(No Model.)

J. W. JOHNSON.

HORSESHOE CALK EXTRACTOR.

No. 559,803. Patented May 12, 1896.

Fig. 1.

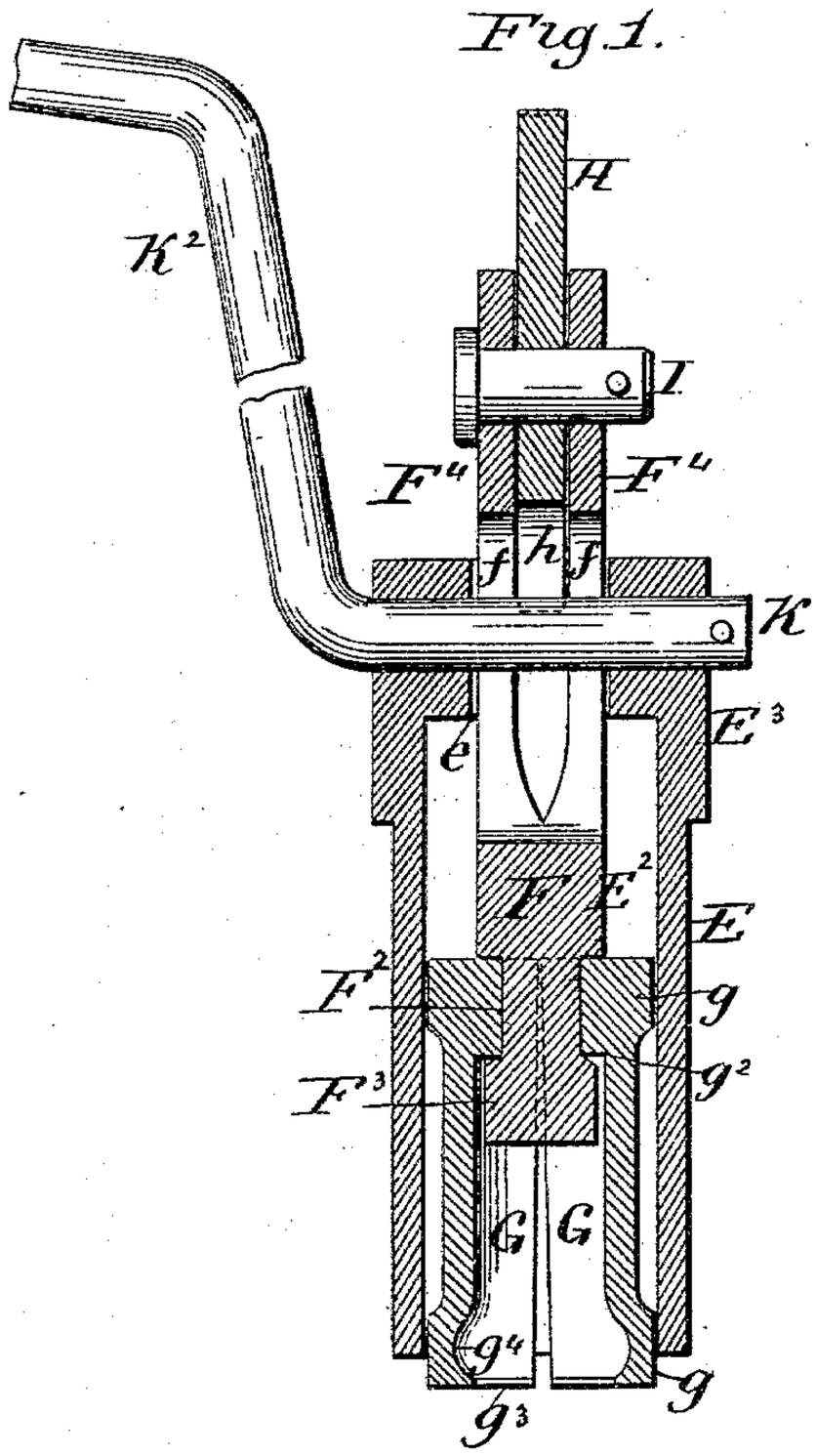


Fig. 2.

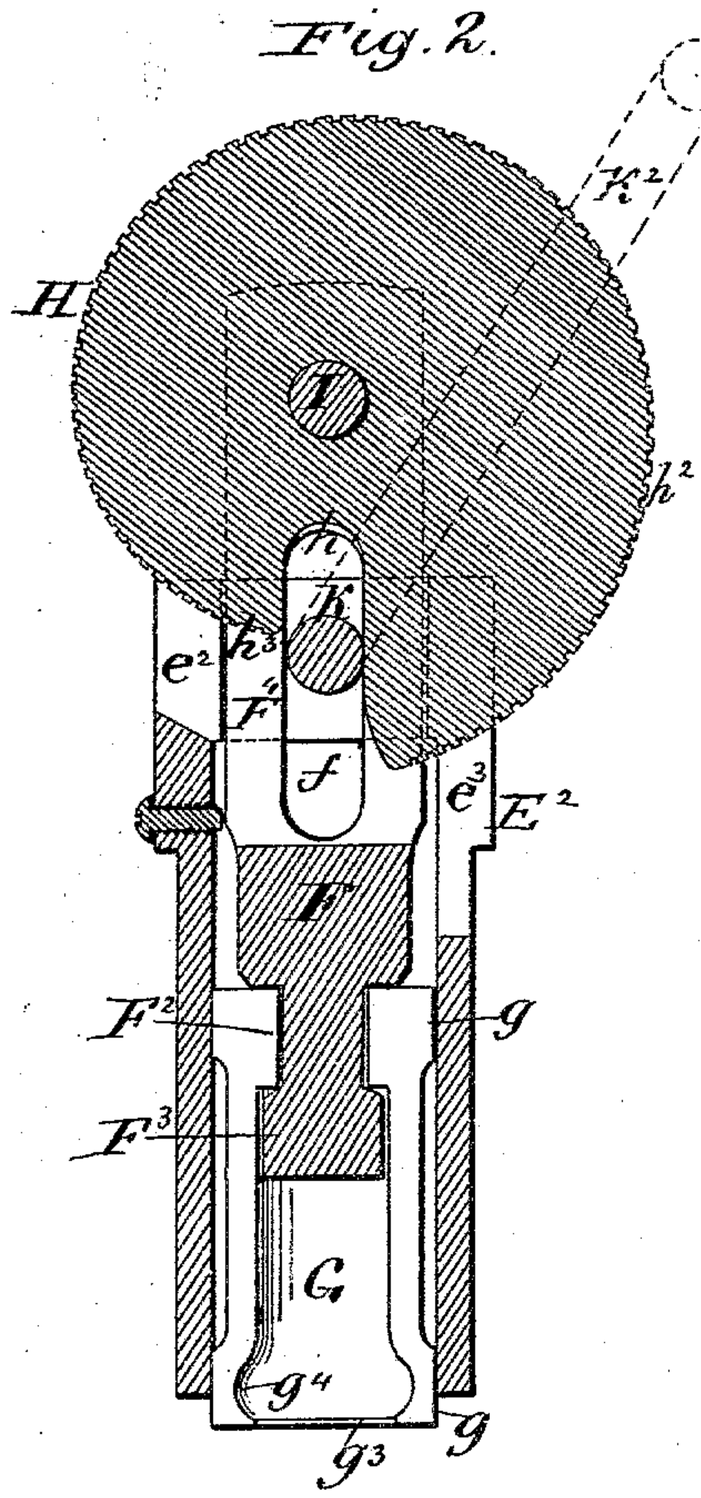


Fig. 3.

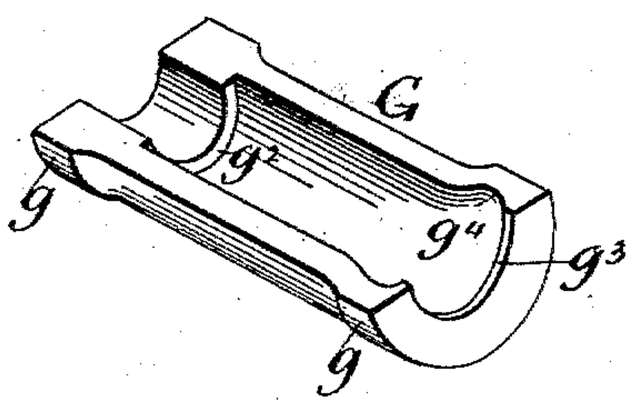
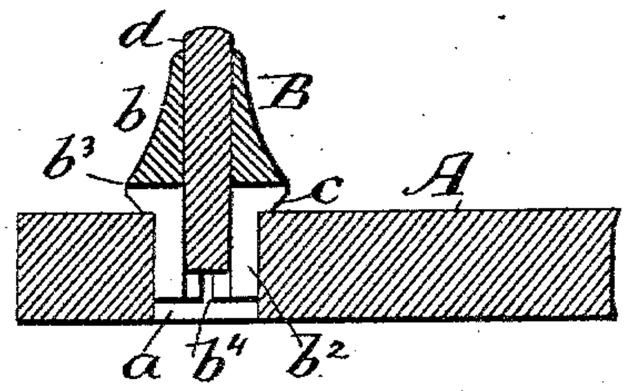


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES W. JOHNSON, OF NEW BRUNSWICK, NEW JERSEY.

HORSESHOE-CALK EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 559,803, dated May 12, 1896.

Application filed February 27, 1896. Serial No. 580,960. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. JOHNSON, a citizen of the United States, residing at New Brunswick, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Horseshoe-Calk Extractors, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of this invention is to obtain a calk-extractor of simple and inexpensive construction adapted to engage with the whole periphery of the neck of the calk and lift the latter axially to prevent lateral strain against the sides of the opening made in the horseshoe to receive it, as any distortion of said opening prevents the proper retention of new calks introduced subsequently therein. I attain this object by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal central section of a calk-extractor constructed in accordance with my invention. Fig. 2 is also a longitudinal central section of the calk-extractor, taken at right angles to that of Fig. 1. Fig. 3 represents in perspective the inner side of one of the jaws of the extractor, both jaws being of identical form. Fig. 4 is a vertical section through a portion of a horseshoe having attached thereto a calk upon which the improved extractor is particularly well adapted to operate.

In said drawings, A represents a portion of a horseshoe, and B one of the calks thereof, of which two are usually secured at the toe and one at each heel. The calks consist of the body b, that is usually made conical and is to project from the horseshoe, and its shank b^2, that is made cylindrical. At the junction of said shank with the body b the latter is undercut to provide an inverted conical shoulder b^3, surrounding the calk, said shoulder forming between it and the body of the shoe an annular V-shaped groove c, for the reception of the inwardly-bent edge of the jaws of the extractor.

To promptly and properly secure the calks to the shoe, the shank of each calk is provided with slots b^4 lengthwise thereof, said slots being extended even into the undercut shoulder b^3 of the body b. Two slots b^4 at right angles to each other are generally made through said shank to permit the branches thus formed to be sprung laterally against the walls of the perforation a, made in the shoe for their reception. To cause this lateral springing of the branches of the calk, the latter is provided with a central perforation therethrough, the inner end of which is slightly conical in the shank, and within said perforation is driven a steel pin d, that has also its inner end slightly conical. As it is desirable that the shank of the calk should primarily fit snugly in the perforation a made in the shoe, it is the practice of the manufacturers of this calk to furnish a drill-bit of the proper diameter with each box of calks; and as it is important that each worn-out calk should be extracted axially and without lateral pressure from the perforation a by bearing uniformly all around the underside of its conical shoulder b^3, so as not to damage the cylindrical form of said perforation, but permit it to receive successively four or more calks, (there being no sensible wear to the body of the shoe,) the extractor shown in the drawings is used. Said extractor consists of a tubular body E, constituting a cylindrical chamber E^2, nearly the whole length thereof and open at its lower end, but provided at its upper end with a cap E^3, preferably integral with the walls of the chamber E^2. Said cap has centrally a rectangular opening e, to guide and permit the passage of a forked standard F, used to elevate or lower the two jaws G of the extractor, that are placed within the lower end of the chamber E^2. Each jaw is in the form of a half-cylindrical body, having an external semicylindrical collar g at each end of such diameter, so that when the two jaws are placed face to face within the chamber E^2 said collars fit snugly, or within about one sixty-fourth of an inch from the walls of said chamber. Said jaws are hollow. Their upper ends are provided internally with a collar g^2 to receive the neck F^2 of the forked standard F, its head F^3 bearing against the lower edge of the collar g^2. The lower ends of the jaws G are chambered to easily receive the body of a shoe-calk. The walls at the lower end of each jaw have an inwardly-bent semiannular edge g^3 to engage under the inverted conical

shoulder b^3 of the calk, while above said edge the chamber is wider, having a semiannular recess at g^4 to make room for said shoulder b^3.

The upper portion of the forked standard consists of two parallel flat branches F^4, between which is placed a cam H, that is carried by a pin I, that passes therethrough and through perforations in the upper ends of the branches F^4. Each branch is also provided with a slot f for the passage of the shaft K of a crank-handle K^2, said shaft passing also through perforations in the cap of the tubular body E. Said perforations constitute the bearings for the shaft K. The cam H is made to pass through vertical slots e^2 e^3 in the sides of the body E, and is radially slotted at h to permit it to be lowered with the standard F, carrying it a sufficient distance to permit the lower collar g of the jaws to be released from within the lower end of the chamber E^2 and the lower end of said jaws to be separated from each other to pass over the shoulder b^3 of the calk and be made to embrace it.

The periphery of the cam H is preferably roughened or serrated, as at h^2, to increase its frictional contact with the periphery of the shaft K, as the latter is used as a pinion to revolve the cam H. As the head F^3 of the standard is preferably integral with its body, in assembling the parts the jaws G are first made to embrace the neck F^2 before the branches of the standard are pushed up through the rectangular opening in the cap E^3 of the body E.

To remove the calks from a horseshoe, the operator lowers the clamping-jaws by pushing down the standard F, and with it the cam H, while the latter has its groove h on its lower side, as in Figs. 1 and 2, until the lower collar g issues from the lower end of the tubular body E. When the clamping-jaws are sufficiently opened to allow them to pass over the shoulder b^3 of the calks, the extractor is placed on the face of the shoe, covering the calk and pressed down firmly upon the shoe, causing the jaws, the standard, and the cam to ascend about a quarter of an inch, the shortest part h^3 of the cam being then above the shaft K. Said cam is rotated by the operator a short distance until its periphery bears firmly upon the shaft K and adheres to it by friction. The crank-handle is then rotated and its shaft continues to act as a pinion against the periphery of the cam and slowly advances its rotation. The rotation of the handle K^2 is continued until the calk comes out of the perforation a in the shoe. The calk-stumps for easy removal should not be allowed to become shorter than one-eighth of an inch or lower than the shoulder b^3 before new ones are inserted.

Having now fully described my invention, I claim—

1. A horseshoe-calk extractor consisting of a tubular body having its open end of the same diameter as the interior of said body, and the other end closed with a cap having a central perforation, a branched standard received in said perforation, a pair of semicylindrical clamping-jaws having an external collar at each end, and an internal collar in the upper end in engagement with the head on the lower end of said standard, and a cam carried by its upper end, with a shaft under the cam, to rotate said cam substantially as described.

2. In a calk-extractor the combination of a tubular body having one end open and the other end closed with a cap having a central perforation, a branched standard received in said perforation, a pair of semicylindrical jaws having an internal collar in their upper ends in engagement with the head on the lower end of said standard, a cam carried between and by the branches of the standard, with a shaft passing between said branches and under the cam substantially as described.

3. In a calk-extractor the combination of a tubular body having one end open and the other end closed with a cap having a central perforation, a slotted standard received in said perforation, a pair of semicylindrical jaws having an internal collar in their upper ends in engagement with the head on the lower end of said standard a radially-slotted cam carried by the upper end of the standard, with a crank-shaft passing through the slotted standard and horizontally through the tubular body substantially as described.

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

JAMES W. JOHNSON.

Witnesses:
C. A. McCORMICK,
E. M. MERCHANT.