

No. 171,170.

Patented Dec. 14, 1875.

Fig 1

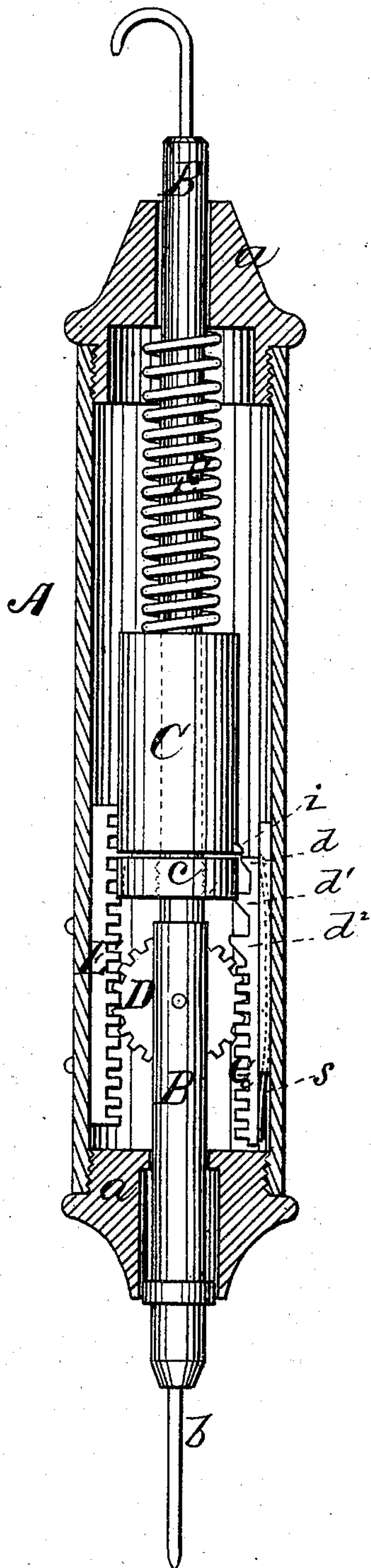
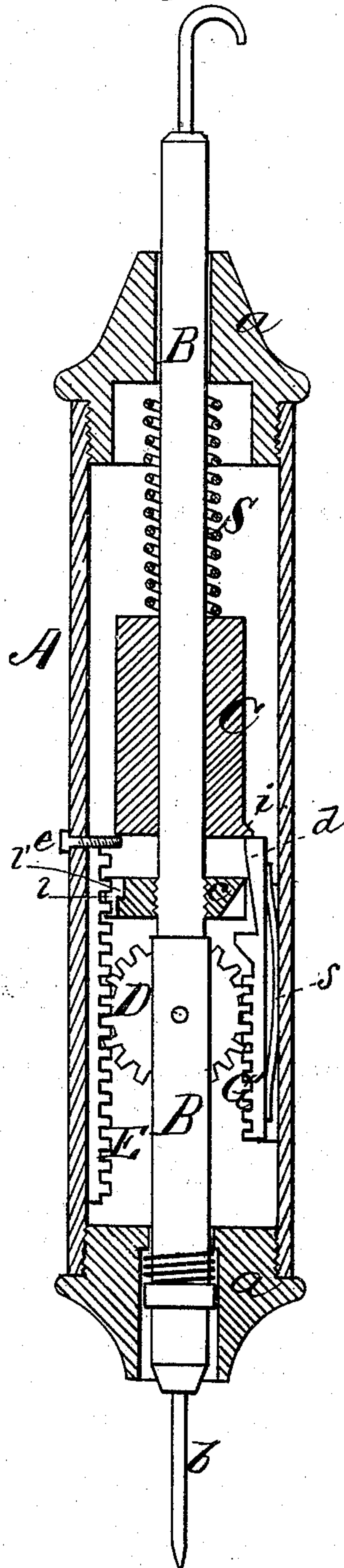


Fig 2



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IMPROVEMENT IN DENTAL-PLUGGERS.

Specification forming part of Letters Patent No. **171,170**, dated December 14, 1875; application filed May 28, 1875.

CASE B.

To all whom it may concern:

Be it known that I, EDWARD S. RIDER, of Catlettsburg, in the county of Boyd and State of Kentucky, have invented a new and valuable Improvement in Dental-Pluggers; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figures 1 and 2 of the drawings are representations of vertical central sections of my dental-plugger.

This invention has relation to improvements in dental-pluggers, which are designed to be used for the purpose of forcing gold-leaf or other suitable metallic leaf into a carious tooth for the purpose of properly filling the same.

The object of the invention is to produce a number of quick successive taps of the hammer upon the head of tool-holder, at each upward movement of the hammer-shaft, so that the force of the operating spring may not be expended in a single violent action, whereby the patient is subjected to great suffering, but may be subdivided in its effects with an equally effective result in consolidating the leaf, but a great reduction of pain to the patient.

To this end the nature of the invention consists in combining with a reciprocating shaft and a hammer, having endwise movement thereon, the latter being actuated by the recoil of a spring arranged upon the shaft above the hammer, a pinion having its bearings in the said shaft, which pinion engages with a rack-bar fixed to the interior of a casing, and a second rack-bar having endwise movement in guides in relation to the first, which latter bar has upon its upper end a number of spaced lugs adapted to engage successively with, and to become disengaged from the said hammer, whereby an equal number of sharp taps will be imparted to a disk rigidly secured upon the shaft at each of its reciprocations, as will be hereinafter more fully explained.

In the annexed drawings, A designates the casing of my improved dental-plugger, which is, preferably, cylindrical in form, and which

is closed at its ends by screw-caps *a*. B represents a shaft passing through the said caps, and carrying in its lower end a plugging-tool, *b*, upon which shaft is arranged an annular disk, *c*, serving as an anvil, and an endwise-movable and, preferably, cylindrical hammer, C, which is actuated by the recoil of a helical spring, S, applied upon the shaft, as shown in Fig. 1. Shaft B, has, near its lower end, below disk *c*, a pinion, D, which engages with a rack-bar, E, permanently secured to the inside of casing A, and with an endwise-movable rack-bar, G, arranged in guides on the inside of casing A, diametrically opposite the bar E. This latter bar has upon its upper extremity a number of projecting lugs, *d d¹ d²*, and it is provided with a spring, *s*, upon its rear edge for a purpose which will hereinafter appear. When the end of the tool is placed upon the leaf in the tooth, and the operator presses down the casing, the first lug *d* will be engaged under a lip, *i*, upon the lower edge of the hammer C, through the upward movement imparted to rack-bar G, through the medium of pinion D and rack-bar E, and will raise the said hammer slightly. As the upward movement of rack-bar G continues, it will be allowed to have a degree of lateral movement sufficient to disengage lug *d* from lip *i* on the hammer, thus allowing the latter to give its first stroke upon the anvil-disk *c*, through the recoil of spring S, because of the yielding of spring *s* to the pressure of pinion D upon the said rack-bar. The upward movement of rack-bar G still continuing, the second lug *d¹*, will then engage in its turn with lip *i*, and, becoming disengaged therefrom through the means above described, will allow the hammer to give its second stroke to the disk, and so on until the whole number of lugs have, in their turn, come into play. After each stroke of the hammer, the rod, disk, and hammer are replaced, ready for a subsequent stroke, by the recoil of the said spring S.

The mechanism above described is adapted to give a single stroke of greatly-increased strength in the following manner, to wit: rack-bar G is removed, and a second rack-bar, G', having a single lug, *d¹*, is substituted therefor,

by which means a single strong stroke is given, of which the strength is greatly increased by raising the hammer, thus compressing the operating spring S, and holding it compressed by means of a pin, *e*. By this means the shaft is allowed greater endwise play, while that of the hammer is lessened, and when the disengagement of lug *d* from lip *i* takes place, its stroke will be much stronger and much more effective. It is evident that the action of spring S in returning shaft B to its place will be effective only until hammer C reaches pin *e*, and its further replacement I then obtain by means of a second spring, *f*, applied on the lower end of the said shaft in a recess of nozzle-cap *a*, as shown in Fig. 2. With a view to holding shaft B against rotation in its bearings in caps *a*, disk *c* is provided with a vertical transverse groove, *l*, shown in Fig. 2, into which rack-bar E is received, the latter thus serving as a spline, and effectually accomplishing the desired result; also, with a view to allowing hammer and disk

to come in contact under the circumstances above described, the upper edge of the latter is notched, as shown at *l'* in Fig. 2.

What I claim as new, and desire to secure by Letters Patent, is—

1. A dental-plugger, having a reciprocating shaft, an anvil, a hammer, and suitable mechanism, whereby a series of successive blows is given to the plugger by means of a continuous endwise pressure thereon, substantially as described.

2. The hammer C, endwise movable on shaft B, and having annular lip *i*, in combination with an endwise-movable rack-bar, G, having projections *d* *d*¹ *d*², substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EDWARD S. RIDER.

Witnesses:

GEORGE E. UPHAM,
FRANCIS J. MASI.