(No Model.) 3 Sheets—Sheet 1.

A. D. LAWS.

MACHINE CHUCK.

No. 567,399. Patented Sept. 8, 1896.

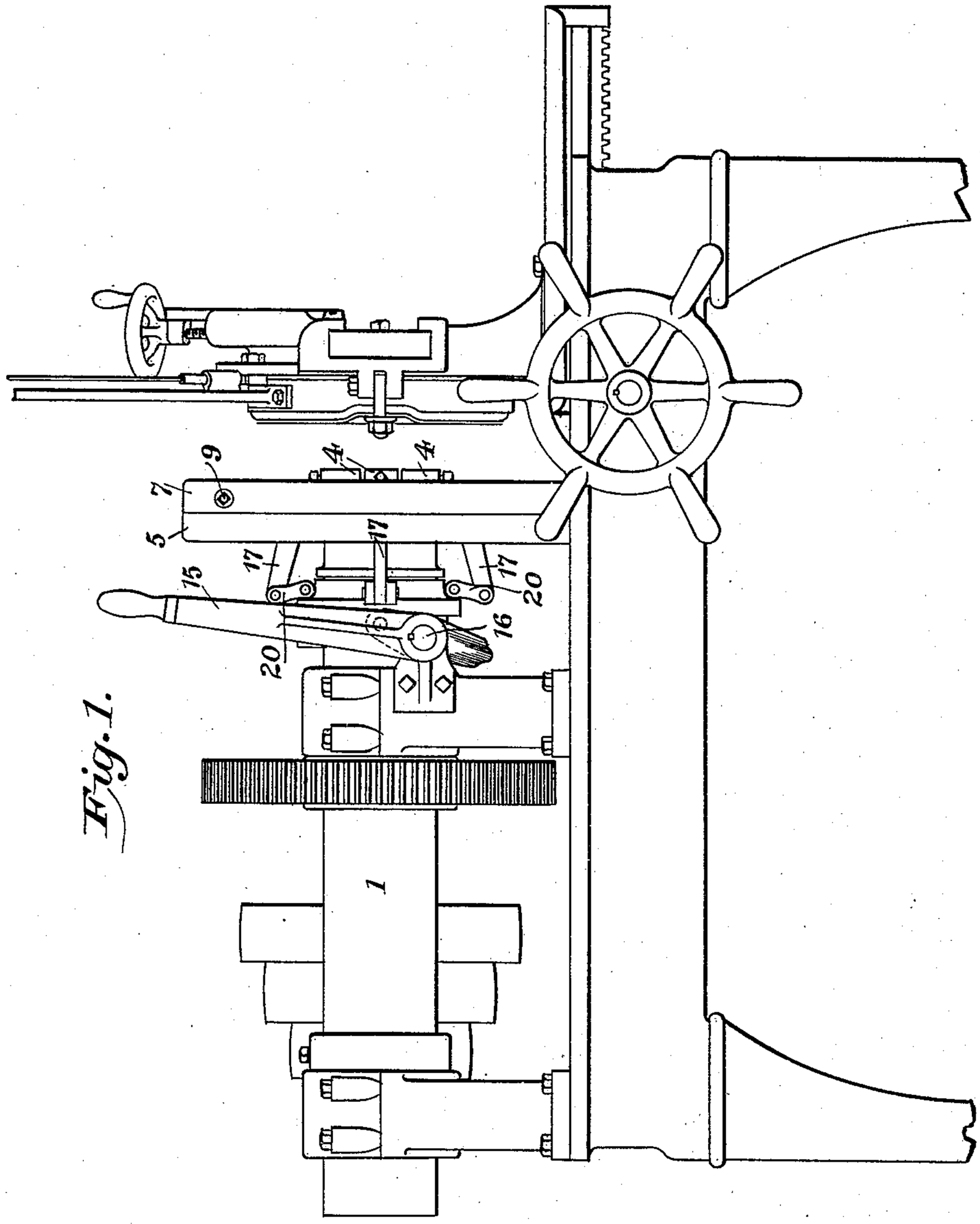


Fig. 1.

WITNESSES:

J. F. Finch.

M. T. Snyder

INVENTOR

A. D. Laws

BY ATTY

(No Model.) 3 Sheets—Sheet 2.

A. D. LAWS.

MACHINE CHUCK.

No. 567,399. Patented Sept. 8, 1896.

Fig. 3.

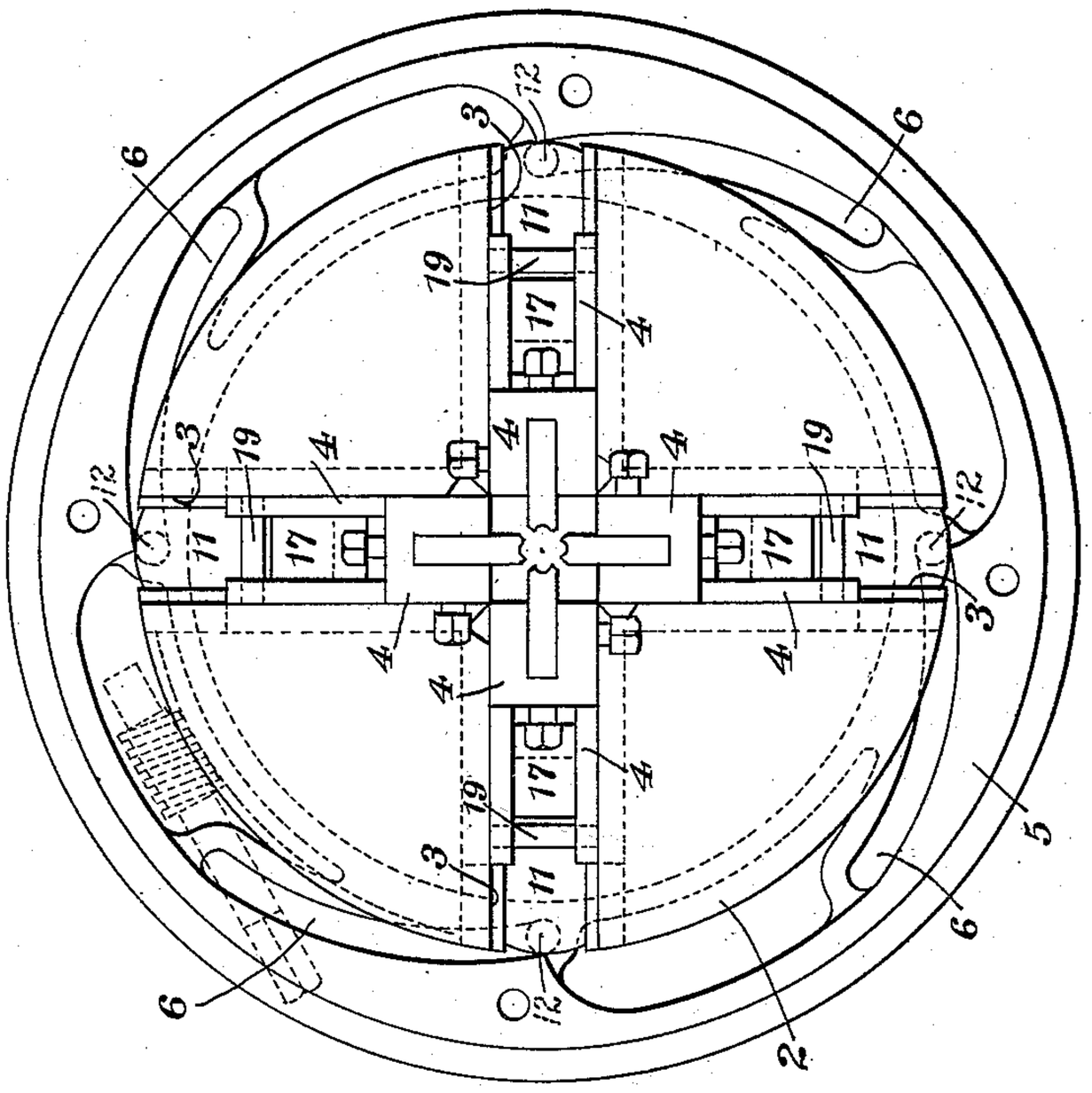
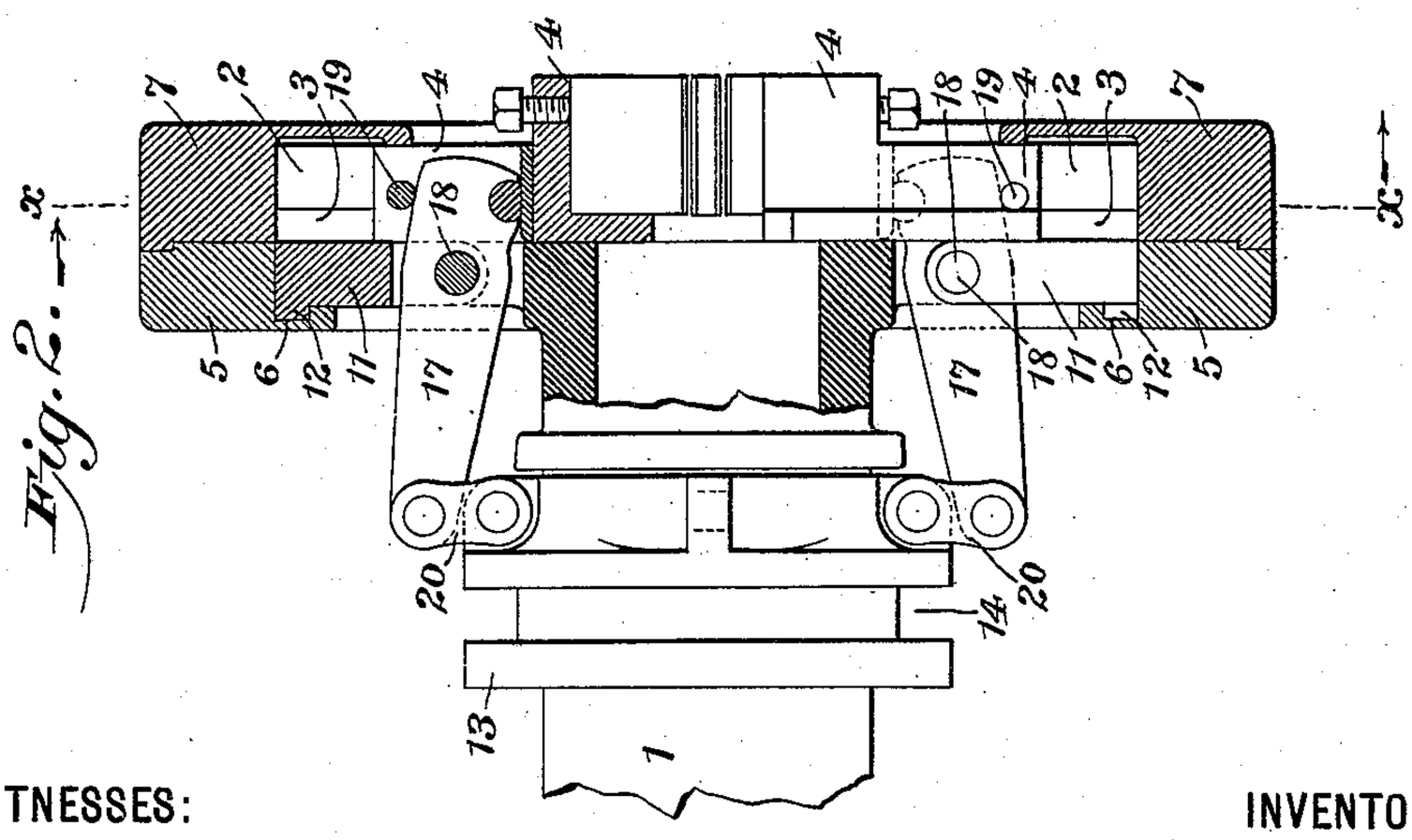


Fig. 2.



WITNESSES:

J. F. Finch.

M. L. Langdon.

INVENTOR

A. D. Laws

BY J. M. Smith Jr. ATTY

(No Model.) 3 Sheets—Sheet 3.

A. D. LAWS.

MACHINE CHUCK.

No. 567,399. Patented Sept. 8, 1896.

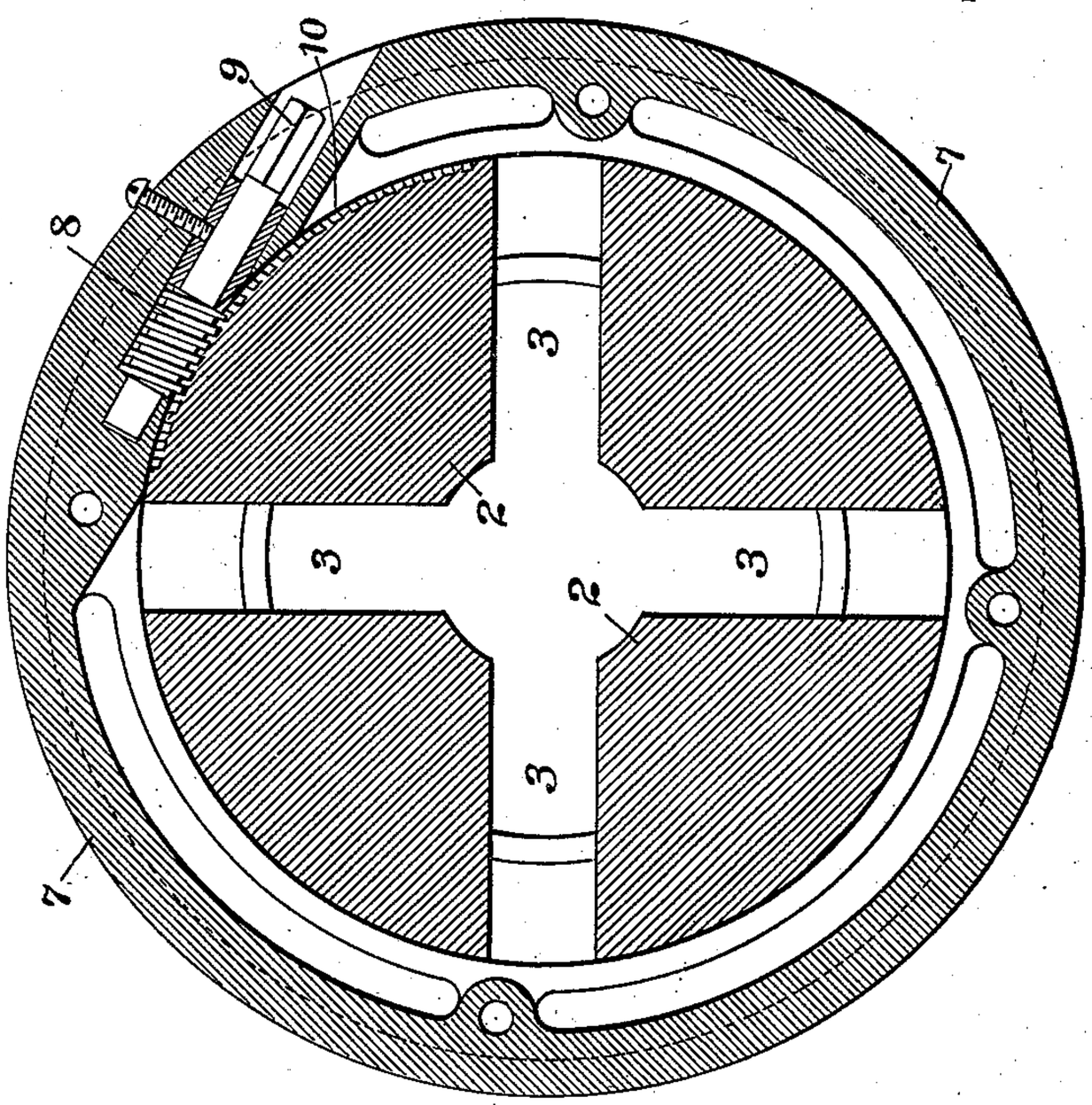


Fig. 5.

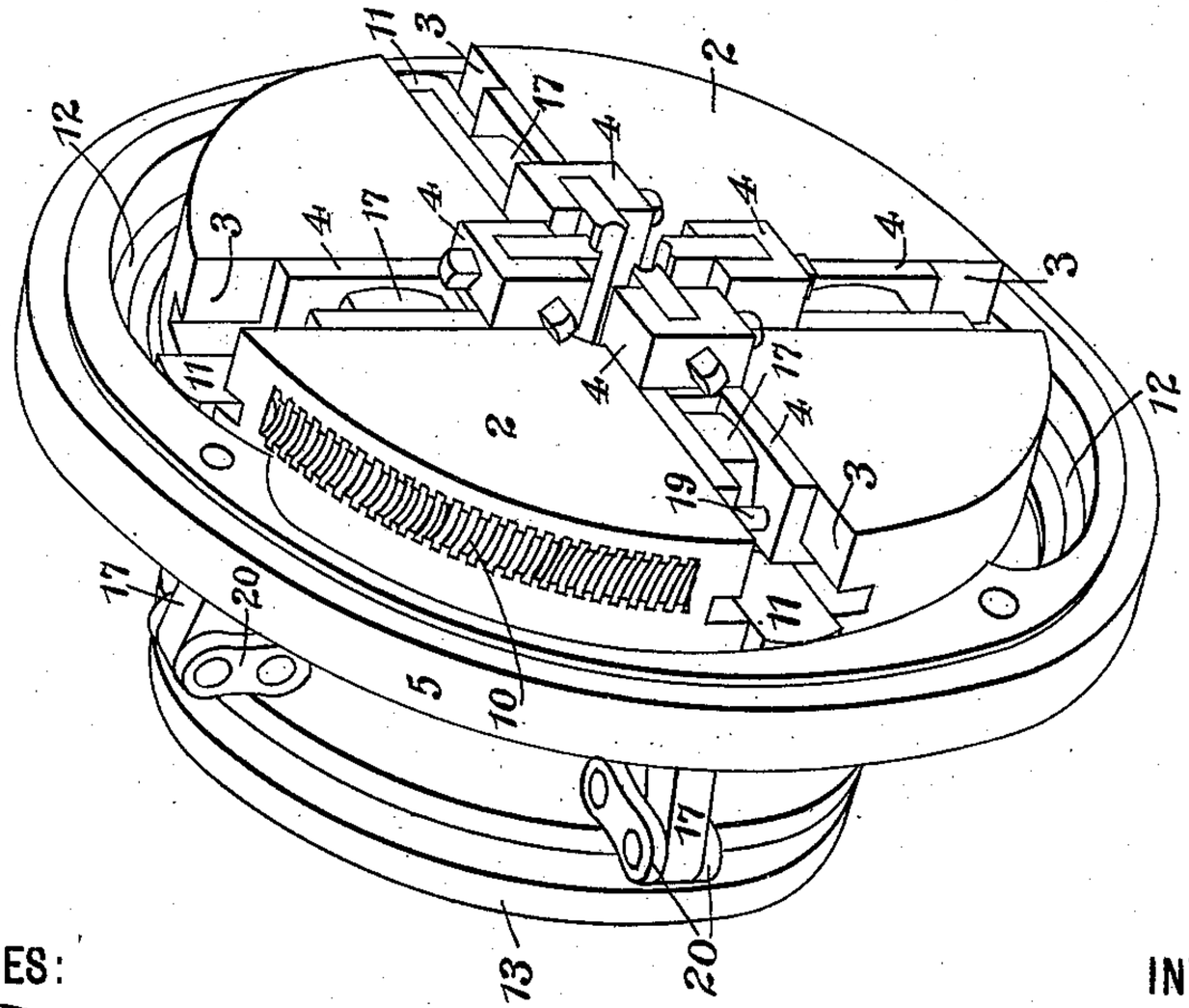


Fig. 4.

WITNESSES:

J. F. Finch.

M. L. Longden

INVENTOR

A. D. Laws

BY M. Smith & Co. ATTY

UNITED STATES PATENT OFFICE.

ALBERT D. LAWS, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE EATON, COLE & BURNHAM COMPANY, OF SAME PLACE.

MACHINE-CHUCK.

SPECIFICATION forming part of Letters Patent No. 567,399, dated September 8, 1896.

Application filed May 29, 1896. Serial No. 593,531. (No model.)

To all whom it may concern:

Be it known that I, ALBERT D. LAWS, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machine-Chucks; and I do 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 appertains to make and use the same.

My invention relates to certain improvements in machine-chucks such as are used on power machinery in shops for the purpose of holding piping, rods, bolts, nipples, &c., during the performance of operations such as screw-cutting, cutting off, milling, and the like.

In order that those skilled in the art to which my invention appertains may fully understand the same, I will proceed to describe its construction and operation in detail, references being had by numerals to the accompanying drawings, which form a part of this application, and in which—

Figure 1 is an elevation of a machine equipped with my improved chuck; Fig. 2, a detail sectional elevation, partly broken away, of the chuck itself; Fig. 3, a front elevation of the chuck with the face-ring removed; Fig. 4, a detail perspective of the construction shown at Fig. 3; and Fig. 5, a section at the line x x of Fig. 2, with the jaws and other operating-levers removed.

Similar numbers of reference denote like parts in the several figures of the drawings.

Although I have illustrated at Fig. 1 a complete machine such as my improvement is usually identified with, nevertheless I do not claim any novelty in the construction of such machine proper, for my invention resides solely in the chuck itself, and I will therefore enter into no description whatever of any other portion of this machine.

The rotatory shaft 1 of the machine is hollow and upon its extremity is secured the chuck-head 2, within which latter are formed ways 3 for the jaws 4 of the chuck. These jaws are preferably four in number and may each be made in one piece or in sections secured together, and they are capable of free sliding movements within said ways 3 toward and away from the axial center of the head 2.

5 is a cam-ring supported around the rear portion of the head 2 and capable of an independent rotary movement thereon, and provided with elongated cam-grooves 6, in the present instance four in number to correspond with the number of jaws used.

7 is the face-ring, which incloses the front portion of the head 2 and is secured by screws to the cam-ring 5 and is capable of rotation with the latter.

Journaled within the rim of this face-ring 7, in any suitable manner so as to be capable of revolution, but incapable of lengthwise movement, is a worm 8, whose shaft is provided with a wrench-hold 9. Upon the periphery of the head 2, throughout a portion of the circumference (about one-quarter) is cut a worm-gear 10, which, when the face-ring is in position, is in engagement with the worm 8. Since this head 2 is rotated with the shaft 1, and since the cam-ring and face-ring are both supported by the head, it will be clear that all these parts will be carried around in harmony with the shaft, but, since the cam-ring and face-ring have an independent movement around the head, it will be clear that when the worm 8 is turned these two rings will be revolved independent of the head, the object of which I will now explain.

11 are fulcrum-blocks, corresponding in number to the jaws and capable of free sliding movements within suitable ways in the head in the immediate rear of said jaws. From the outer extremities of these fulcrum-blocks studs 12 extend rearwardly into the cam-grooves 6, so that it will be clear that when the cam-ring 5 is turned these fulcrum-blocks are thrown inward or outward, as the case may be.

13 is a collar loose on the shaft 1, so as to be capable of a lengthwise movement thereon, which collar is constructed with a groove 14.

15 is a hand-lever pivoted at 16 to the frame of the machine, and having any suitable and ordinary connection with the groove 14, whereby the swinging movements of the lever will effect the sliding of the collar 13 without in any way interfering with the revolution of the latter.

17 are levers, pivoted at 18 to the fulcrum-blocks 11, the forward extremities of which levers bear at their inner surfaces against the jaws, while across the upper edges of the levers extend pins 19, secured within the jaws, whereby the latter will move in harmony with the upward swing of said levers.

20 are links whose extremities are respectively pivoted to the rear ends of the levers 17 and to the collar 13, so that it will be clear that when said collar is moved along the shaft the levers 17 will be rocked on their pivotal points 19.

In securing a pipe by means of my improved chuck said pipe is passed through the shaft and between the jaws, and is then securely clamped by the latter by throwing the lever 15 inward, as shown at Fig. 1, and the release of the pipe may be readily effected by the reverse movement of said lever.

I have shown the hollow shaft, since I have illustrated my improvement in connection with a machine for threading or cutting off pipe, but of course I do not desire to be limited to the hollow shaft, since my improvement is applicable in any instance where a machine-chuck is used, and is not necessarily associated with the threading or cutting of pipe.

The normal adjustment of the jaws to conform to different diameters and work to be clamped is effected by turning the worm 8, whereby the fulcrum-blocks 11 are contracted or distended, as the case may be, it being of course manifest that the jaws will move in harmony with such blocks.

My improvement is exceedingly strong and durable and stands the heaviest strains, is positive and efficient in its operation, and is readily adjustable for various kinds of work.

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

1. The combination of the shaft, the head carried thereby, the jaws guided within suitable ways in said head, the ring provided with cam-grooves and loosely supported around said head, the fulcrum-blocks guided within suitable ways in the head and provided with studs which project within said cam-grooves, the levers pivoted to said fulcrum-blocks and connected at their inner extremities to said jaws, the collar capable of sliding on said shaft, the links having their extremities pivoted respectively to the outer ends of said levers and to said collar, and the lever suitably connected to the collar and whereby the latter is operated, substantially as set forth.

2. The combination of the shaft, the head carried thereby and having a worm-gear cut on a portion of its periphery, the jaws guided within suitable ways in said head, the ring supported loosely around said head and provided with cam-grooves, the fulcrum-blocks guided within suitable ways in the head and having studs extending within said cam-grooves, the face-ring loosely supported around said head and secured to the cam-ring, and the worm journaled within said face-ring and engaging with the worm-teeth in said head, substantially as set forth.

3. The combination of the shaft carrying the head within a portion of the periphery of which latter worm-gear teeth are cut, the ring supported loosely around said head and having therein cam-grooves, the fulcrum-blocks guided within suitable ways in the head and having studs which extend within said cam-grooves, the jaws also guided within suitable ways in said head, the face-ring supported loosely around the head and secured to the cam-ring, the worm journaled within the face-ring and engaging the worm-teeth on said head, the levers pivoted to the fulcrum-blocks and having their inner extremities operatively engaged with the jaws, the sliding and grooved collar on said shaft, the links whose extremities are pivoted respectively to the outer ends of the levers and to said collar, and the lever pivoted to a stationary part of the machine and operatively connected with the grooves in said collar whereby the latter may be shifted to and fro without interfering with its rotation, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT D. LAWS.

Witnesses:
J. S. FINCH,
EDWARD M. BENNETT.