

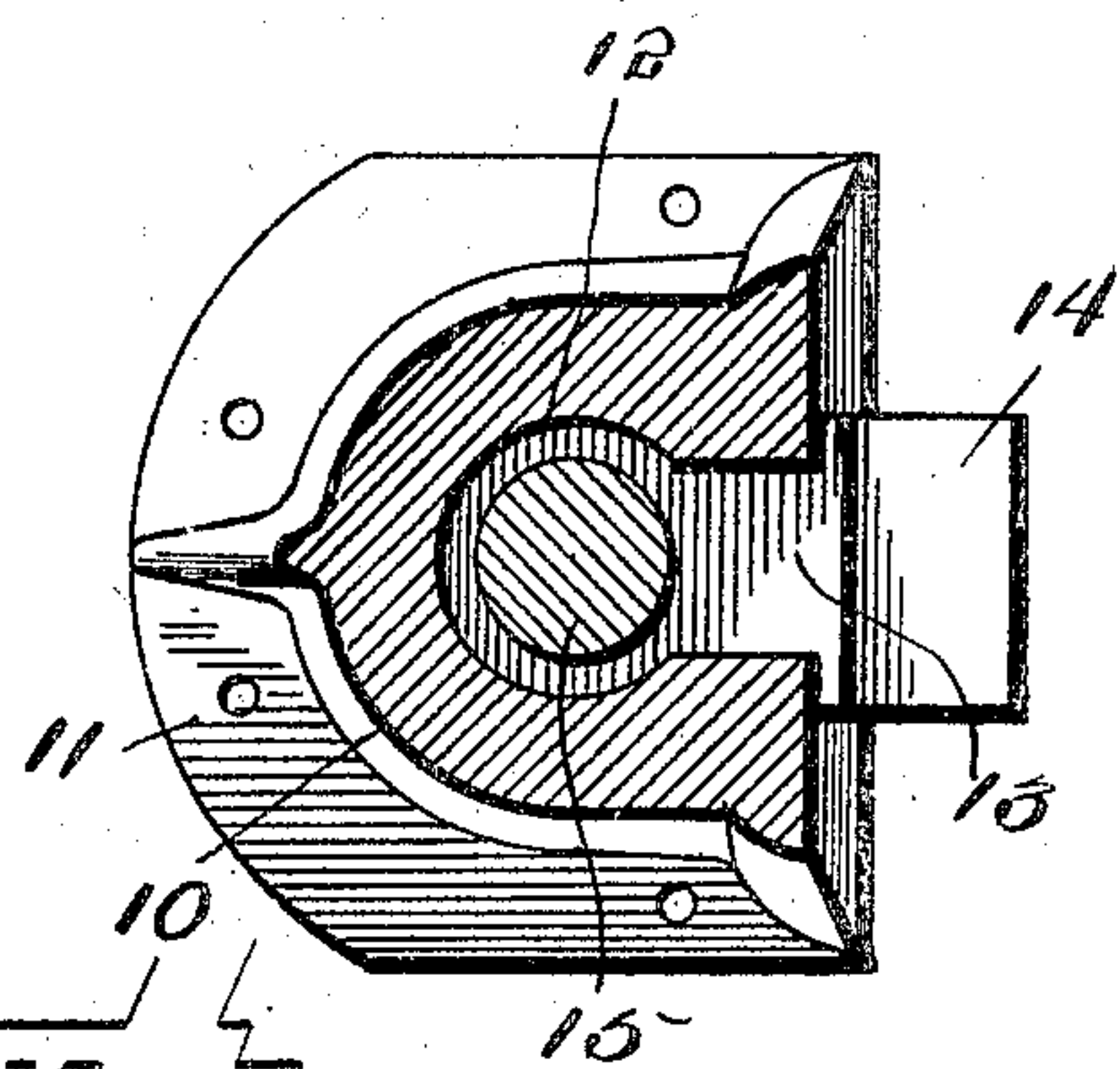
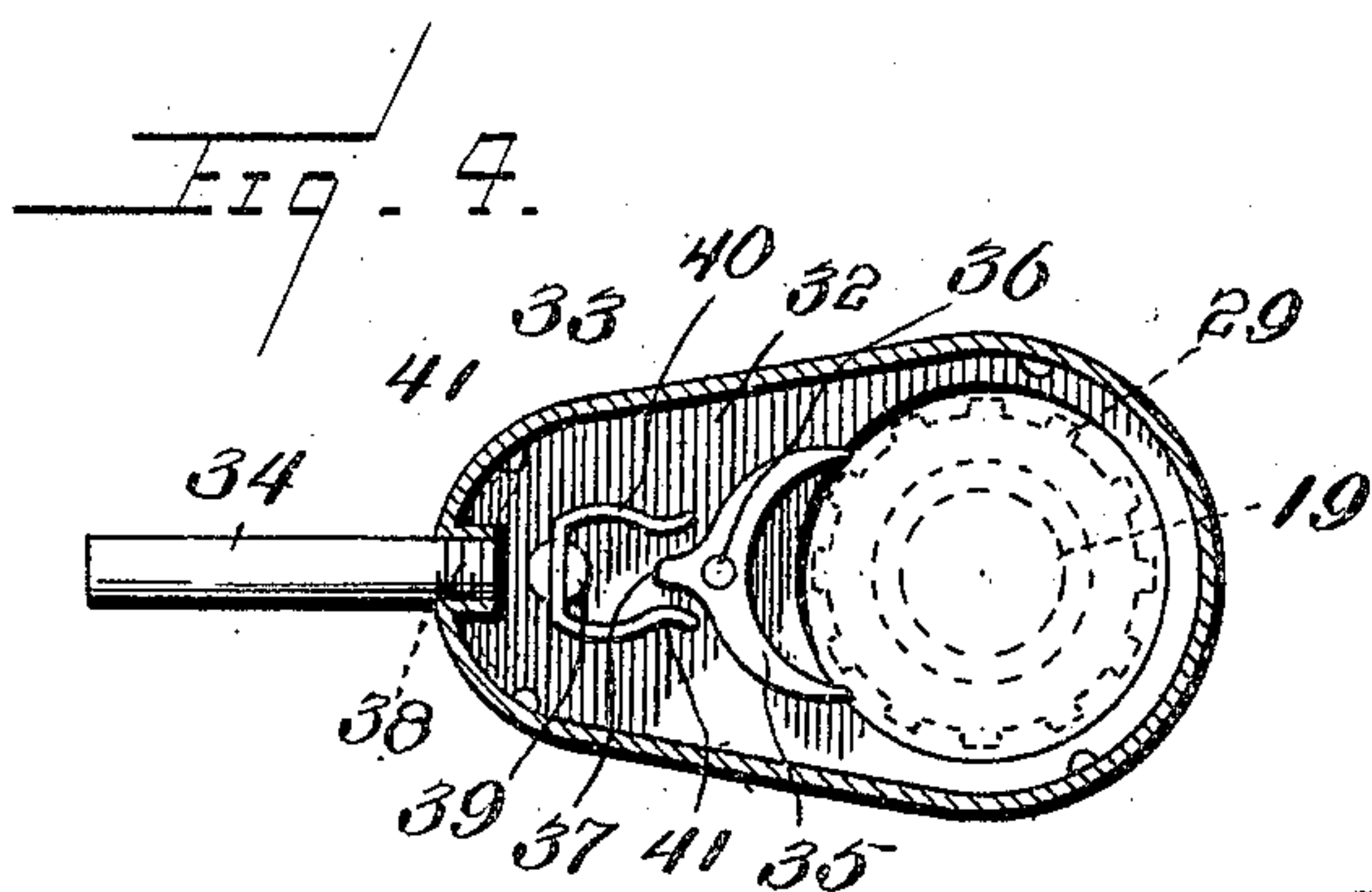
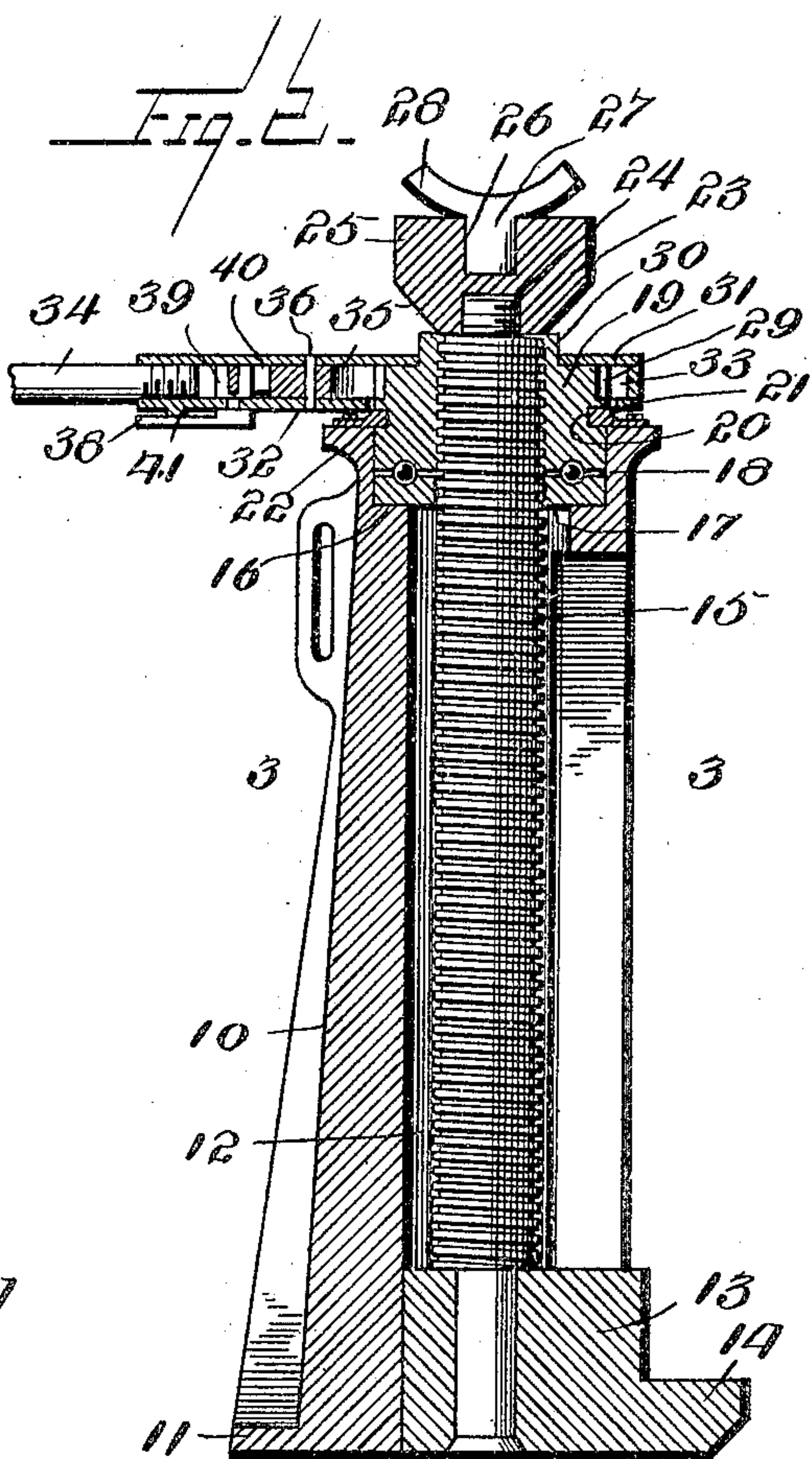
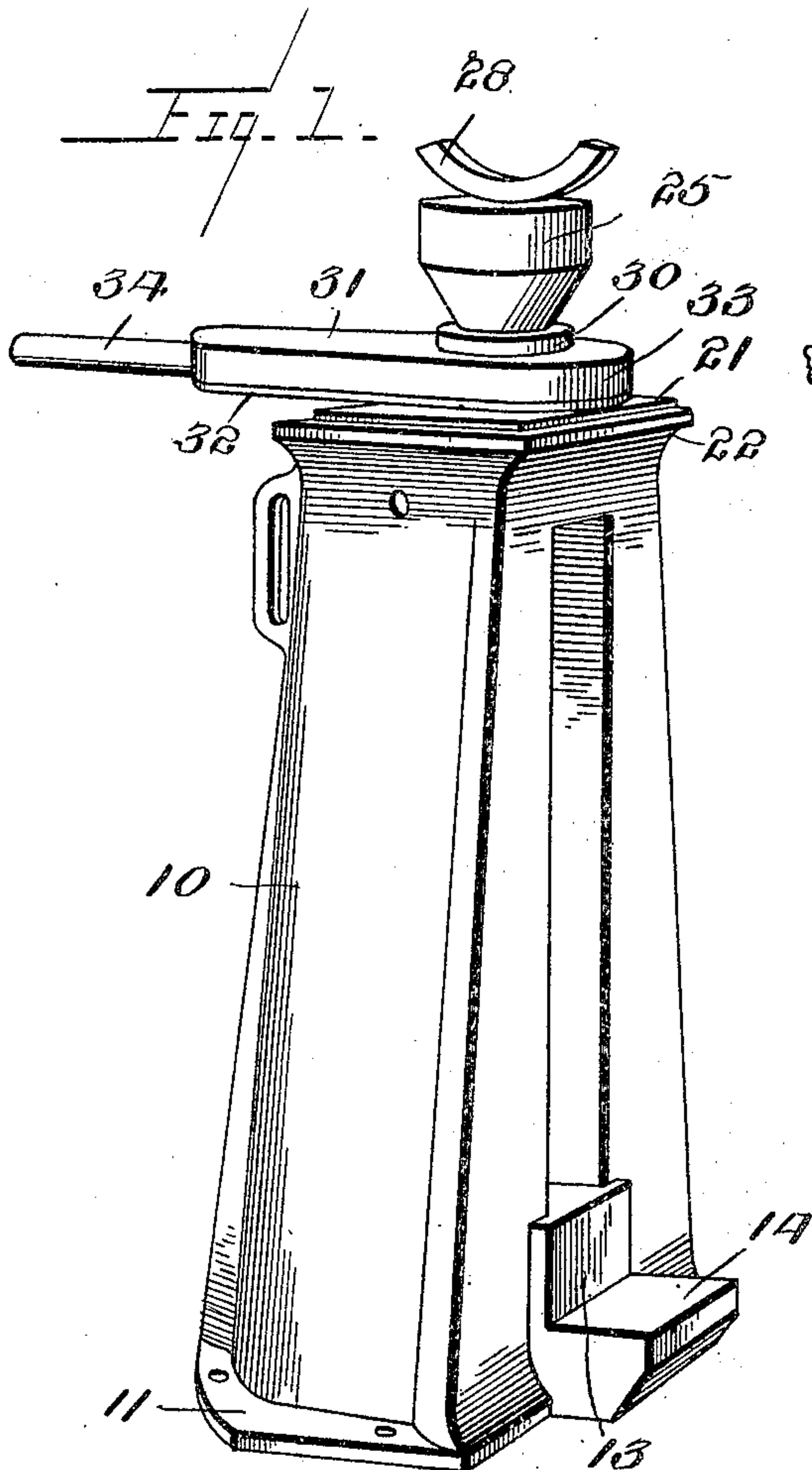
No. 804,125.

PATENTED NOV. 7, 1905.

W. H. HORNER & E. A. BUCK.  
TIRE SHRINKER AND JACK.

APPLICATION FILED DEC. 11, 1903.

2 SHEETS—SHEET 1.



WITNESSES:

*W. F. Doyle,*  
*F. C. Jones*

INVENTORS

*W. H. Horner and*  
*E. A. Buck.*

BY

*Charles C. Cramble*  
*Attorneys*



No. 804,125.

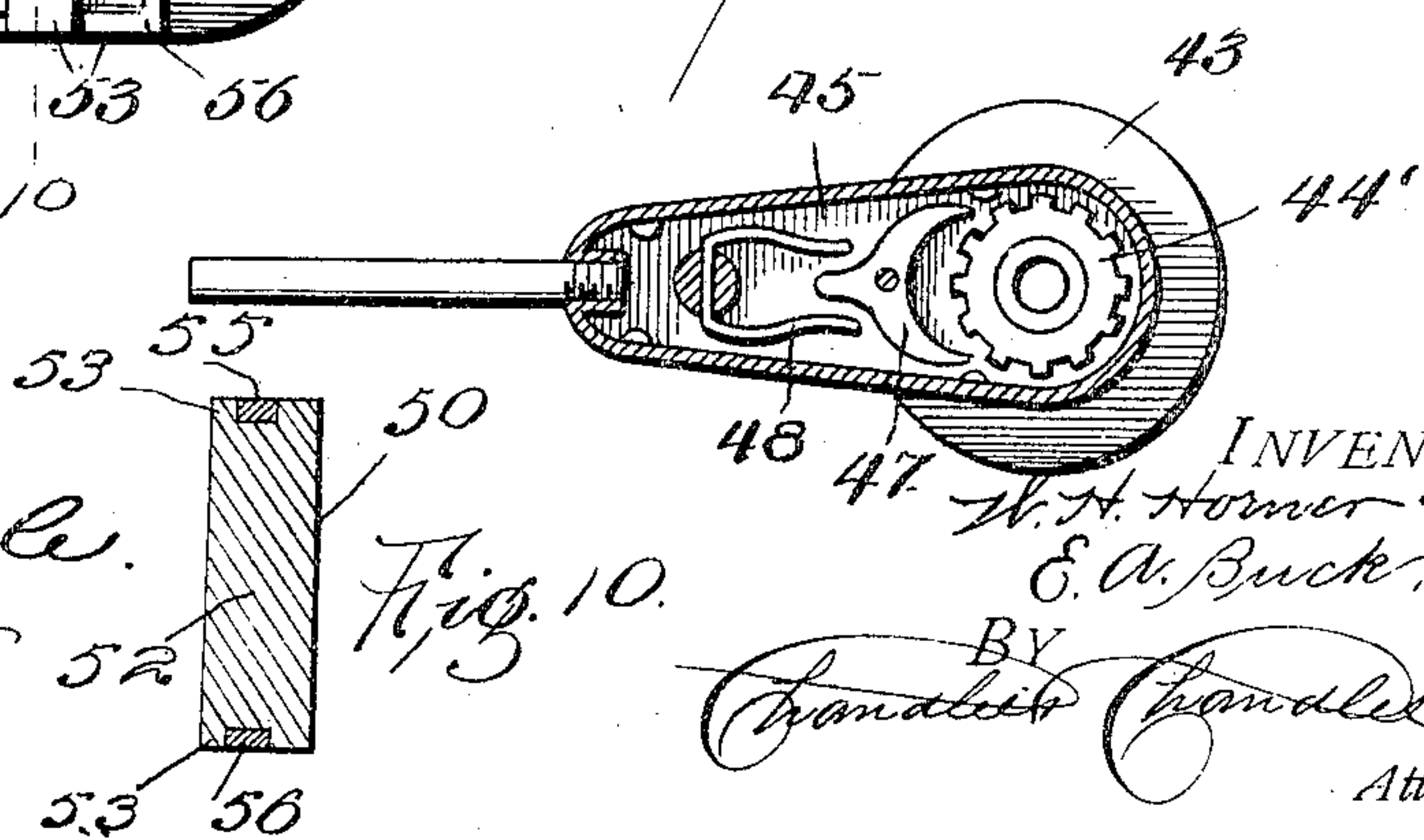
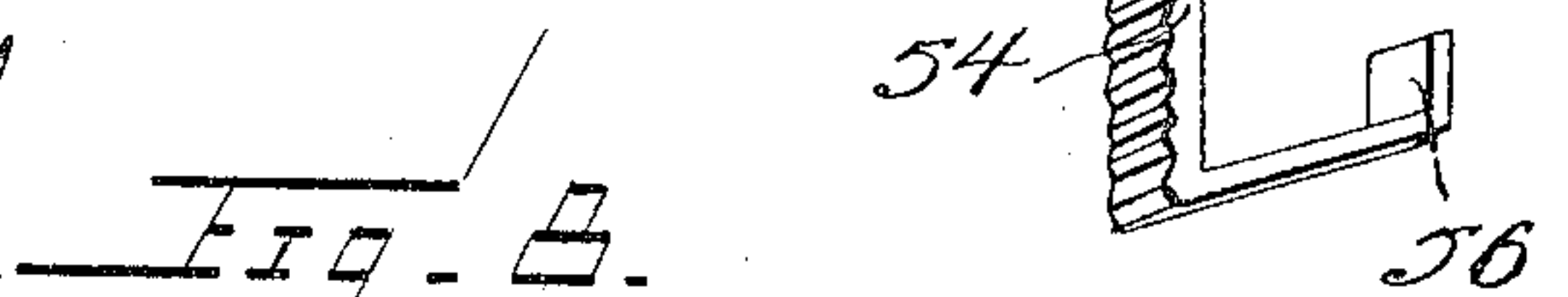
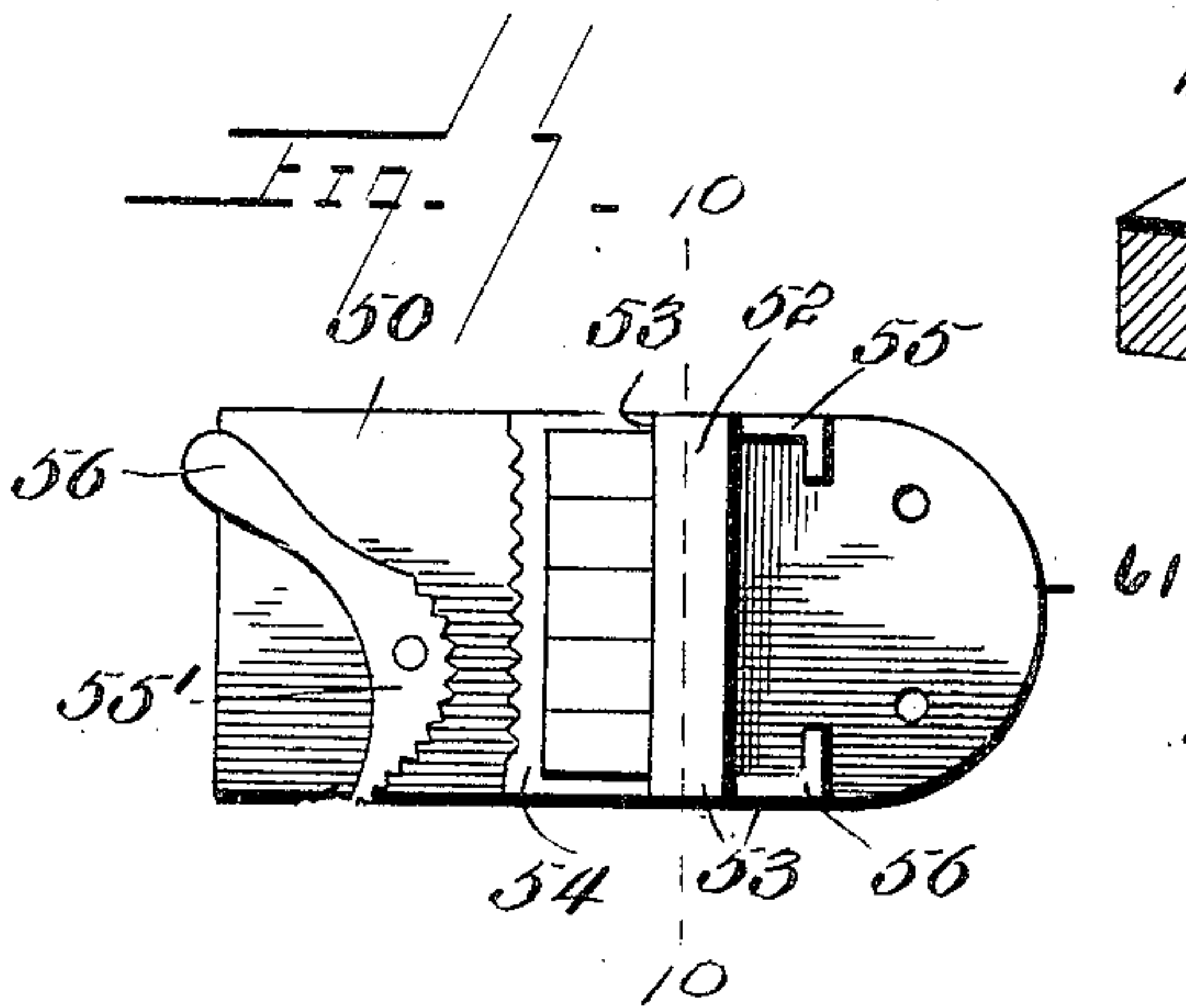
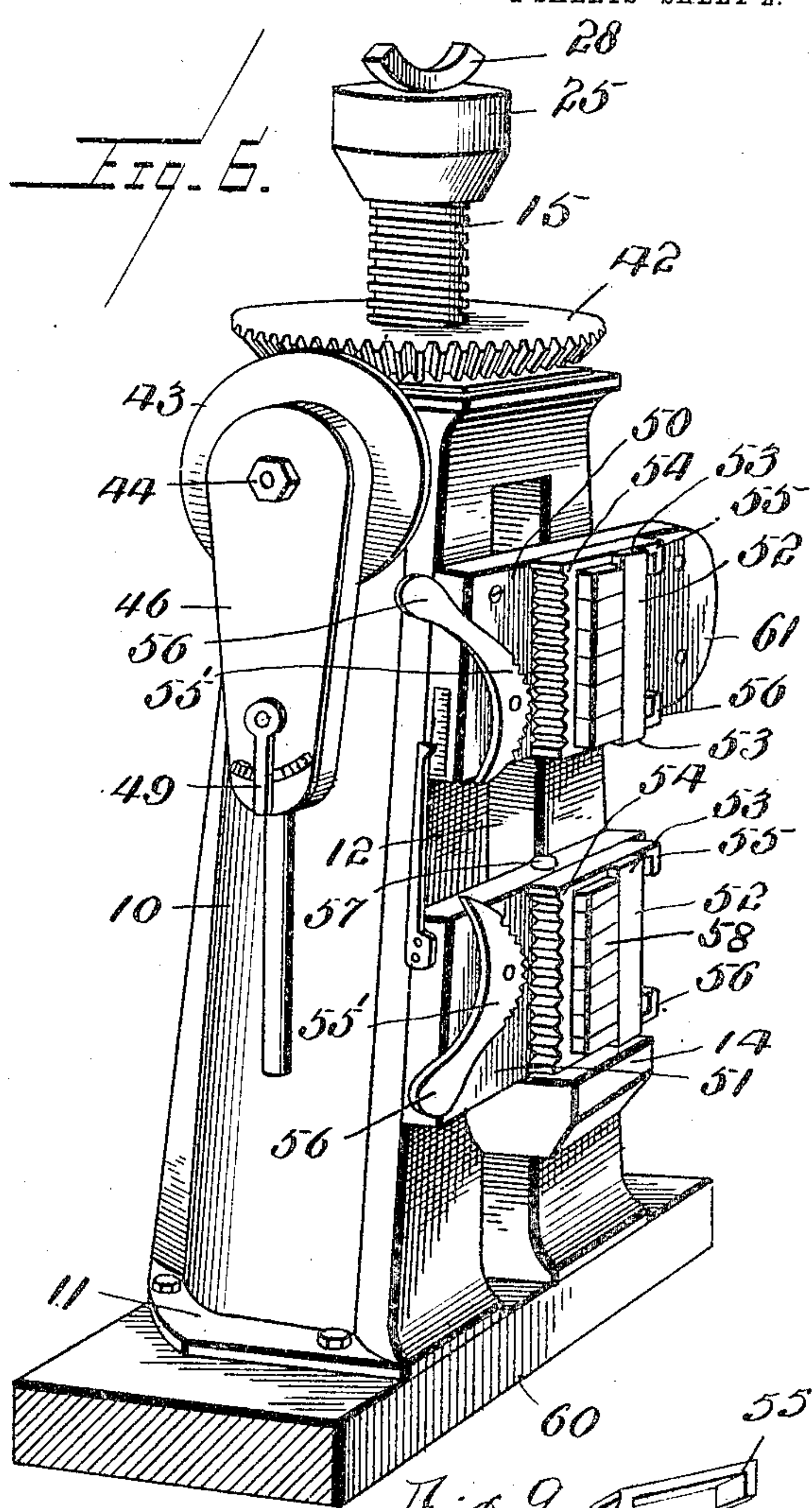
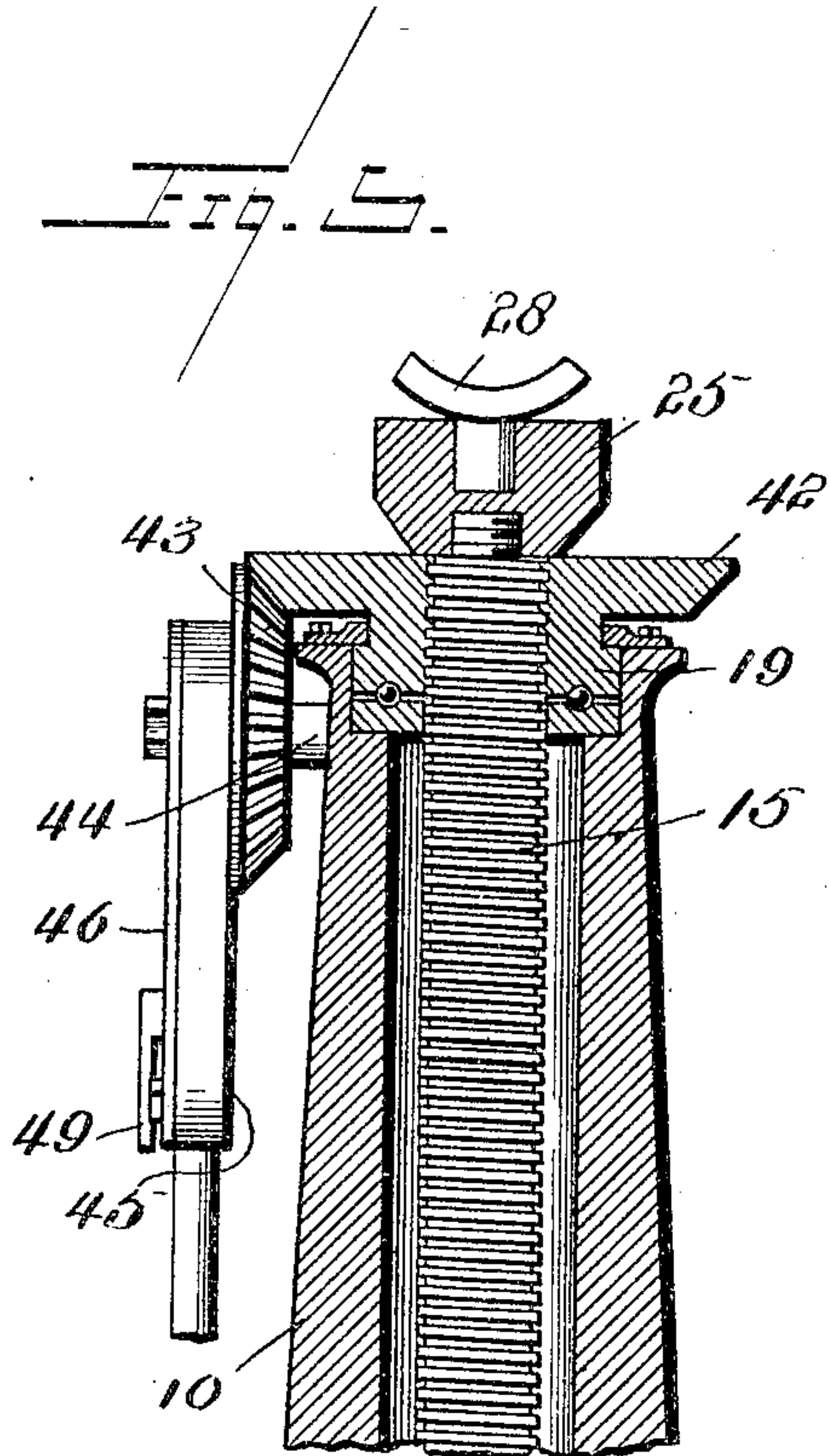
PATENTED NOV. 7, 1905.

W. H. HORNER & E. A. BUCK.

TIRE SHRINKER AND JACK.

APPLICATION FILED DEC. 11, 1903.

2 SHEETS—SHEET 2.



WITNESSES:

*W. F. Doyle*  
*F. G. Jones*

*Fig. 10.*

INVENTORS

*W. H. Horner and*  
*E. A. Buck.*

BY

*Chandler Chandler*  
Attorneys



# UNITED STATES PATENT OFFICE.

WALTER H. HORNER AND EDWIN A. BUCK, OF SEATTLE, WASHINGTON.

## TIRE-SHRINKER AND JACK.

No. 804,125.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed December 11, 1903. Serial No. 184,710.

*To all whom it may concern:*

Be it known that we, WALTER H. HORNER and EDWIN A. BUCK, citizens of the United States, residing at Seattle, in the county of King, State of Washington, have invented certain new and useful Improvements in Tire-Shrinkers and Jacks; and we 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.

This invention relates to combination tools or implements; and it has for its object to provide a construction which may be employed either as a lifting-jack or a tire-shrinker and in which certain of the implements are employed in both uses of the tool or implement, the expense of duplication of parts, as in building two separate tools or implements, being saved.

A further object of the invention is to provide a construction which will be easy and efficient in operation, which may be readily adjusted for its different functions, and which will be durable.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a perspective view of the tool or implement ready for use as a simple lifting-jack. Fig. 2 is a vertical section through the construction shown in Fig. 1, parts thereof being in elevation. Fig. 3 is a transverse section through the lower portion of the tool just above the lifting-foot. Fig. 4 is a top plan view of the ratchet-lever employed for feeding the screw. Fig. 5 is a vertical section through the upper portion of the jack and showing a construction in which the lever or handle moves in a vertical plane. Fig. 6 is a perspective view showing the jack equipped for shrinking tires. Fig. 7 is a front elevation of the upper gripping mechanism for engagement with a tire to be shrunk. Fig. 8 is a section taken longitudinally through the operating-lever in Figs. 5 and 6. Fig. 9 is a detail perspective view of one of the sliding jaws. Fig. 10 is a section on line 10 10 of Fig. 7.

Referring now to the drawings, and more particularly to Figs. 1, 2, 3, and 4 thereof, there is shown a tool or implement comprising a stand 10, which is tapered gradually upwardly and at the base of which are the flanges 11, which are perforated to receive bolts 12 for securing the stand to a suitable base when

desired. Through the stand 10 is a longitudinal passage 12, the lower portion of which opens through what may be termed the "front" of the stand, and in this passage is disposed the sliding block 13, having a foot 14, that projects outwardly therefrom and is adapted for engagement beneath a body to be lifted. A threaded spindle 15 has its lower end reduced and rotatably engaged with the block 13, this spindle passing upwardly through the top of a stand 10. The passage 12 at its upper end is countersunk to form the shoulder 16, and in the countersink and upon the shoulder is disposed an annular race-plate 17, on which are disposed balls 18. A nut 19 is engaged with the threads of the upper end portion of the spindle 15 and rests upon the balls 18, the lower portion of the nut, which is cylindrical, lying within the countersink of the upper end of the stand 10. In the vertical face of the nut 19 is a circumscribing groove 20, in which are engaged plates 21, which are bolted to the flange 22 at the upper end of the stand 10. The plates 21 hold the nut from raising off from the balls, but permit of free rotation of the nut, it being understood that as the nut is rotated in one direction the spindle 15, with the block 13 and its foot 14, will be raised and that when the nut is rotated in the opposite direction these parts will be forced downwardly. The upper end of the spindle 15 is likewise reduced, as shown at 23, and is engaged in a socket 24 in the lower end of a lifting-head 25, which is rotatable upon this reduced end and which is designed to engage beneath a body to be lifted. The head 25 has a recess 26 in its upper face, in which is removably received the stem 27 of a yoke-shaped supplemental head 28, it being understood that other specific shapes of special supplemental heads may be employed.

The upper end portion of the nut 19 has ratchet-teeth 29 formed thereon to receive interchangeably the arms of a double pawl to be presently explained. The upper end of the nut 19 is reduced in diameter, as shown at 30, and with this reduced portion is engaged a plate 31, forming one member of a lever, which includes also a second plate 32, which is bolted to the depending flange 33 of the plate 31, so as to be held in spaced relation to the central portion of plate 31. Engaged between the plates 31 and 32 is a handle 34. Pivoted to the under side of the plate 31 is a crescent-shaped double pawl 35, having its pivot 36 midway of its ends and having pro-



jecting from its convex side a finger 37. A shifting lever 38 has a stud 39 pivotally engaged in the plate 32, and in its slotted lower end is engaged the middle portion of a spring-plate comprising fingers 40 and 41, which lie at opposite sides of the finger 37. When the lever 38 is shifted in one direction or the other, the corresponding spring-finger is caused to press against the finger 37 and move a corresponding arm of the double pawl into active relation to the ratchet-teeth 29, so that when the lever comprising the plates and handle is oscillated upon the nut the latter will be rotated in one direction. The same movement of the lever will cause step-by-step rotation of the nut in the opposite direction if the lever 38 be shifted to bring the other arm of the double pawl into active relation to the ratchet-teeth. The lever 38 is held in its different positions by means of ratchet-teeth 41, formed upon the plate 32.

In Fig. 5 of the drawings, as also in Fig. 6, the nut 19 has a bevel-gear 42 at its upper end, with which is engaged a bevel-pinion 43, mounted upon a stud-shaft 44 on the stand 10. The beveled pinion 43 has upon its hub a ratchet-wheel 44' corresponding to the ratchet-wheel 29, and which is inclosed between the plates 45 and 46 of a lever equipped with a double pawl 47, spring-arms 48, and an adjusting-lever 49 for moving the spring-arms to shift the double pawl, all of which is the same as that above described.

With the construction as above described it will be understood that either the head or the foot of the jack may be engaged beneath a body to be raised and that in the construction including the bevel-gears there is provided what is commonly known as a "pump-jack," so called by reason of the fact that the operating-lever has the movement of a pump-handle.

To adapt the jack for shrinking tires, as illustrated in Fig. 6 of the drawings, tire-gripping jaws are fixed to the stand 10 and a second pair of tire-gripping jaws are fixed to the foot 14, so that the tire may be gripped by these pairs of gripping-jaws, and then by feeding the spindle 15 upwardly the metal of the tire will be upset and the tire thus shrunk. The upper and lower gripping-jaws are carried by plates 50 and 51, the jaws upon these plates being the same in form and arrangement, so that a description of one will suffice for both. Adjacent to one end of each of the plates 50 and 51 is formed a forwardly-directed lug 52, having end flanges 53, and in connection therewith there is employed a shiftable jaw 54, having the guide-arms 55 and 56 projecting rearwardly at right angles thereto and having their extremities turned toward each other. The guide-arms are slidably received between the flanges 53 and the adjacent face of the carrying-plate, so that the jaw 54 may be slid transversely of the

carrying-plate for a purpose to be presently explained. Upon each of the carrying-plates 50 and 51 is mounted a second gripping-jaw 55' of arc shape, which is pivoted eccentrically and has a handle or lever 56 for roughly adjusting it or throwing it out of engaging position. As the pivoted jaws swing on their mountings they approach or recede from the corresponding or cooperating jaws 54. The plate 50 is screwed or bolted to the face of the stand 10 across the passage 12, while the plate 51 is held upon the foot 14 by means of a bolt 57.

When a tire is to be shrunk, it is heated and then is adjusted to position, so that its side edges above and below the point of greatest heating will be clamped between the clamping or gripping jaws, filling-blocks 58 being disposed between the jaws 54 and the projections 52 to a degree sufficient to insure proper gripping action between the cooperating jaws. The jaws 55' are so mounted that the lower jaw swings downwardly into engaging position while the upper jaw swings upwardly into engaging position. If the screw or spindle 15 be then rotated so as to raise the foot 14, the plate 51, with its jaws, will be similarly moved and will tend to force the engaged portion of the tire upwardly, and as the upper jaws on the plate 50 hold the tire securely against upward movement the result is that the metal of the tire is upset and the diameter of the tire correspondingly reduced.

When the tool is to be used for shrinking tires, it may be bolted to a suitable base 60, and to hold it further rigidly the plate 50 has a lateral projection, which is perforated for the reception of bolts for securing it to a post.

It will be noted that when the tool is equipped for shrinking tires, its use as a jack by engaging its head beneath a body to be lifted is not interfered with.

In practice modifications of the specific construction shown may be made, and any suitable materials and proportions may be used for the various parts without departing from the spirit of the invention.

What is claimed is—

1. A convertible tool of the class described comprising a stand having a central passage and a longitudinal slot in the vertical face thereof communicating with the passage, a foot slidably disposed in the passage and slot and projecting from the latter beyond the face of the stand, means connected with the foot for sliding it vertically in the stand, and tire-clamping devices carried respectively by the foot and the face of the stand above the foot, and removable therefrom.

2. A tool of the class described, comprising a stand having a central passage and a longitudinal slot in one face thereof communicating with the passage, a screw in the passage,



a foot pivotally connected with the lower end of the screw and projecting through the slot beyond the face of the stand and with which the screw is engaged and through which it may  
5 move longitudinally and plates removably mounted upon the projecting portion of the foot and the upper portion of the stand, respectively, each of said plates having an outwardly-directed lug, a shiftable gripping-jaw  
10 having rearwardly-directed guide-arms associated with the said lug and having their free ends turned toward each other in position to engage said lug and limit the movement of

the jaw in one direction, spacing-blocks removably disposed between the jaw and the lug, 15 a second gripping-jaw pivoted to the afore-said plate in operative relation to the first-named jaw and means for rotating the afore-said element at the top of the stand.

In testimony whereof we affix our signatures 20 in presence of two witnesses.

WALTER H. HORNER.

EDWIN A. BUCK.

Witnesses:

R. A. BROWN,

C. R. HESSELTINE.