No. 715,552. Patented Dec. 9, 1902.

A. COLLET.

BALLAST RAMMER.

(Application filed Sept. 17, 1902.)

(No Model.)

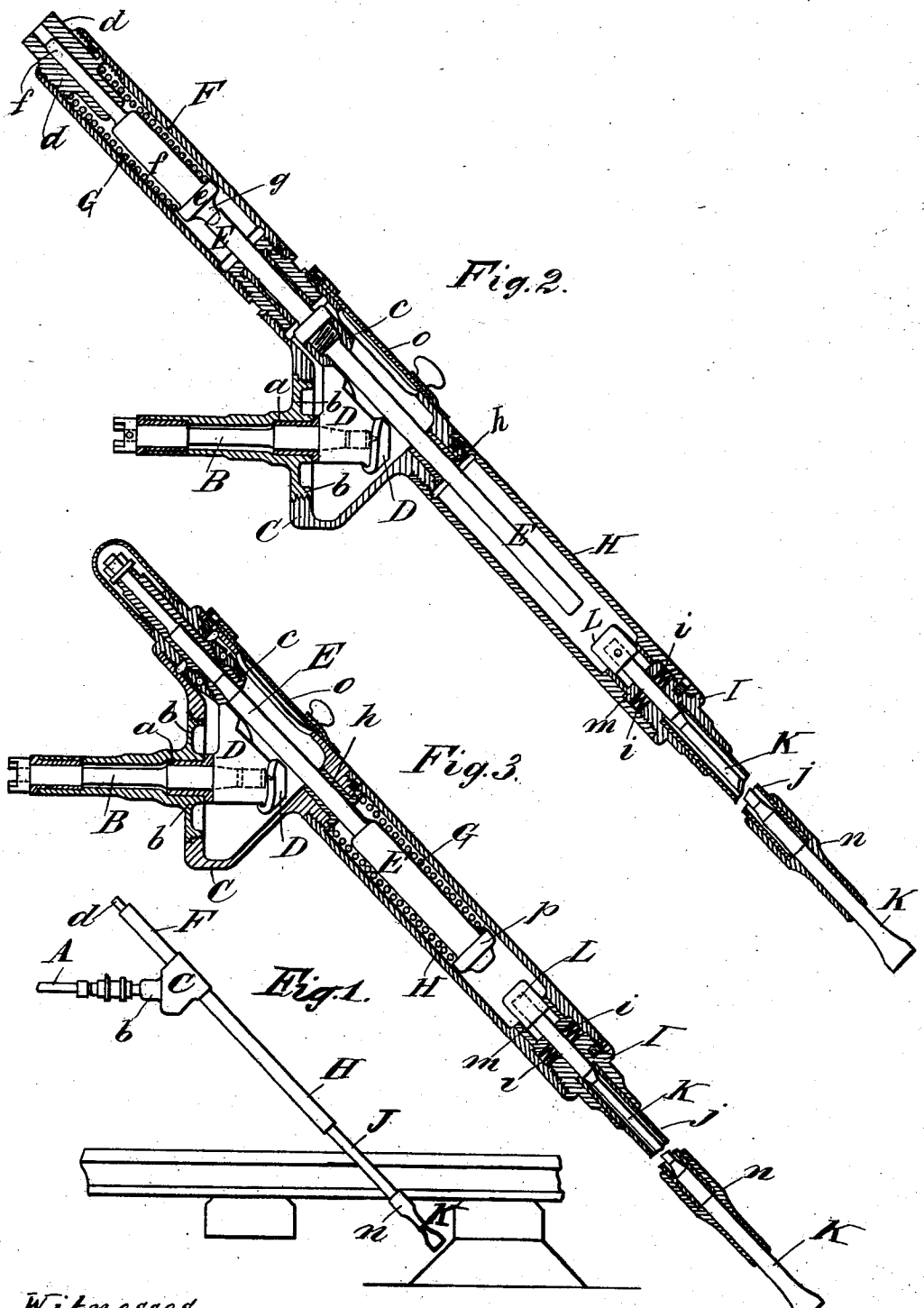


Fig. 2.

Fig. 3.

Fig. 1.

Witnesses.
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UNITED STATES PATENT OFFICE.

ALBERT COLLET, OF PARIS, FRANCE.

BALLAST-RAMMER.

SPECIFICATION forming part of Letters Patent No. 715,552, dated December 9, 1902.

Application filed September 17, 1902. Serial No. 123,711. (No model.)

To all whom it may concern:

Be it known that I, ALBERT COLLET, a citizen of the French Republic, residing in Paris, France, have invented certain new and useful Improvements in Ballast-Rammers, of which the following is a specification.

This invention relates to the class of mechanical ramming or tamping devices; and it has for its object to provide an effective device or tool for ramming the ballast under the ties and stringers which support the rails of railways.

In the accompanying drawings, which serve to illustrate an embodiment of the invention, Figure 1 is a general view of the device or tool drawn to a small scale and illustrating its use. Fig. 2 is a longitudinal axial section of the device on a much larger scale than Fig. 1. Fig. 3 is a similar view to Fig. 2, illustrating a slightly-modified construction.

Referring primarily to Figs. 1 and 2, A, Fig. 1, is a flexible shaft adapted to be driven by any suitable kind of motor. (Not shown.) This flexible shaft is coupled to and drives a shaft or arbor B, rotatively mounted in a bearing-sleeve *a*, set in a tubular branch screwed at *b* into a bracket on the body or central portion C of the hollow or tubular stock of the rammer, which has tubular prolongations F and H.

Within the body C is a lifting helix or helical cam D, secured on the arbor B. As this arbor rotates, the cam D takes under a projection *c* on a plunger E and lifts or draws back the latter and then sets it free, as the helix forming the cam is broken away or mutilated. The plunger E extends upward into the tubular portion F of the stock, where it is properly centered and guided. Within the tube F and beyond the plunger E is a follower *f*, the rounded end *g* of which bears in a concavity in the end of said plunger. At its upper end the follower has a reduced stem, which is slidably guided in a screw-plug *d*, set in the end of the tube F. On the lower end of the follower *f* is an annular shoulder, and between this shoulder and a similar shoulder on the screw-plug *d* is a coil-spring G.

The operation so far as described is as follows: When the shaft A is set in motion, the arbor B and cam D are rotated. The cam, taking under the annular projection *c*, first draws back the plunger E and then sets it free. In moving back or upward the plunger acts through the follower *f* to compress the spring G, and this spring when the plunger is set free drives the latter forcibly downward or forward.

It may be noted that the plunger E is free to rotate axially, being cylindrical, and that under the influence of the helical cam D the plunger is rotated, this being effected by the frictional contact of the rotating cam on the projecting annular bearing *c* on the plunger. This rolling of the surfaces of the parts D and *c* over each other materially reduces the friction between the parts. Moreover, the construction described produces uniform wear on the entire annular surface of the bearing *c*, which would not be the case if the plunger did not rotate axially.

The plunger E has a guide *h* below where the tubular portion H of the stock joins the central portion or body C. In this portion H is secured a head I, from which extends a tube *j*, provided with a ferrule *n*, and through the tubular sheath formed by the parts I, *j*, and *n* plays the rammer K. This rammer is in the nature of a rod provided with a ramming or tamping head, which may be of any form, and on the upper or inner end thereof is a head L to receive the blows of the plunger E in the operations of the tool.

To cushion the blows of the plunger, a spring or springs *i* are placed in the tube H between the inner end of the head I and a species of trunk-piston *m*, slidable in the tube H, but limited in its upward movement by an internal shoulder on the tube. If the head L be driven forward or outward far enough, it will impinge upon the cushioned piston *m*.

It will be noted that the plunger E is independent of the rammer K and strikes on the head of the latter as a hammer strikes a nail in driving it. The strokes of the plunger may be very frequent or not, as desired, this being governed by the speed imparted to the shaft A, and the force of the blows may be governed by regulating the tension of the spring G through the medium of the screw-plug *d*.

The workman holds the tool or machine in his hands and directs the rammer as he desires.

In the modification illustrated in Fig. 3 the spring G is interposed between the slide-bearing *h* and a head *p* on the plunger itself, the follower *f* being dispensed with or made to form a substantial part of the plunger; otherwise the construction is substantially the same as that seen in Fig. 2.

The rammer will ordinarily be directed obliquely downward, as seen in Fig. 1, in tamping ballast on railways, and hence for convenience the drawing back of the plunger has been referred to as a lifting or upward movement; but these words are only employed descriptively and not in a limiting sense.

Having thus described my invention, I claim—

1. In a tool or device for the purpose specified, the combination with a tubular stock and a rammer slidable in said stock, of a spring-plunger in said stock and alined with the rammer but independent thereof, said plunger being adapted to strike the rammer a blow when drawn back and then freed, and a rotary cam device for drawing back and then setting free the plunger, substantially as set forth.

2. In a tool or device for the purpose specified, the combination with a tubular stock and a rammer slidably mounted therein, of means for cushioning said rammer, a spring-plunger in said stock and alined with the rammer, and means for drawing back and setting free said plunger in order that it may strike the rammer, said means comprising an arbor B, rotatively mounted in bearings on the stock, and a helical cam D on said arbor and adapted to engage a projecting part on the plunger, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALBERT COLLET.

Witnesses:

JULES ARMENGAUD, Jeune,

EDWARD P. MACLEAN.