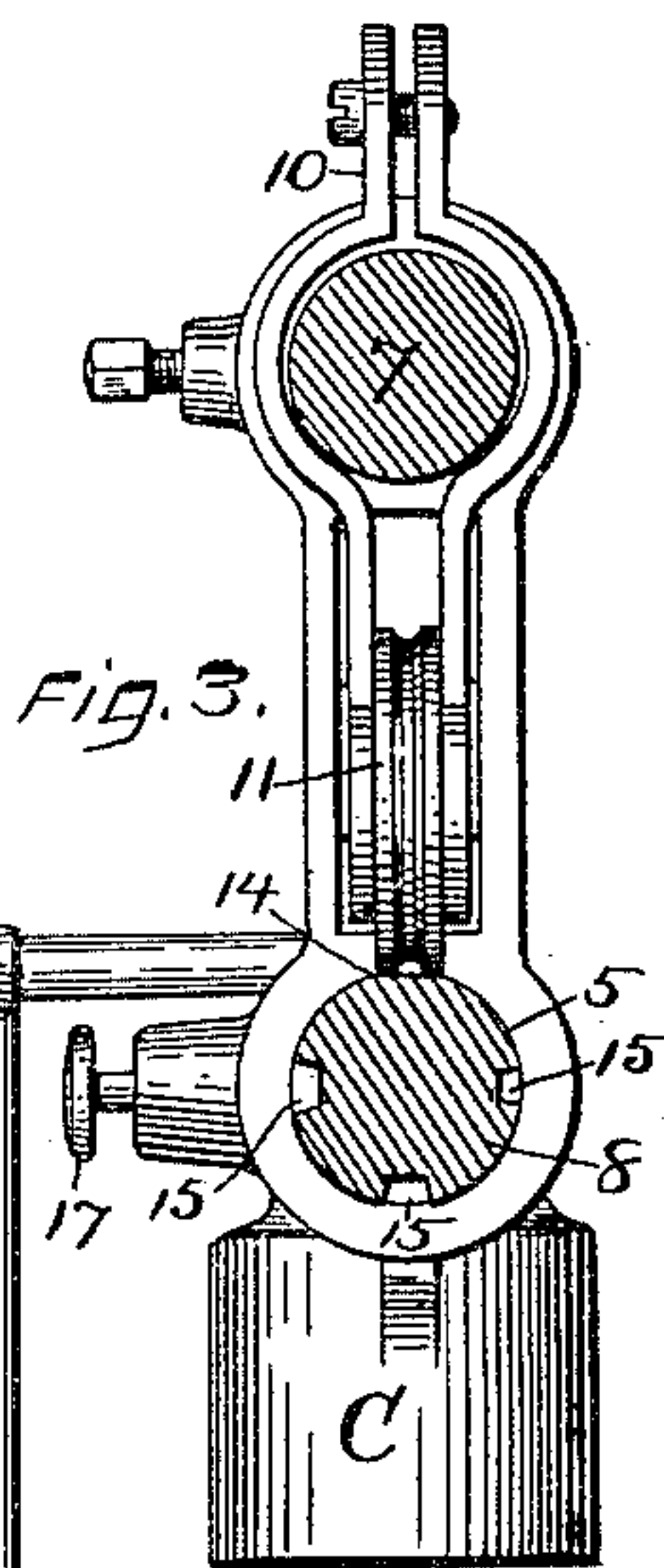
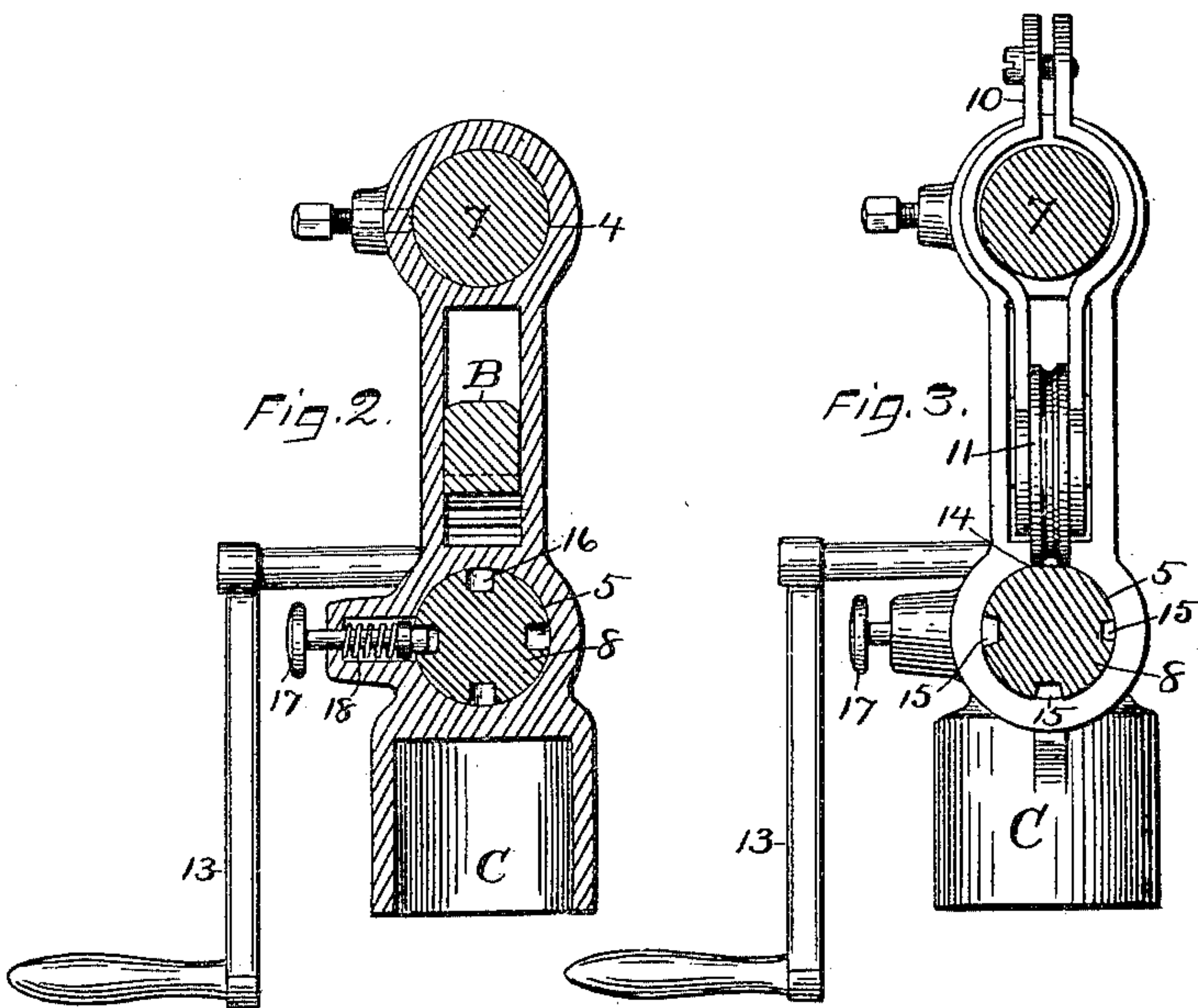
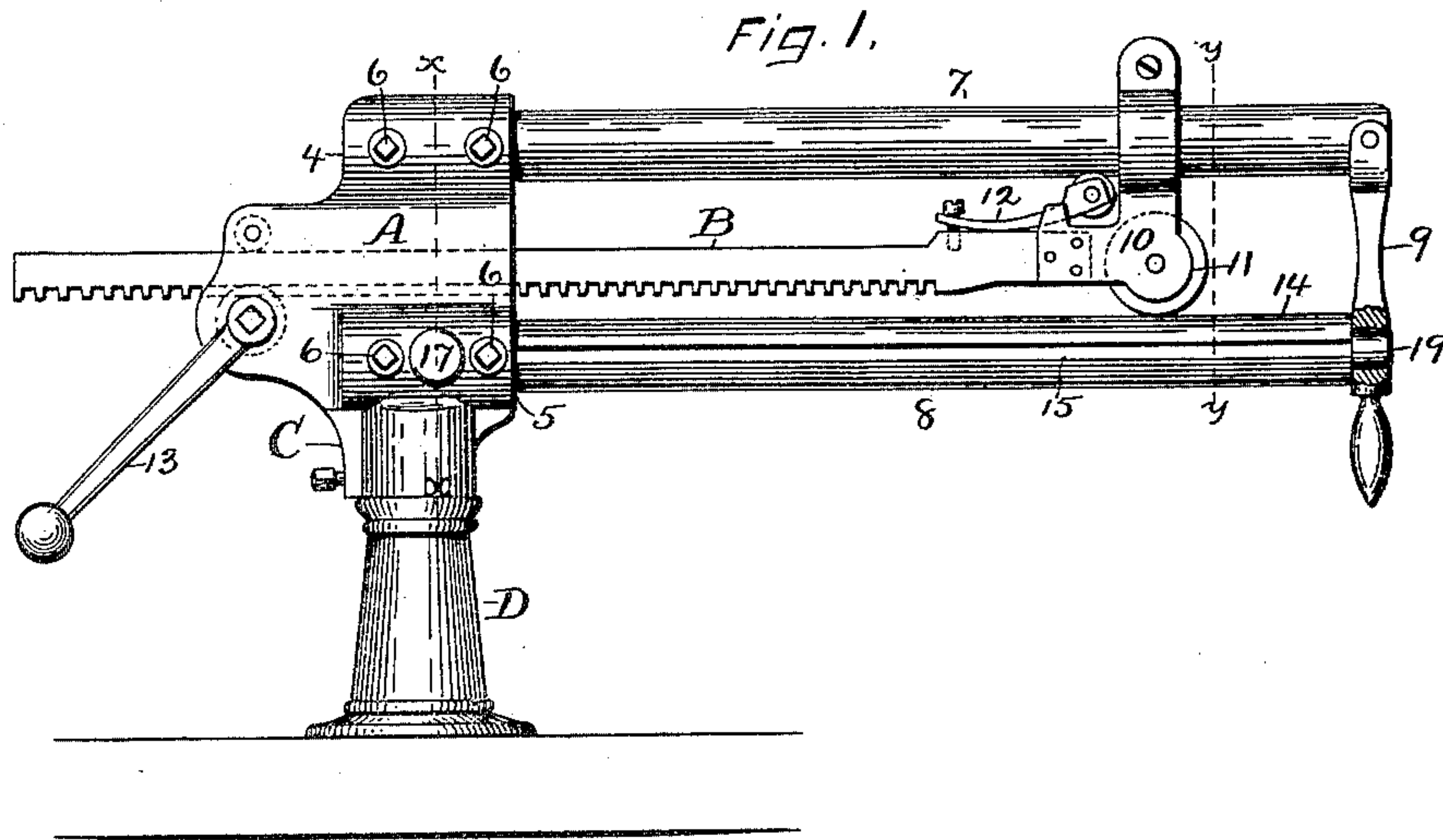


(No Model.)

H. S. GRANNIS.  
GROOVING MACHINE.

No. 462,840.

Patented Nov. 10, 1891.



WITNESSES.  
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# UNITED STATES PATENT OFFICE.

HIAL S. GRANNIS, OF SOUTHTON, CONNECTICUT, ASSIGNOR TO THE PECK, STOW & WILCOX COMPANY, OF SAME PLACE.

## GROOVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 462,840, dated November 10, 1891.

Application filed February 18, 1891. Serial No. 381,815. (No model.)

*To all whom it may concern:*

Be it known that I, HIAL S. GRANNIS, a citizen of the United States, residing at Southington, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Grooving-Machines, of which the following is a specification.

My invention relates to improvements in grooving-machines, and the objects of my improvement are cheapness and simplicity of construction and the production of a strong and substantial machine for long work and which is especially easy and convenient to operate.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of my machine as mounted upon a standard. Fig. 2 is a vertical section of said machine on line  $xx$  of Fig. 1; and Fig. 3 is a vertical section of the horns or bars on line  $yy$  of Fig. 1, with the other parts in side elevation.

A designates the frame, having the usual longitudinal opening for the passage of the rack-bar B and having two sockets 4 and 5, which are round in cross-section, as shown in Fig. 2. These sockets are each provided upon one side with set-screws 6, whose inner ends are capable of reaching through the walls of the sockets. The lower part of the frame is provided with the usual standard-socket C by which to secure the machine to a suitable standard D, as shown in Fig. 1.

Instead of a flat bar and a horn, as in ordinary grooving-machines, I form two horns 7 and 8 of cold-rolled steel and insert said horns within the sockets 4 and 5, where they are secured by the set-screws 6. These horns and the rack-bar may be of any desired length. At the outer end of the upper horn 7 I pivot a swinging bail 9, the lower end of which has a socket that slips over a tenon 19 on the end of the lower horn 8, so as to hold the horns parallel to each other. At the end of the rack-bar is a carriage 10 for the roller 11, the side pieces of which at the upper portion of said carriage are swelled or curved for extending around the upper horn, as shown. The rack-bar and carriage are also provided with the ordinary spring-roller frame 12 and its roller. The rack-bar and carriage are driven by the crank 13 and connected devices in any ordi-

nary manner of driving such rack-bar in analogous machines—as, for instance, a rack and pinion. The lower horn is provided on one side, as at 14, with a flat place, extending longitudinally, and upon three other sides at equal distances therefrom with longitudinal grooves 15, the width of which should correspond to the respective width of the grooves in the grooving-rollers of an ordinary set. At the inner end of the lower horn I drill four locking-holes 16, Fig. 2, and within the frame of the machine I arrange a locking-bolt 17 and a spring 18, which presses upon said bolt with a constant tendency to force it inwardly. These locking-holes 16 are in alignment with the respective grooves and flat place on the lower horn. When this horn is put in place, (the set-screws 6 being loosened and the locking-bolt pulled out,) the horn is turned around to bring the flat place or desired groove uppermost, and when it reaches the top the locking-bolt 17 will snap into one of the holes 16 and lock the lower horn in proper position. The set-screws 6 are then tightened to firmly hold the horn in place.

In the ordinary grooving-machine a flat cast-metal bar is used at the point where I place the upper horn 7. The carriage and rack-bar are mainly guided by said upper bar, and consequently the ordinary carriage is provided not only with side pieces extending up by the side of the bars, but with upwardly-projecting lugs in the rear of said side pieces for engaging the sides of the bar at its lower edge. This bar, being of cast metal, is liable to warp, and it is not only difficult to straighten, but when straightened as well as is practicable it is difficult to make the roller track well on the horn.

In my machine I leave a little room between the side pieces of the carriage and the surrounded upper horn, so that the carriage may work up and down thereon, and I make the case A much wider at the part where the rack-bar passes through it, so as to cause the rack-bar and its carriage to be guided largely by the case and that end of the bar that passes through said case.

The flat place upon the lower horn is for use when it is designed to leave the seam upon the outside, and the grooves are designed for



use in connection with their respective rollers when it is desired to leave the seam upon the inside of the work. When it is desired to change the position of the lower horn, it is  
5 only necessary to loosen the set-screws, pull the locking-bolt out of its locking-hole and turn the horn to bring the desired portion to the top, when upon releasing the locking-bolt it will lock itself in the hole that is brought  
10 opposite thereto, and the set-screws may be again tightened to rigidly hold the horn in place. The swinging bail 9 permits the work to be slipped on and off over the lower horn and to hold the horns firmly together after  
15 the work is slipped on.

I am aware that a prior patent shows a grooving-machine with a round lower horn set in a socket in a frame and having peculiar longitudinal grooves formed in said bar; also,  
20 that another patent shows a grooving-machine with a swinging bail for connecting the horn and upper bar at their outer ends. All of said prior art is hereby disclaimed.

By my invention the frame is easily and  
25 cheaply cast, is of a small and compact form, and both horns may be made from a round bar of cold-rolled steel and cheaply and quickly inserted within the sockets of the frame. By making them of steel instead of  
30 cast-iron I make a very strong and durable machine, particularly in both the upper and lower horns, and I can extend the length indefinitely. By being made of bar-steel the upper horn is easily made straight and true

better than it can be in cast-iron, and there- 35 fore the carriage will work easily and smoothly on the upper horn. Although the upper horn is round instead of square, and thereby not of a form so well adapted to guide the carriage, by making said upper horn of bar-steel and  
40 guiding the rack largely by means of the case the roller in my machine will track better and the machine in general is more efficient than the ordinary grooving-machine.

I claim as my invention— 45

1. The combination of the frame A, having upper and lower sockets, set-screws 6, and a longitudinal passage for a rack-bar, the upper and lower horns 7 and 8, formed of round bars and secured within said sockets, the rack-bar 50 B, fitted to the longitudinal passage through said frame, and the roller-carriage 10, having curved side pieces surrounding and embracing said round upper horn, substantially as described, and for the purpose specified. 55

2. In a grooving-machine having an upper horn, the combination of the frame having a socket for a lower horn, the lower horn 8, fitted to said socket and provided at its socket end with locking-holes 16, and a locking-bolt se- 60 cured in said frame for engaging said holes for locking said lower horn correctly in its several positions, substantially as described, and for the purpose specified.

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Witnesses:

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