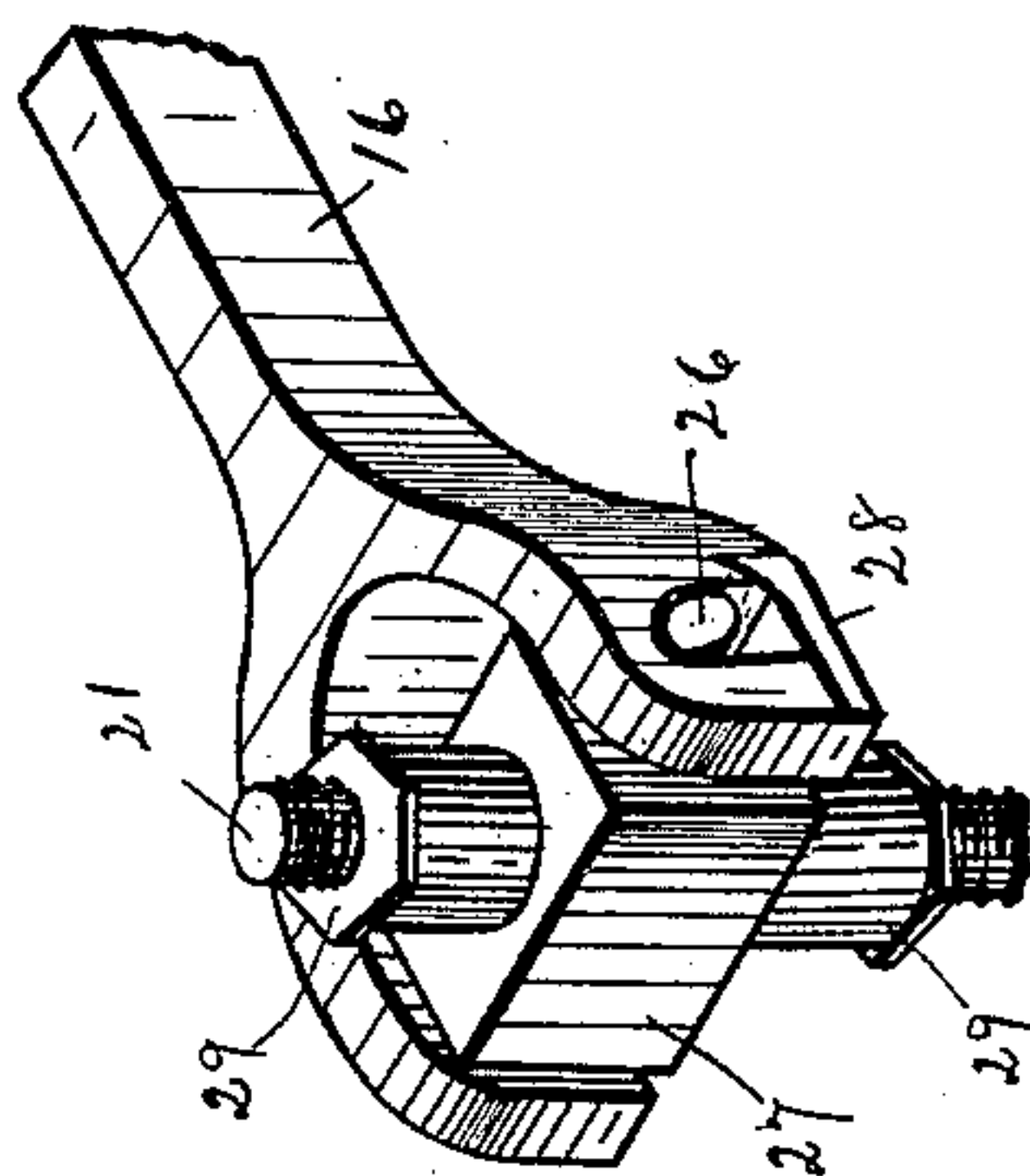


Fig. 5.

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UNITED STATES PATENT OFFICE.

HENRY RUNG, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF TO
FRANK S. UPTON, OF SAME PLACE.

CHUCK FOR RODS OR TUBES.

SPECIFICATION forming part of Letters Patent No. 410,738, dated September 10, 1889.

Application filed May 17, 1889. Serial No. 311,295. (No model.)

To all whom it may concern:

Be it known that I, HENRY RUNG, of the city of Rochester, county of Monroe, and State of New York, have invented certain new and
5 useful Improvements in Chucks for Rod or Tube Cutting Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being
10 had to the accompanying drawings, forming a part of this specification, and to figures and letters of reference marked thereon.

My present invention relates more particularly to that class of chucks adapted to grasp and rotate tubes or rods, which may then be
15 operated upon by any suitable tools—as cutters to cut off sections—and it has for its objects to provide an improved chuck that is simple in construction, easily and quickly operated, permitting the release or chucking of
20 the tube or rod being operated upon without necessitating a stoppage of the machine, and, further, one that will be automatically locked when operated to grasp the tube without requiring an auxiliary catch or lock for holding
25 it in engagement.

To these ends the invention consists in certain constructions and combinations of parts, all as will be hereinafter fully described, and the novel features pointed out
30 particularly in the claims at the end of this specification.

In the drawings, Figure 1 represents a side elevation of a machine constructed in accordance with my invention; Fig. 2, a longitudinal
35 section of the same with the jaws separated; Fig. 3, a similar view with the parts in locked position holding a piece of tubing; Fig. 4, an end view of the chuck; Figs. 5 and 6, detail views.

40 Similar letters of reference in the several figures denote similar parts.

1 indicates a base or table, and 2 standards thereon having bearings at the upper ends in which the chuck-head 3 operates. This
45 head, preferably tubular, as shown, is provided with a groove 4 on the outside near one end, into which the collar 5 in one of the bearings, preferably of Babbitt metal, enters to prevent longitudinal movement of said
50 head, and secured to the head, preferably between the bearings, is a cone-pulley 6, on

which the driving-belt operates. Inside this head operates a movable hollow spindle 7, extending out at the rear and supported in a bearing formed in a standard 8 on the base, 55 and upon its forward end are provided the clamping-jaws, arranged to co-operate with the inclined mouth of the head 3 and grasp the tube or rod when the spindle is moved toward the rear. The internal diameter of 60 the forward portion of head 3 is larger than the spindle 7, and upon the end of the latter is mounted a sleeve 9, having a tapped rear end screwing into the spindle, as shown, said sleeve being split at its 65 outer end, forming separate spring-arms 10, to which the jaws 11 are connected. This sleeve is further provided with a groove or keyway, in which projects a screw 36, passing through the head and operating to carry 70 the spindle when the head is rotated, though permitting its longitudinal movement relative to the head. The outer sides of the ends of the arms are beveled to correspond with the tapering aperture in the forward portion 75 of the head, and the jaws are constructed with bearing portions 12, extending inside the arms, and flanges 13 at the front, through which screws 14 are passed into the arms, securing the jaws in position. The shape and position 80 of these jaws are such that they will, when the arms 10 are clamped together, form an opening the size and shape of the tube or rod to be grasped, the jaws shown in Fig. 4 being arranged to grasp a round tube on all sides 85 without liability of crushing it, if of light material. It will be noted that the jaws project at the front of the chuck and that the securing-screws are readily accessible to facilitate removal, and as I propose to have a number 90 of different sizes of sets of jaws I am enabled to readily secure in place jaws that will hold the size of tubing it may be desired to operate upon with the same movement of the spindle. 95

It will be understood that the clamping of the jaws is accomplished by drawing the spindle 7 backward, causing the inclines on the head and arms to co-operate and bring them together, and that the release is caused by 100 moving said spindle forward, the spring-arms automatically separating the jaws. As a

means for accomplishing this operation and forming a desirable and efficient locking device for holding the jaws clamped upon the tube, I secure upon the spindle, just beyond
 5 the end of the head, a casting 15, upon which are pivoted arms or levers 16, preferably provided with rollers 17 on their ends, adapted to operate upon an incline 18, formed on the rear of the head, and preferably arranged at
 10 an angle of, say, forty-five degrees, while the incline operating on the clamping-jaws is at a different angle, say thirty degrees, the object of this differential arrangement being to permit a comparatively small movement of
 15 the levers to move the jaws in and lock them.

Mounted upon the spindle 7, so as to slide loosely thereon, is a block 20, upon which are pivoted eyebolts or links 21 21, connected to
 20 the ends of levers 16 and forming therewith toggles operating, when the block is moved toward the casting 15, to separate the rear end of the levers and cause the rollers on the ends to bear upon the end of the head, drawing the spindle toward the rear and causing the jaws
 25 to clamp the tube.

23 represents a collar constituting a stop secured to the spindle 7, with which the block 20 is adapted to come in contact when moved forward to its extreme position, and this stop
 30 is so arranged relative to the lever ends that when it is in this extreme position the pivotal point of the links 21 on the block 20 will be forward of the point of connection of the levers, thus throwing the toggle over the center and keeping the spindle drawn back and
 35 the tube grasped by the jaws.

For the purpose of preventing the movement of the spindle too far forward when the jaws are released, I provide it with a collar 37
 40 at the rear end, arranged, when the jaws are fully released, to co-operate with bearing 8.

The links 21, I prefer to construct in the form of eyebolts, the pivotal pins 25 passing through the eyes on the block 20, while the
 45 ends of the levers 16 are provided with suitable recesses forming bearings for trunnions 26 on perforated blocks 27, said trunnions being held in place by plates 28. The eyebolts pass loosely through these blocks, and
 50 suitable set-nuts 29 29 are arranged upon said bolts—one on each side of the blocks—adapted to be screwed tightly against the blocks, locking them to the bolts. This form of connection is simple, and, more than all,
 55 enables me to adjust the length of the link formed by the screws, thereby regulating the movement given the levers and spindle, so that when clamping-jaws are provided in the chuck for grasping small tubes the links may
 60 be lengthened and a greater amount of motion given the spindle, though I prefer to have the movement of the spindle and head relative to each other constant and employ jaws of different size for different tubes.

65 The block 20 may be slid on the spindle by any means desired; but I prefer to form in it a groove 30, in which operates a fork 31, piv-

oted to an operating-lever 32, provided with a handle and adapted to co-operate with any friction-surface, as 33, it being held by this
 70 from accidental displacement.

In operation the head is rotated by a suitable belt passing around the pulley, carrying with it the spindle and connected parts, so that the only points at which there can be
 75 any friction are in the bearings and between the fork 31 and the block 20, which will be very slight. The parts being in the position shown in Fig. 2, the rod or tube it is desired to rotate is passed in the spindle from the
 80 rear, with its end projecting from the head between the jaws, and the operator moves it out the required distance, preferably against a gage, if it is desired to cut off a section, and then throws the lever 32 over to the position
 85 in Fig. 3, causing the spindle to be drawn backward and the jaws to clamp the tube tightly and rotate it, and it will be noted that the jaws and operating devices are by the passage of links 21 over the center firmly
 90 locked, and as the devices causing the locking are rotating there is no friction with a stationary part.

By a reverse movement of the lever the tube can be released and adjusted by the operator as desired without stopping the rotation, and again chucked, these operations being accomplished as often as desired.
 95

It will be noted that the locking-levers move with the chuck and that the rollers operate
 100 at the same points on the head, and for the purpose of reducing the wear of the parts to the minimum and compensating for it I preferably form the rear end of the head of a hardened-steel ring 40, secured in place by
 105 one or more screws 41, so that should the portion of the incline with which the rollers on the levers engage become worn this ring can be loosened, turned around a slight distance, and again secured, thus giving a new surface
 110 for the rollers to operate upon.

I claim as my invention—

1. The combination, with the chuck-head having the inclined portion and the jaws co-operating with the incline, of a toggle or toggles connecting said head and jaws, moving
 115 them relative to each other to cause the clamping, and a stop for limiting the motion of the toggle or toggles across the center and locking the jaws in clamped position, substantially as described.
 120

2. The combination, with the chuck-head and the jaws co-operating therewith, of a toggle connecting said head and jaws for moving
 125 them relative to each other, causing the clamping, and means for throwing said toggle across the center, causing the locking of the jaws when clamped, substantially as described.

3. The combination, with the rotary chuck-head and the jaws co-operating therewith, of
 130 one or more toggles connecting said head and jaws, for moving them relative to each other to cause the clamping, a sliding block rotating with the head, and a lever for operating said

block to move the toggle across the center, causing the clamping and locking, substantially as described.

4. The combination of the chuck-head 5 having the two inclines, the spindle, the clamping-jaws thereon co-operating with one of the inclines, the pivoted lever or levers mounted on the spindle and co-operating with the other incline on the head, the sliding block 10 for moving the lever or levers to cause the movement of the head and jaws relative to each other, and the lever for moving said block, substantially as described.

5. The combination of the chuck-head 15 having the differential inclines, the spindle, the clamping-jaws thereon co-operating with one of the inclines, the pivoted lever or levers mounted on the spindle and co-operating with the other incline, and the sliding block for moving the lever or levers to cause the movement 20 of the head and jaws relative to each other, substantially as described.

6. The combination, with the clamping-jaws, the chuck-head, and the spindle arranged to be moved relative to each other to 25 cause the clamping, of the lever forming the connection between them, a sliding block rotating with the head, and a link connecting the block and lever, substantially as described.

7. The combination of a hollow chuck-head 30 having inclines at the ends, a hollow spindle, clamping-jaws carried thereby, levers pivoted on the spindle operating on the incline on the head, a sliding block, links connecting it with the levers, and a shifting-lever 35 connected to the block for operating it, substantially as described.

8. The combination, with the chuck-head, 40 the clamping-jaws, and the spindle, of the lever or levers for moving the head and spindle relatively to cause the clamping, the movable block rotating with the spindle and head, the links connecting levers and block, and means for adjusting their length, substan- 45 tially as described.

9. The combination, with the chuck-head, the clamping-jaws, and the spindle, of the lever or levers for moving the head and spindle relatively to cause the clamping, the movable block rotating with the spindle and head, 50 the adjustable links connecting the levers and block, and a stop for limiting the movement of the block, substantially as described.

10. The combination of the chuck-head having the inclined portion, the spindle, the 55 sleeve thereon having the spring-arms carrying the clamping-jaws, and the spline-and-groove connection between said sleeve and head, substantially as described.

11. The combination, with the chuck-head 60 and the spring-arms, of the removable clamping-jaws mounted on the arms, and the securing devices—such as screws—accessible from the front, substantially as described.

12. The combination, with the chuck-head, 65 the spindle, and the spring-arms thereon, of the removable clamping-jaws having the lateral flange passing over the ends of the arms, and the screws for securing them to the arms, substantially as described. 70

13. The combination, with the chuck-head, the spindle, and the spring-arms thereon, of the removable clamping-jaws having the longitudinal bearing-surfaces on the inside of 75 the arms and the lateral flanges on the outer ends, and the screws for securing the jaws on the arms, substantially as described.

14. The combination of the chuck-head, the spindle, the clamping-jaws, the levers for causing the movement of the head and spin- 80 dle relatively to each other to cause the clamping, and the adjustable inclined collar on which the lever operates, substantially as described.

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Witnesses:

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