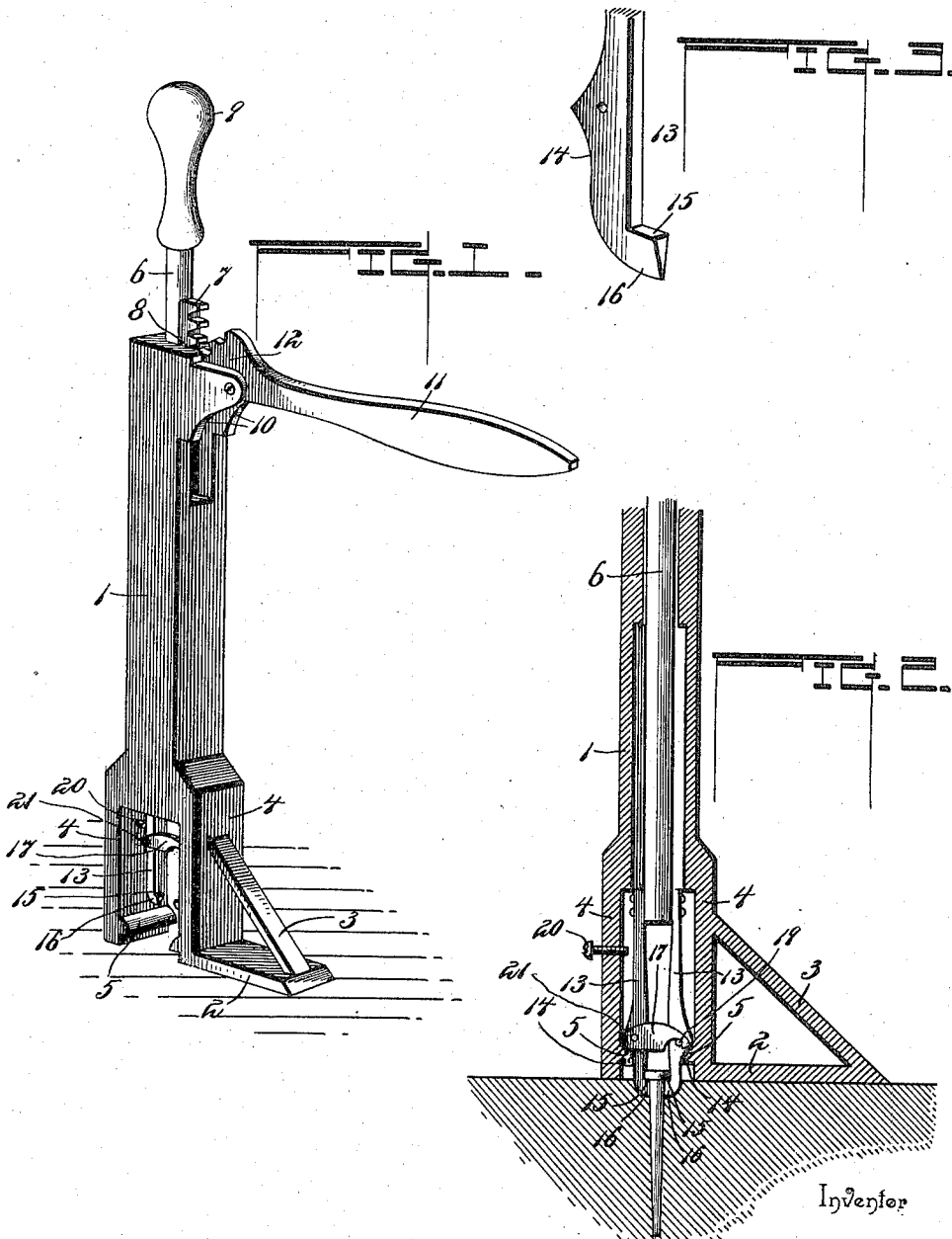


(No Model.)

F. B. JOHNSON.
NAIL PULLER.

No. 579,150.

Patented Mar. 23, 1897.



Witnesses

Milton O'Connell

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UNITED STATES PATENT OFFICE.

FRANK BOWERS JOHNSON, OF ADDISON, NEW YORK.

NAIL-PULLER.

SPECIFICATION forming part of Letters Patent No. 579,150, dated March 23, 1897.

Application filed January 7, 1897. Serial No. 618,321. (No model.)

To all whom it may concern:

Be it known that I, FRANK BOWERS JOHNSON, a citizen of the United States, residing at Addison, in the county of Steuben and State of New York, have invented a new and useful Nail-Puller, of which the following is a specification.

My invention relates to nail or spike pulling devices, and has for its object to provide a simple and efficient construction of parts whereby the jaws of the clutch are firmly engaged with the head of the nail or spike preparatory to operating the draw-rod.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a nail-pulling device constructed in accordance with my invention. Fig. 2 is a partial vertical section showing the jaws in operative engagement with the head of a nail or spike. Fig. 3 is a detail view of the lower extremity of one of the clutch-jaws.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a guide having a base 2, of which the upper surface is adapted to form a foot-rest and is spanned by a stirrup or keeper 3, and the lower extremity of the guide contiguous to said base is cut away at its sides or bifurcated to form opposite parallel cheeks 4, provided at their lower extremities and upon their inner surfaces with cam-faces 5, consisting of projections having beveled upper sides. Mounted in the guide, of which the upper portion is contracted to form a cross-sectionally round or tubular bore, is a pulling-rod 6, provided with a rack 7, operating in a slot or lateral offset or extension 8 of the guide, near the upper end of the latter, said pulling-rod terminating at its upper end in a suitable handle 9. Between parallel brackets 10, projecting from and preferably integral with the guide upon opposite sides of the slot 8, is mounted a pivotal operating-lever 11, having a segmental toothed enlargement or head 12 for engagement with the rack 7.

Attached to the lower extremity of the pull-

ing-rod and carried thereby is a clutch consisting of opposite yielding jaws 13, having inclined or beveled outer faces 14 for engaging the cams 5, said jaws being normally held separated at their lower extremities and being reduced at said extremities to form knife-edges 16. The lower extremities of the jaws are turned inward to form shoulders 15 for engaging under the head of a nail or spike, as indicated in Fig. 2. The normal position of the jaws is illustrated in Fig. 1, and it is obvious that when the pull-rod is depressed, and before the beveled faces 14 thereof come in contact with the cam-faces 5, the sharpened edges of the jaws will engage the material in which a nail or spike is embedded upon opposite sides of the head of such nail or spike, and this separated relation of the jaws will be maintained during the sinking of the jaws into said material until the beveled faces come in contact with the cam-faces and cause the jaws to be pressed inward or toward each other against the tension of their yielding resistance to such movement. This inward movement or contraction continues until the shoulders 15 pass under the opposite sides of the head of a nail or spike and thus cause said head to assume a position in the path of the vertical upward movement of the shoulders. In order to hold the jaws in this contracted position during the upward movement of the pull-rod by means of the operating-lever and segmental toothed head 12, I employ a gravity pawl or latch 17, pivoted near one extremity to one of the jaws, preferably at the enlarged portion thereof contiguous to the cam-face 14, and provide the other jaw with a pin or stud 19, also located at the enlarged portion of said jaw, for engagement by a notch 18 in the free end of the latch, said latch being normally in operative relation with the latch pin or stud 19, and being adapted to engage the same automatically when the jaws have reached such a relative position as to bring said stud into the path of the notch. With the parts in this position the pull-rod may be elevated to withdraw the nail or spike, but it is desirable also, when the jaws have reached a certain elevation, to automatically release the nail or spike, and hence I employ a trip stud or stop 20, arranged upon one jaw of the guide or other fixed part of the frame of the

device, in the path of a rearward extension 21 of the pawl or latch, said extension being beyond the pivotal point thereof and being permanently in the path of the trip stud or stop. Hence as the jaws are elevated they remain locked together, even after leaving the cam-faces 5, and the upward movement proceeds until the extension or tail of the pawl or latch comes in contact with the stud or stop 20, when a still further upward movement of the jaws causes the independent elevation of the free or notched end of the latch, and hence the disengagement thereof from the retaining or latch pin or stud and the release of the jaws. The stud 20, in order to secure an efficient coöperation of the parts, and at the same time compensate for wear, is preferably adjustable, and is shown in the drawings as consisting of a screw, threaded in a suitable opening in the jaw of the guide.

The automatic operation of the locking and trip devices, in connection with the engaging jaws, enables the puller embodying my invention to be operated with facility, without loss of time, and at the same time with a degree of accuracy which is of importance in devices of this class.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a nail-puller, the combination of a clutch consisting of jaws adapted to engage a nail or spike, means for elevating and depressing the clutch, contracting devices to force the jaws toward each other as they are depressed, an automatic locking device for

connecting and securing the jaws in their contracted relative position, and a trip for disengaging the locking device and releasing the jaws when the latter are elevated, substantially as specified.

2. In a nail-puller, the combination of a clutch having jaws adapted to be contracted to engage a nail or spike, means for elevating and depressing the clutch, contracting devices for forcing the jaws toward each other as they are depressed, a latch mounted upon one of the jaws to engage a retaining pin or stud on the other jaw to hold the jaws in their contracted position, and a trip pin or stop arranged in the path of an extension of the latch to disengage the latch and release the jaws during the upward movement of the latter, substantially as specified.

3. In a nail-puller, the combination of a clutch having jaws adapted to engage a nail or spike, means for elevating and depressing the clutch, contracting devices adapted to force the jaws toward each other during their downward movement, a locking device consisting of a latch pivotally mounted upon one of the jaws and adapted to automatically engage a retaining pin or stud on the other jaw, and an adjustable trip pin or stop arranged in the path of a rearward extension of the latch and adapted to disengage the latch and release the jaws during the upward movement of the latter, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK BOWERS JOHNSON.

Witnesses:

EUGENE WADE,
J. S. HARRISON.