

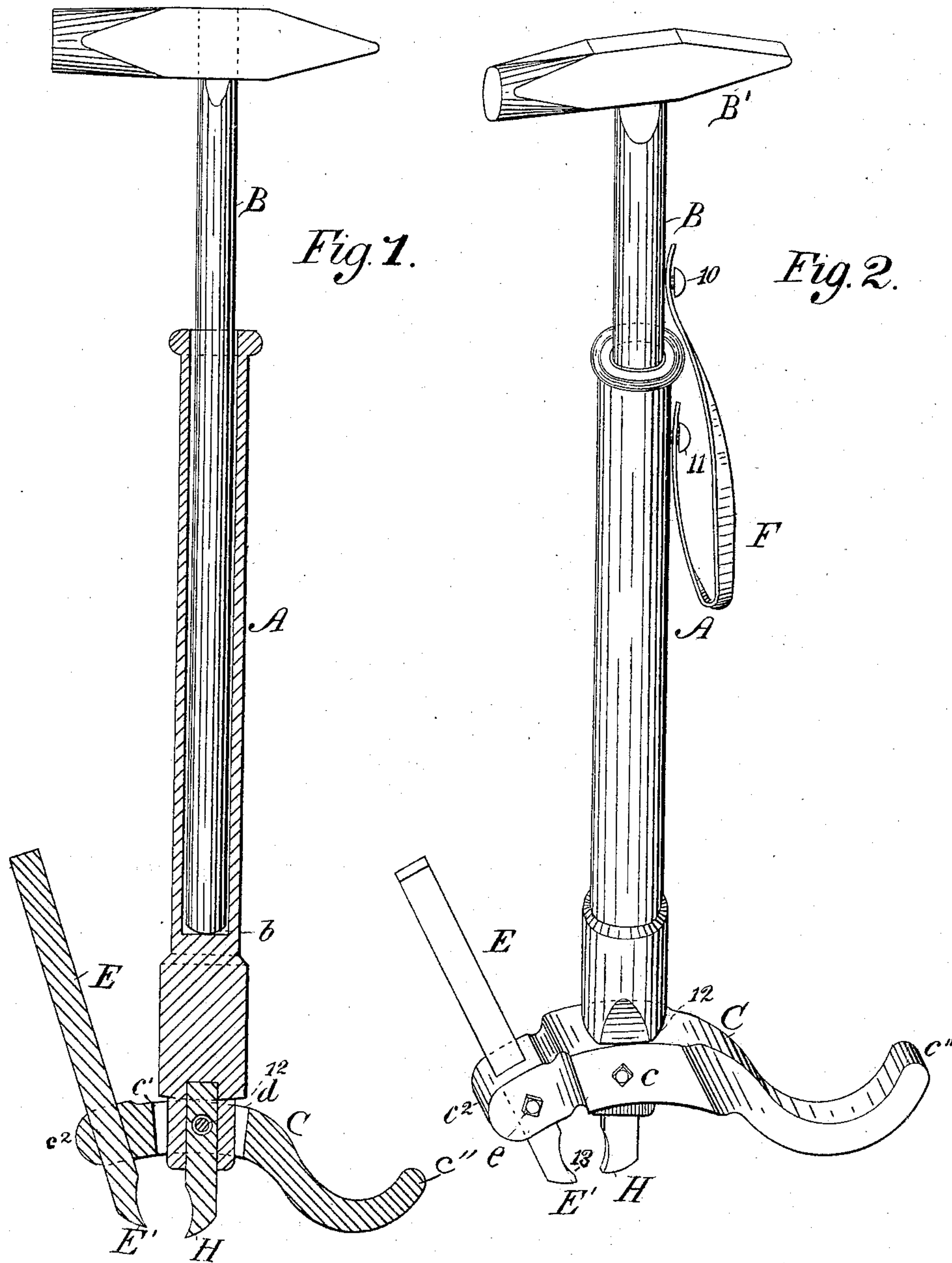
(No Model.)

2 Sheets—Sheet 1.

P. F. KING.
NAIL EXTRACTOR.

No. 368,536.

Patented Aug. 16, 1887.



WITNESSES:
Rich. M. Nalle
Geo. B. Paxton

INVENTOR,
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

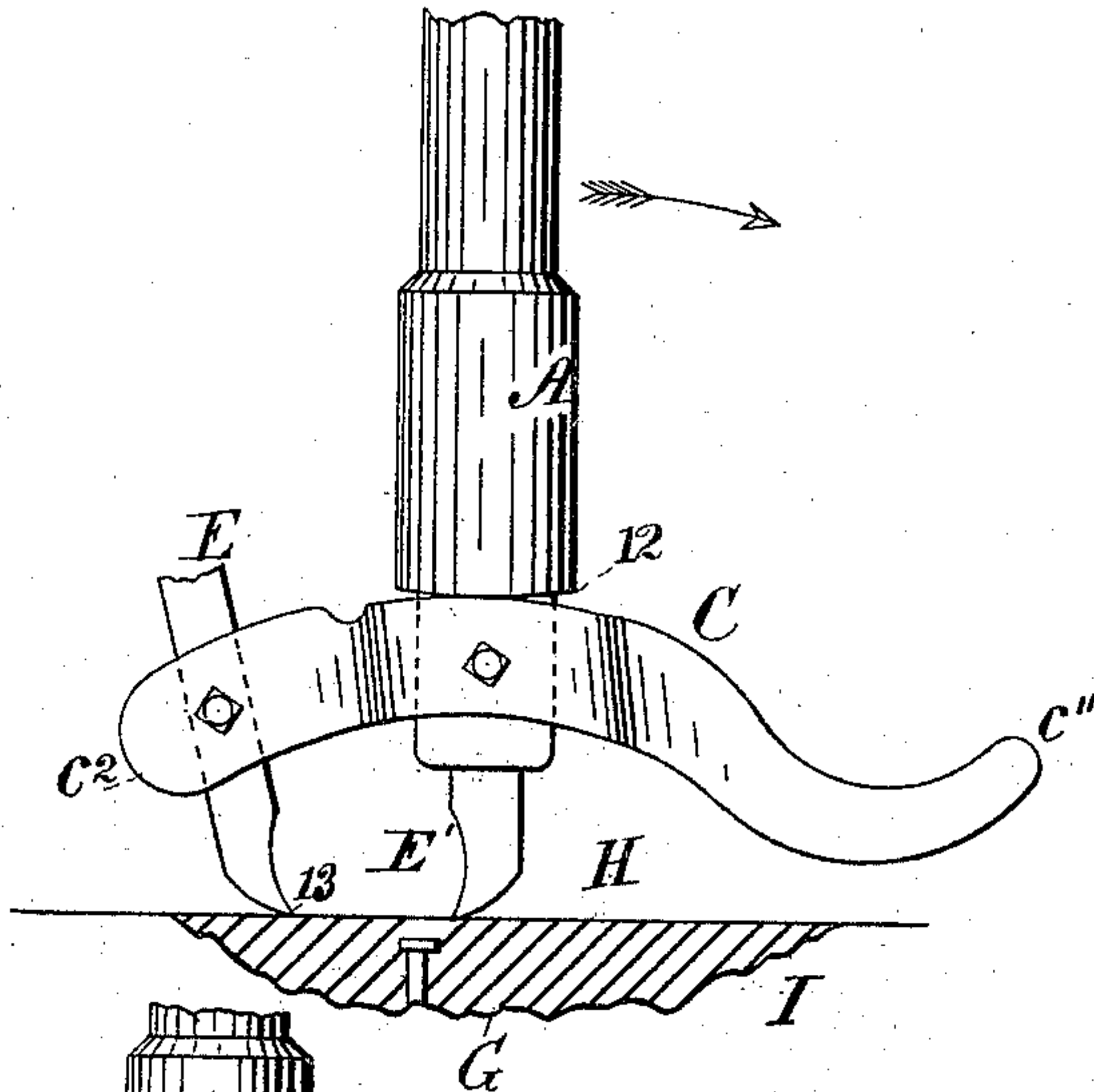


Fig. 4.

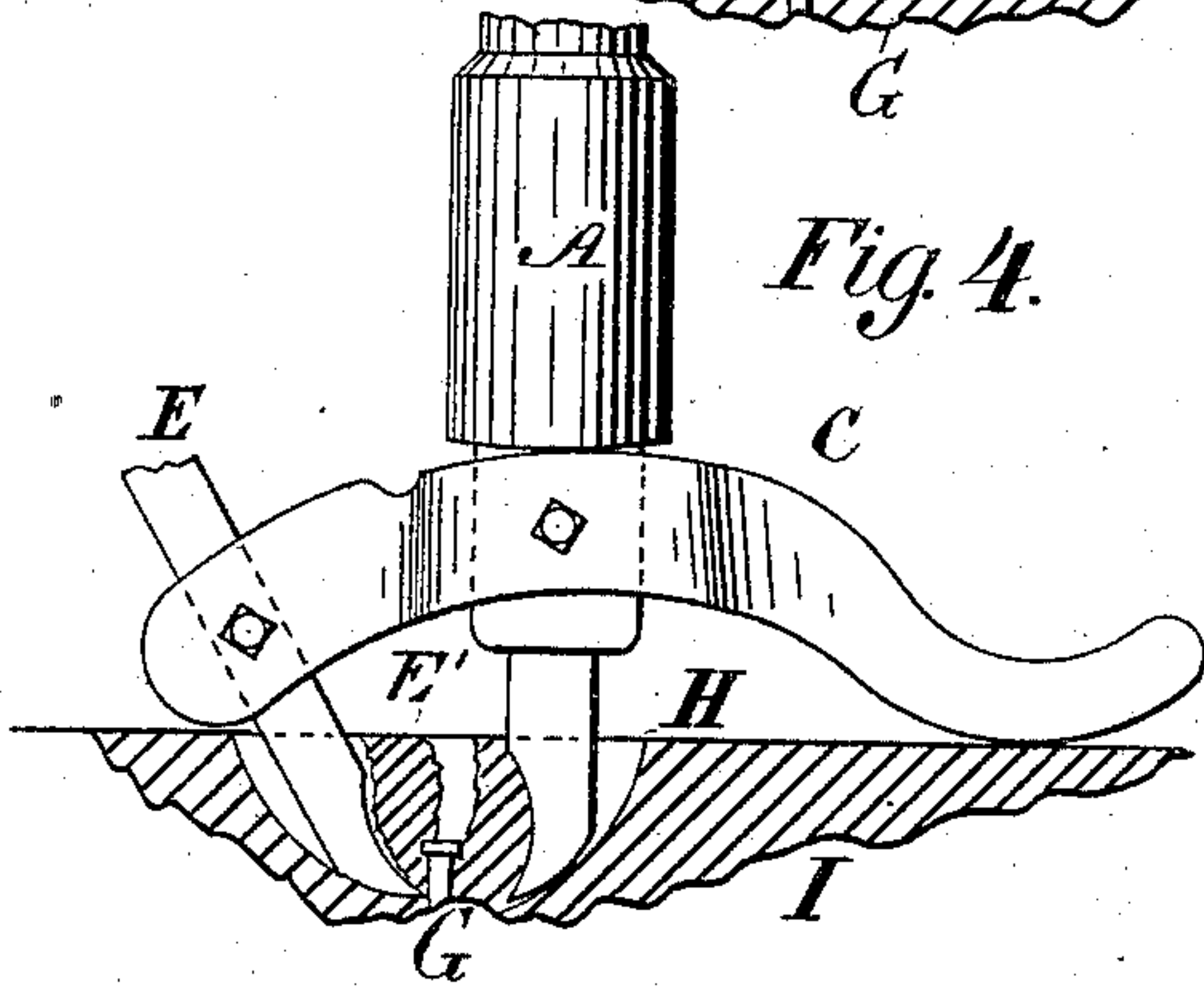


Fig. 5.

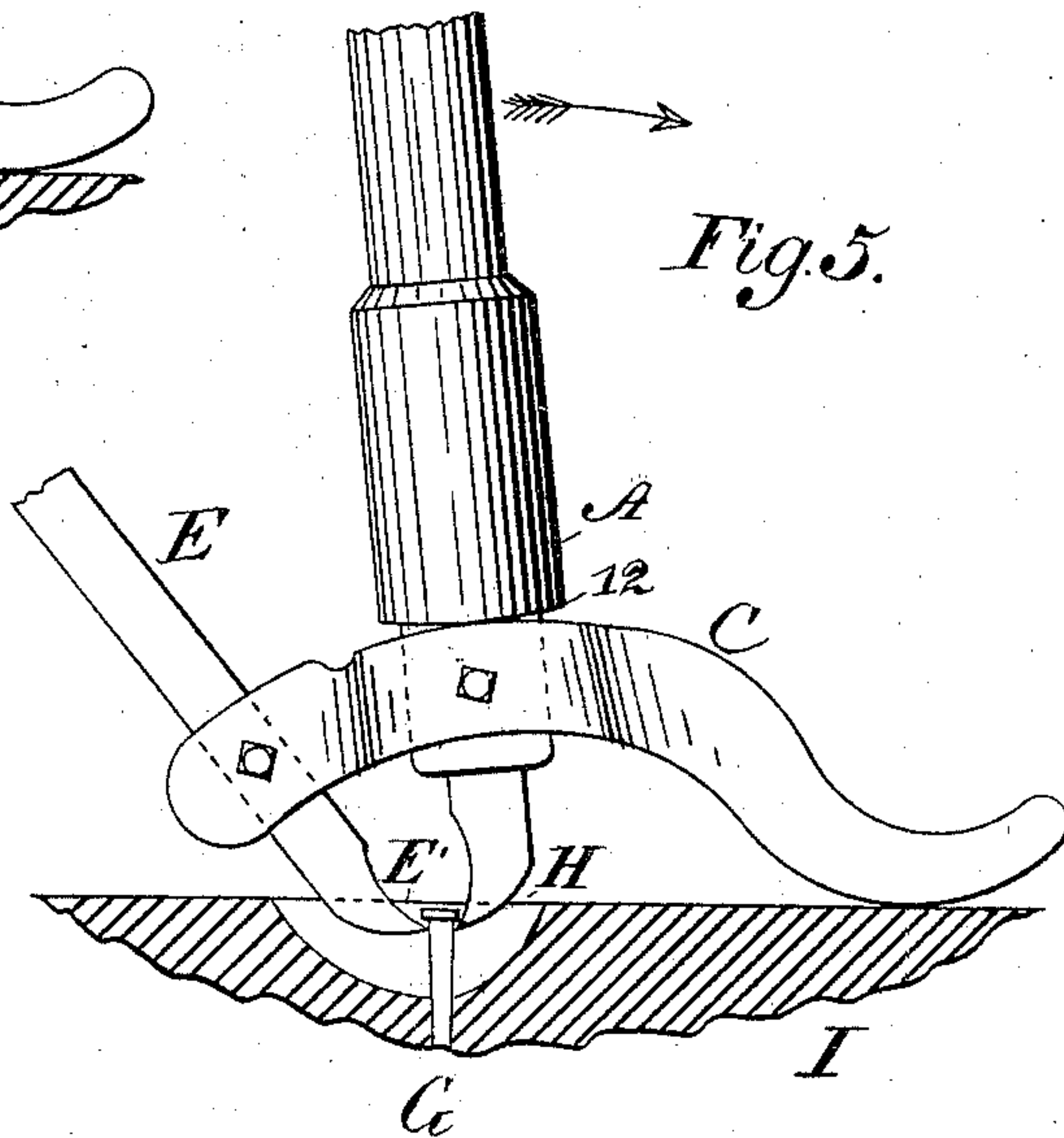
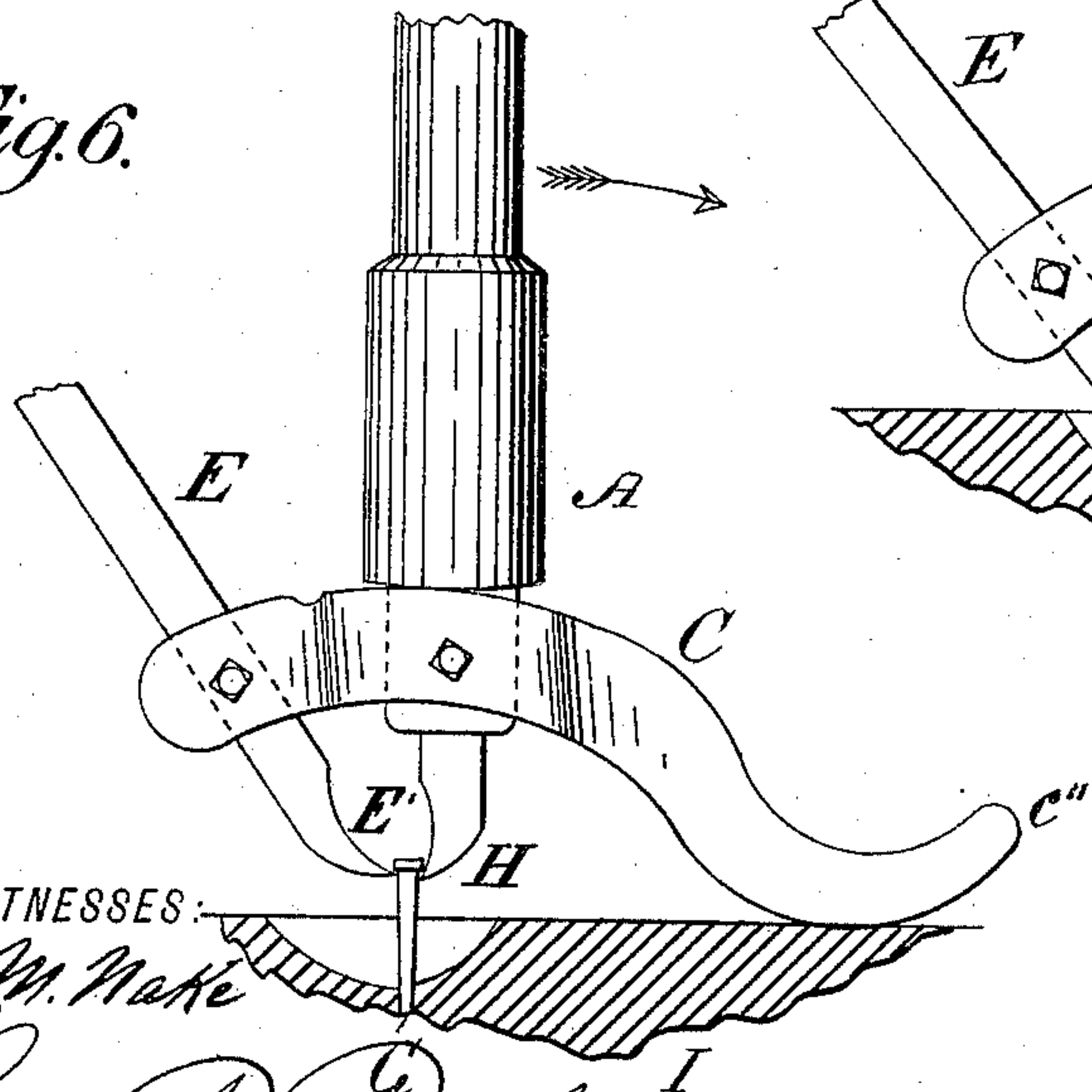


Fig. 6.



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UNITED STATES PATENT OFFICE.

PHINEAS F. KING, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF
TO ALVA E. CAMPBELL, OF SAME PLACE.

NAIL-EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 368,536, dated August 16, 1887.

Application filed February 1, 1887. Serial No. 236,145. (No model.)

To all whom it may concern:

Be it known that I, PHINEAS F. KING, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Nail-Extractors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to certain improvements upon the nail-extractor shown and described in my United States Patent No. 339,993; and my object is to produce a device that will not be limited to drawing nails, but that can also be used as a band or wire cutter, one that can enter the wood to draw extremely deep-set nails without forcing the jaws together before the nail is reached, and to provide an improved hammer attachment which can be readily removed from the other parts of the instrument for the purpose of driving nails or for other uses to which an ordinary hammer may be put, all of which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, which illustrate the manner of carrying out my invention, Figure 1 is a sectional elevation of the tool. Fig. 2 is a perspective view of the same; and Figs. 3, 4, 5, and 6 are detail side views showing the manner of using the tool.

A is the stem or lever-bar, which I now propose to make in the form of a cylinder or a socket, with its upper end open, and with its lower end solidly closed, and which may be properly formed of wrought or malleable iron.

B is the handle of hammer B', which is preferably made of a steel bar, and attached to said hammer in any desired way, and which is adapted to be reciprocated within the cylinder A during the operation of extracting a nail.

For the purpose of preventing the complete withdrawal of the handle B from the cylinder A during the driving portion of the pulling operation, I locate a button, 10, on said handle at a suitable point, and another button, 11, on the outside of said cylinder, near its upper end, and to said buttons I attach a strap, F, as shown. This will allow the necessary amount of motion between the said handle and the cyl-

inder, and yet will not permit the handle to be inadvertently withdrawn from the cylinder. When the hammer is to be used in driving nails, the strap F is to be detached from the handle B.

C is a shoe, slotted at *c'* to allow the passage of the lower end of cylinder A, and supported on a pivot-bolt, *c*, passing through the sides of the shoe and through the said end of the cylinder. The length of slot *c'* is sufficient to allow the lever A a limited movement on pivot *c*. The movement of the lever is limited in the shoe, to prevent the pulling-jaws coming in actual contact and to enable the lever and the curved fulcrum-bar *c''* to act together as a bell-crank lever in the drawing of the nail from the wood I. The other arm, *c''*, of the shoe is slotted or mortised for the passage of the shank E of the jaw E'. This shank is held in position in the mortise by a set-screw or bolt, *e*. The jaw E' has a chisel-edge, 13, which is fitted to cut a groove in the wood and to engage the nail G beneath the head, as seen in Figs. 3, 4, 5, and 6.

H is a set which is fixed in a mortise or socket made in the solid lower end of cylinder A. This set forms one of the gripping-jaws, and it may be held in by the pivot-bolt *c*. The construction is such that the set may be removed for repointing, or may be replaced by another.

The position of the tool when first applied to draw a nail is shown in Fig. 3, where I represents the wood in section.

One hand of the operator, preferably the left one, is applied to the cylinder A and the other to the hammer B', the jaw H being located near one side of the nail, and the cylinder being in a substantially vertical position. I would say here that said stationary jaw H is so located in the lower end of the cylinder as to be as near as possible in a direct line with said cylinder and with the handle of the hammer, whereby the concussion of the handle upon the solid end *b* of the socket in the cylinder A will act first to drive the jaw H into the wood while the jaw E' is fully open, and then the jaw E' will come in contact with the wood, and, as the reciprocations and concussions of the hammer continue, both jaws

will be forced into the wood in an open position still, as is shown in the detail views, before referred to, and by the size of the shaving that has been removed from the wood. Thus
 5 the jaws are made to enter the wood to draw extremely deep-set nails without being forced together before the nail is reached, as in my prior patent, before mentioned.

The construction of my device is such that
 10 the hammer-handle B acts directly upon and in a direct line with the stationary jaw H; and the said handle, by reciprocating action within its socket in the cylinder A, will force the stationary jaw in a direct line to any rea-
 15 sonable depth, and also causing the movable jaw carried by shoe C to be dragged or pressed into the wood on the opposite side of the nail in a fully drawn back and open position, and without leaving a possibility of its closing
 20 upon the nail until the cylinder is moved to pull it at the intended time.

In operation, the lower end of the handle of the hammer is made to forcibly come into contact with the end b of the socket in the cylin-
 25 der until the jaws have been driven into the wood a sufficient depth to secure the nail, after which the said cylinder is moved in the direction of the arrow, and both jaws are lifted with the nail by bearing on the curved arm c' as a
 30 fulcrum. (See Fig. 6.) The form of the arm c' is such that the nail is drawn out in almost a straight line, and without heading or bending. The swinging or movable jaw E', being adjustable in the shoe C, can be set to operate
 35 in the wood at a greater depth than stationary jaw H, thus insuring positive action in drawing the nail and not depending upon the head of the nail, as, owing to the enormous gripping-power of the jaws thus arranged, the tool
 40 will draw headless nails quite easily.

A shoulder, 12, is formed upon the solid end of the cylinder A, and in drawing a nail most of the pressure is taken off of the pivot-bolt c and transferred to said shoulder, which rests
 45 upon the upper side of shoe C, as shown. To permit of this, the passage d for the said pivot-bolt through the lower end of the cylinder and through the set or jaw H is made somewhat

larger than the body of said bolt, as shown in Fig. 1.

It will be seen that I do not use a spring of any kind in my device, and that I can draw a nail in a positive manner from the hardest wood.

The shank E, I have made of ordinary bar-
 55 steel pointed up, as shown at E', and as the point wears the shank can be set down to compensate for the wear.

In using the tool as a cutter for iron box-bands or wire bands, the jaw E' is placed at
 60 one edge of the band to be cut, and the cylinder A is inclined from the band, after which a few strokes of the hammer and handle will drive the jaw under the band, when the cylinder is still farther inclined, thereby cutting
 65 or breaking the band at the required point.

I do not claim a nail-extractor with a vertical tube or cylinder operated by a ram in a direct line with the pivot of two solid jaws, as I am aware that such construction has been
 70 used before.

Having thus described my invention, what I claim is—

1. In a nail-extractor, a tube or cylinder having a solid extension upon its lower ex-
 75 tremity, said solid extension being provided with a mortise, and a single jaw having a shank or body portion extending into said mortise, and secured therein by a bolt or screw, in combination with a pivoted curved foot and ad-
 80 justable jaw secured to said foot.

2. In a nail-extractor, a tube or cylinder containing a hammer-ram, the lower extremity of said tube being provided with a solid portion,
 85 the lower end of said solid portion being mortised, and a jaw adjustably held therein by means of a set screw or bolt, in combination with a pivoted foot provided with a gripping-jaw.

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

PHINEAS F. KING.

Witnesses:

BERNARD DONNELLY,
 JOHN CALLAHAN.