

No. 636,417.

Patented Nov. 7, 1899.

H. F. SMITH.
HORSESHOE CALK SHARPENER.

(Application filed May 10, 1899.)

(No Model.)

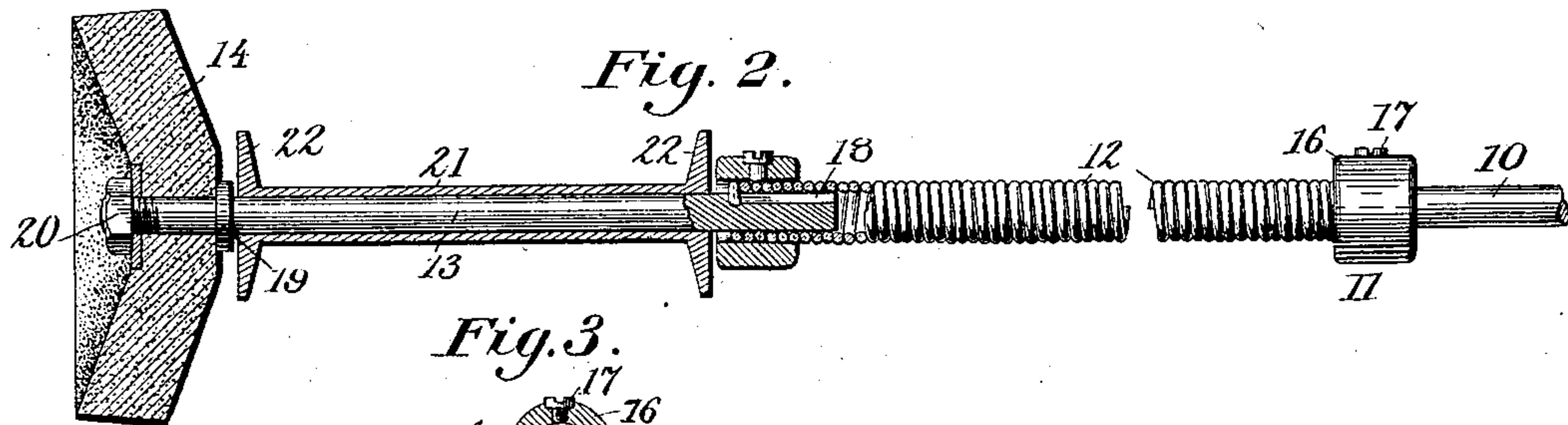
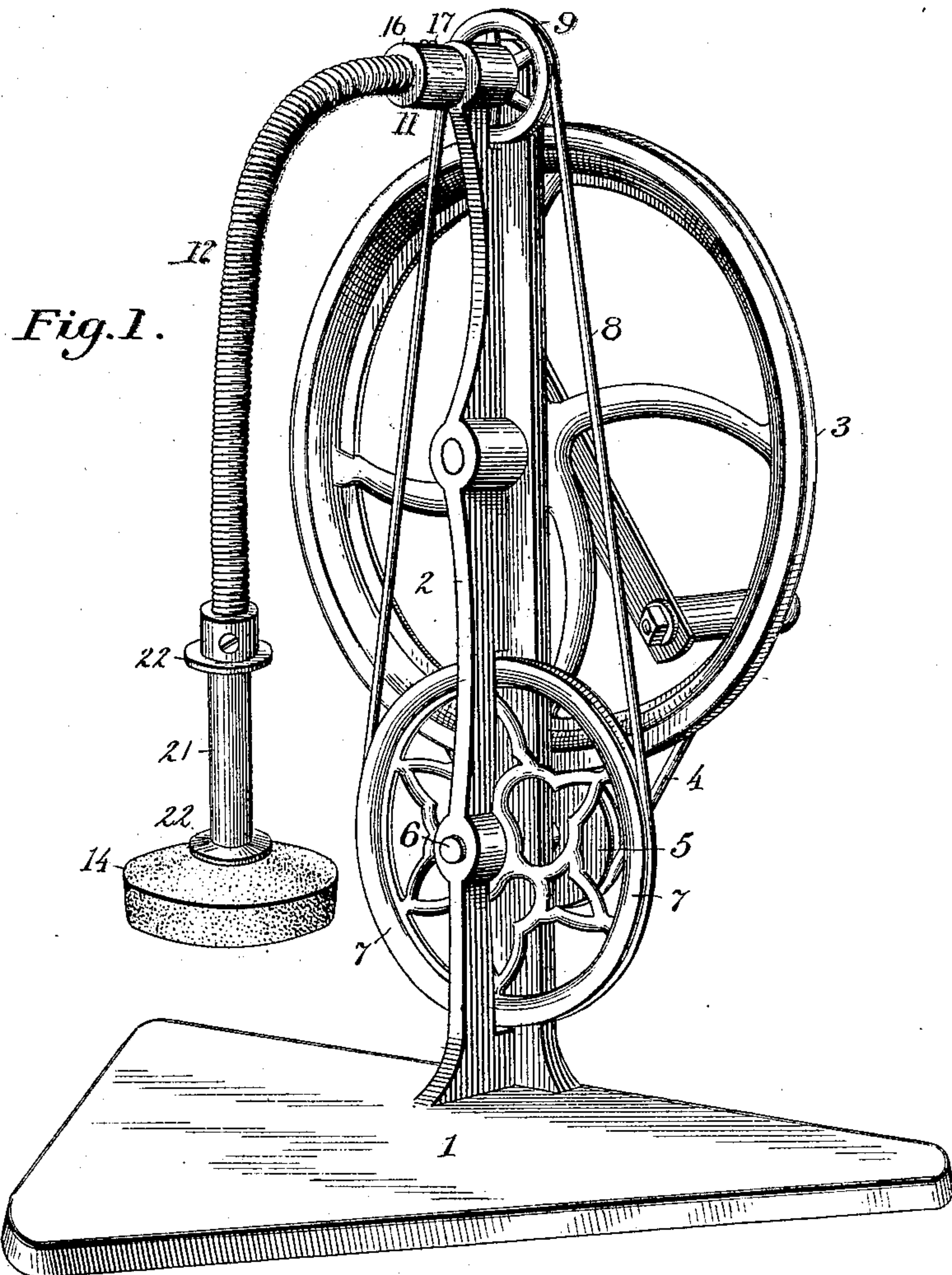
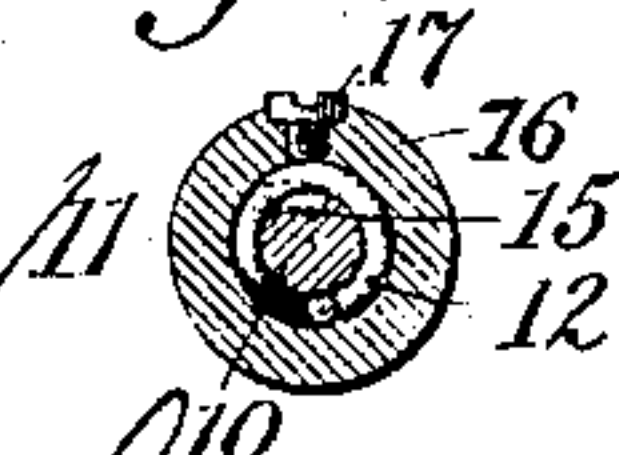


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY F. SMITH, OF HELENA, MONTANA, ASSIGNOR OF TWO-THIRDS TO
EDWARD HORSKY AND ADAM F. KLEESE, OF SAME PLACE.

HORSESHOE-CALK SHARPENER.

SPECIFICATION forming part of Letters Patent No. 636,417, dated November 7, 1899.

Application filed May 10, 1899. Serial No. 716,285. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. SMITH, a citizen of the United States, residing at Helena, in the county of Lewis and Clarke and State of Montana, have invented a new and useful Horseshoe-Calk Sharpener, of which the following is a specification.

My invention relates to a horseshoe-calk sharpener, and has for its object to provide a grinding or sharpening disk having an extended abrading-surface designed to increase the durability of this member of the apparatus and also to enable the operator to produce any desired shape of calk, to provide improved means whereby the grinding or abrading disk may be manipulated in dressing a calk, and, furthermore, to improve and simplify the general construction of machines of this class.

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 calk-sharpener constructed in accordance with my invention. Fig. 2 is a detail view, partly in section, of the abrading-disk, flexible shaft, and connections. Fig. 3 is a detail transverse section of the flexible shaft at the point of connection of the spiral with the driven shaft.

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

Upon a suitable supporting-frame, consisting of a base 1 and a slotted or analogous upright 2, is mounted a driving-wheel 3, connected by a belt 4 with a belt-wheel 5 on a counter-shaft 6, also mounted in suitable bearings in the standard. Said counter-shaft carries a second belt-wheel 7, connected by a belt 8 with a pulley 9 on a driven shaft 10, the relative sizes of said driving and belt wheels being such as to produce a multiplication of speed of the driven shaft, whereby the abrading member or disk may be rotated efficiently.

Connected with the driven shaft by means of a coupling-collar 11 is a flexible shaft 12, and to the latter in turn is attached a spindle 13, which carries the abrading-disk 14. The

portion of the driven shaft which fits within the adjacent end of the flexible shaft is grooved, as shown at 15, to form an abrupt shoulder against which abuts the extremity of the wire forming said flexible shaft, and that portion of the flexible shaft which is fitted upon the end of the driven shaft is encircled by a coupling-collar 16, held in place by a set-screw 17. The other end of the flexible shaft is similarly fitted upon the extremity of the spindle 13, the latter having a longitudinal groove 18, forming an abrupt shoulder against which the extremity of the wire forming said flexible shaft abuts to positively communicate rotary motion to the spindle. This form of connection between the rigid shaft and the extremities of the flexible shaft facilitates the assembling of the parts and at the same time insures the efficient communication of motion, as I have found in practice.

The spindle is provided adjacent to its outer or free end with an enlargement forming a shoulder 19, and the portion of the spindle beyond said shoulder is extended through a central opening in the abrading or grinding disk and is engaged beyond the outer surface of said disk by a securing-nut 20. In the preferred construction the grinding-disk is concavo-convex, with a cylindrical peripheral surface, and the concave surface, which is arranged outermost, thus meets the peripheral surface to form an acute-angled edge, and in practice I have found that this construction of disk enables the operator to reach all portions of the surface of a calk and grind the latter to the desired shape properly and with facility. The peripheral surface being of comparatively large diameter is sufficiently extensive to insure the durability of the device. Said grinding-disk is preferably constructed of emery. Furthermore, the concave outer surface of the disk provides for countersinking the securing-nut in rear of the plane of the front edge of the disk, where it is out of the way in the operation of the machine.

Mounted upon the spindle, between the enlargement forming the shoulder 19 and the adjacent end of the flexible shaft, is a handhold or grip 21, consisting of a sleeve provided

with terminal guards or flanges 22. The emery-wheel is adapted to be manipulated by one hand of the operator, while the other is employed in holding the hoof of the horse or other animal in proper position, the machine being designed for use in grinding the calks fore and aft without the removal thereof from the shoe or hoof. It is obvious, however, that the machine may be used for other analogous purposes unnecessary to mention in detail herein. It will be seen, furthermore, that by the specified connection between the parts of the apparatus the flexible shaft may be detached from the spindle, or vice versa, by applying sufficient axial strain in opposite directions thereon, and that when said members are disconnected the handhold or grip is free for removal from the spindle. It will be seen, furthermore, that the abrading-disk is secured to the spindle by extending a portion of the latter through the center of the disk, whereby it firmly and substantially engages the disk and reduces the liability of displacement or straining of the parts in use. Furthermore, the securing-nut is exposed and may be readily manipulated when necessary to replace a worn or injured disk without disarranging any of the other portions of the apparatus. It will be understood, furthermore, that various changes in the form, proportion, size, and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having described my invention, what I claim is—

1. In a horseshoe-calk sharpener, the combination with a driven shaft and a movable and rigid spindle, each having a longitudinal

peripheral slot, of a flexible shaft consisting of a helical spring inclosing the slotted portions of the driven shaft and the spindle and having its ends turned inwardly and engaging said slots, a collar inclosing the slotted portions of the shaft and spindle and the adjacent portions of the flexible shaft, and means for clamping said collar to compress and hold the flexible shaft upon the first-named shaft and spindle, substantially as specified.

2. In a horseshoe-calk sharpener, the combination with a driven shaft having a longitudinal peripheral slot and a rigid spindle having also a longitudinal peripheral slot, of a flexible shaft consisting of a helical spring having its ends inclosing the slotted portions of the driven shaft and the spindle, and having its extremities turned inwardly and engaging said slots, a collar adjustably mounted upon the flexible shaft and encircling the inclosed portions of the driven shaft and spindle, a set-screw carried by the collar and adapted to clamp it upon the flexible shaft and compress the latter into frictional engagement with the inclosed portions, a flange upon the spindle, a sleeve upon the spindle intermediate the flange and collar, said collar being adapted to hold the sleeve against longitudinal displacement, and an abrading-disk secured to the outer end of the spindle beyond the flange and adapted for rotation with the spindle, 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.

HENRY F. SMITH.

Witnesses:

JNO. J. FALLON,
EDWARD HORSKY.