

(No Model.)

2 Sheets—Sheet 1.

W. HELLBERG.
WATCHMAKER'S TOOL.

No. 538,163.

Patented Apr. 23, 1895.

Fig. 1.

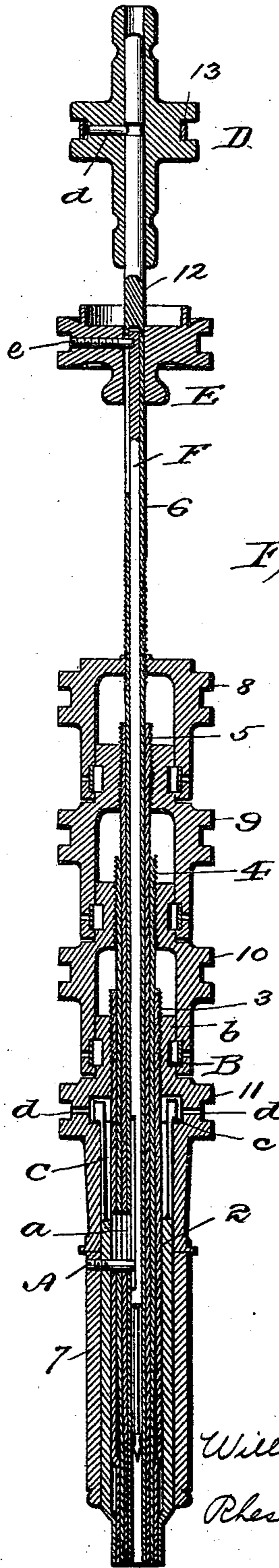
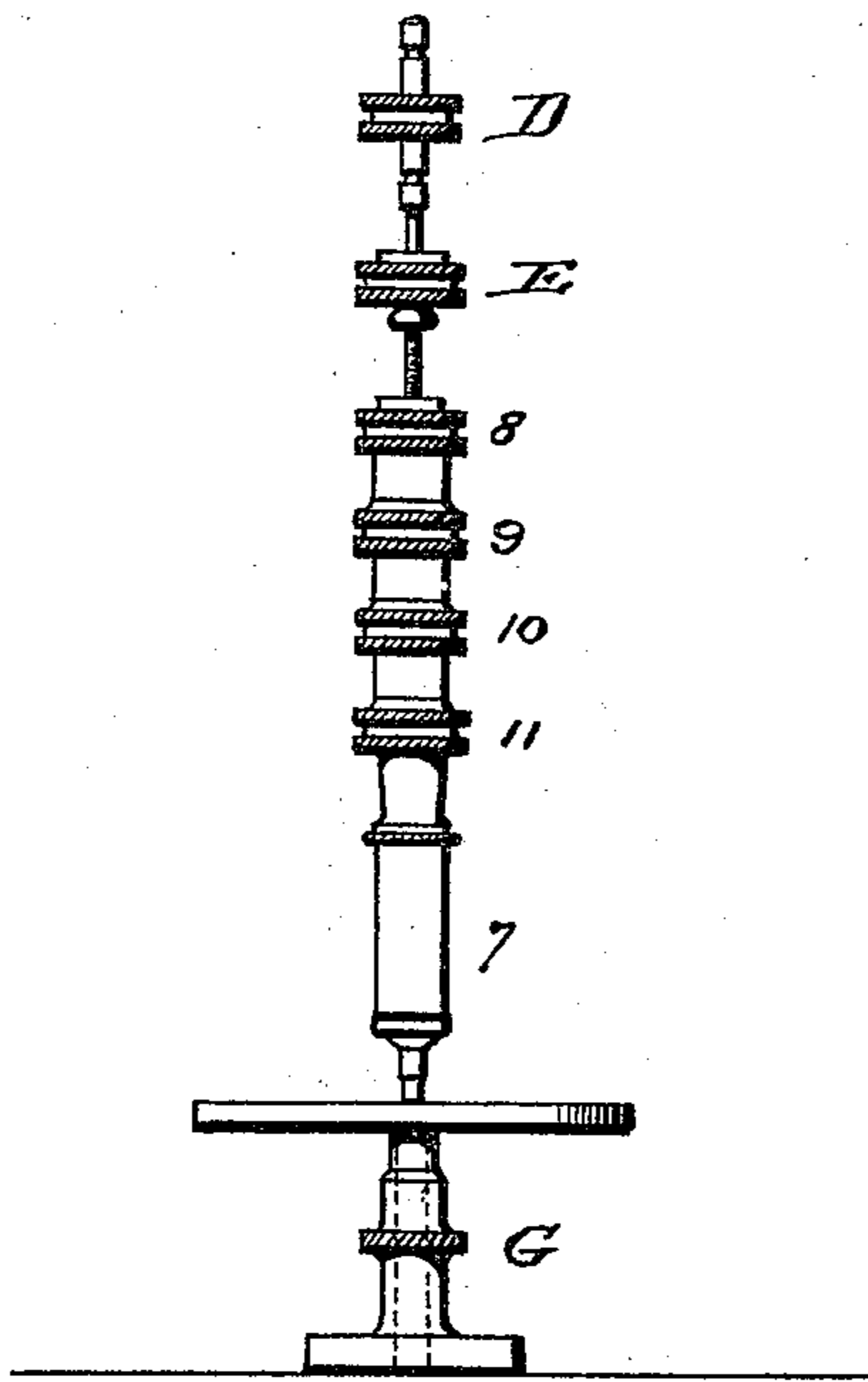


Fig. 2.

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Fig. 3.

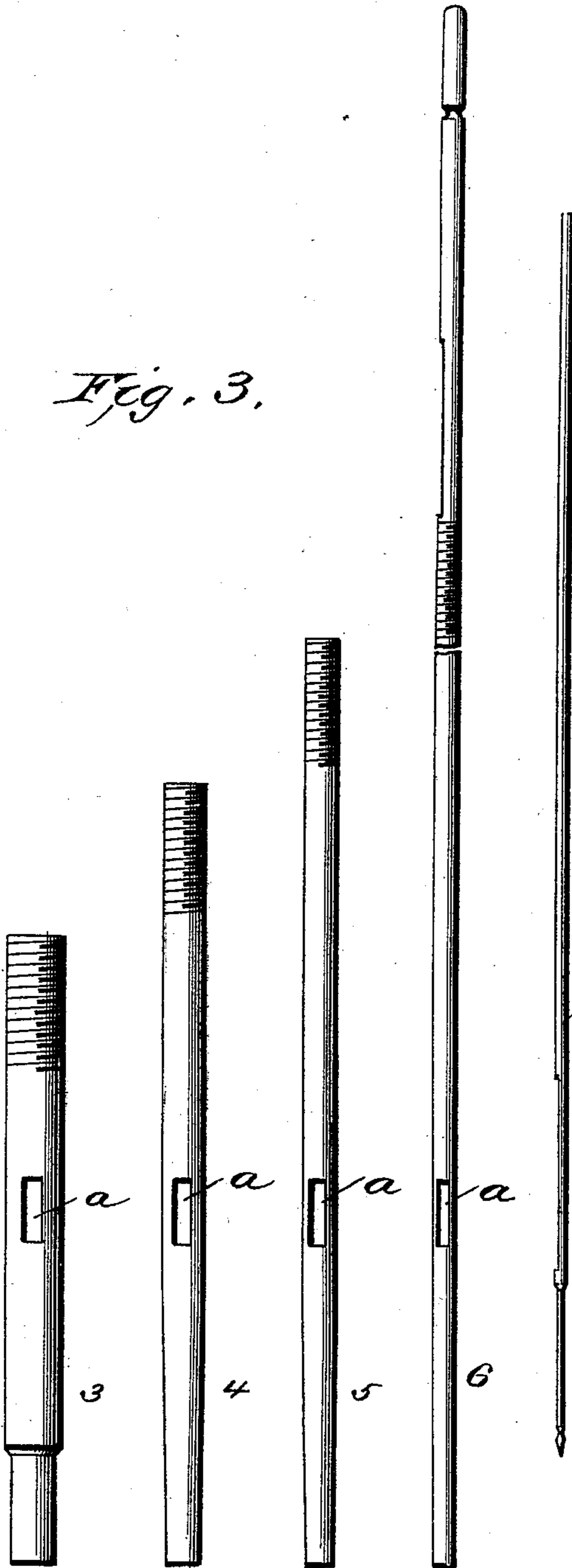


Fig. 4.

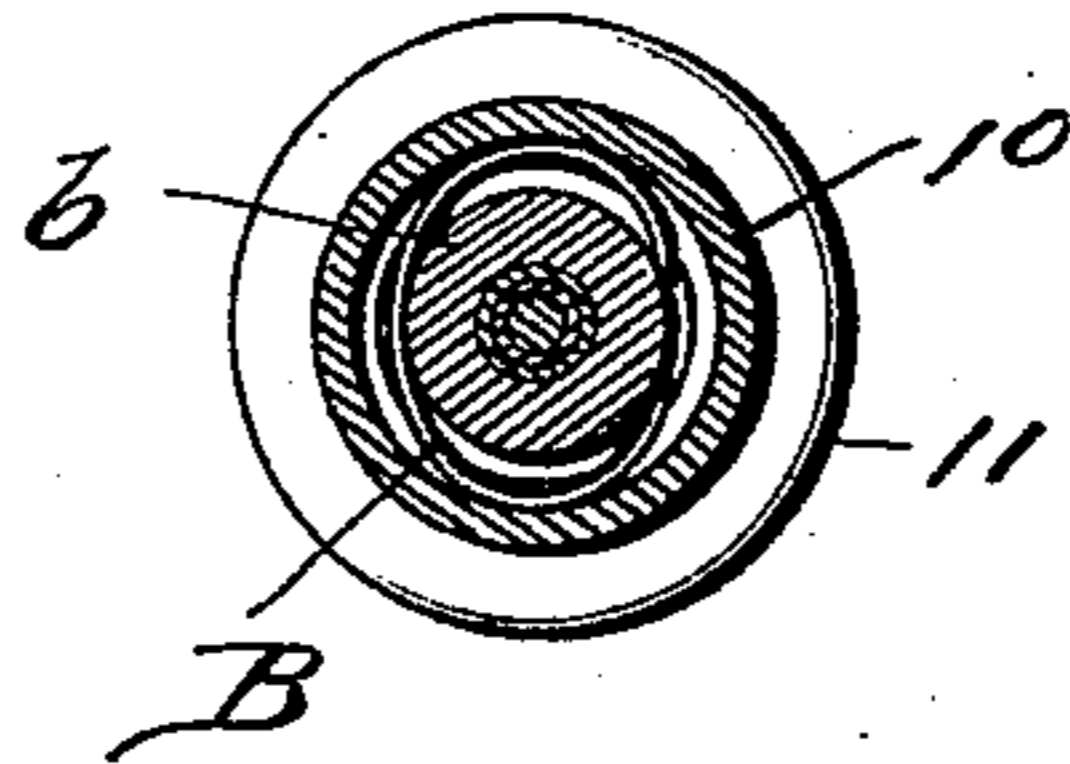
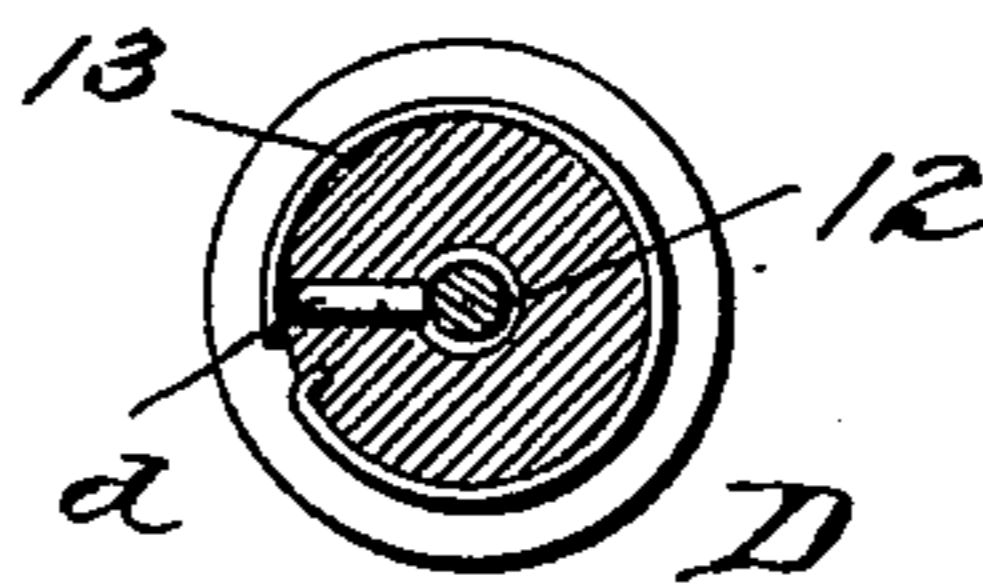


Fig. 5.



Fig. 6.



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UNITED STATES PATENT OFFICE.

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WATCHMAKER'S TOOL.

SPECIFICATION forming part of Letters Patent No. 538,163, dated April 23, 1895.

Application filed May 2, 1894. Serial No. 509,814. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HELLBERG, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Watchmakers' or Jewelers' Tools; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The object of the present invention is the provision of a tool for watch makers which will combine in one organization means for removing and replacing jewels in a watch movement from the smallest to the largest size, an oiler and a cap-jewel setter, the latter being reversible to present active ends of different diameters to accommodate different sizes of cap jewels. A hollow stake is provided and used in connection with the tool to receive the jewels and prevent them from becoming lost when removed from the bridge and other jeweled portions of the movement.

A further object of the invention is a tool of the character described which will be compact, easily manipulated, light and comprise a minimum number of parts consistent with the range and scope of the device.

The invention comprises a series of concentric tubular plungers placed the one within the other, and a corresponding series of hand operated devices for projecting the required plunger into operative position. In the preferred form of construction the plungers have a threaded portion and the plunger operating devices are thumb nuts held and working in co-operative relation so that a rotation of the proper thumb nut will actuate and project into working position the plunger operatively connected with the said thumb nut.

The improvement will be described more particularly hereinafter and set forth in the subjoined claims, and is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the tool show-

ing it in connection with the hollow stake, and the manner of applying the same for removing jewels from their setting. Fig. 2 is a longitudinal section of the tool on a larger scale. Fig. 3 is a side elevation of the several plungers separated and arranged in progressive order. Fig. 4 is a sectional detail showing the manner of connecting the thumb nuts together in series. Fig. 5 is a detail view of the thumb nut connecting spring; and Fig. 6 is a detail section of the cap jewel setter showing the means of securing it on the grooved stem or projecting end of the innermost plunger.

Similar letters and numerals refer to corresponding parts in the several views.

The plungers 2, 3, 4, 5 and 6 are tubular and concentrically disposed, the one fitting snugly within the other and arranged so that the working ends will come flush or about in the same plane when all the plungers are moved in to their utmost limit. A pin or screw A passes laterally through openings in the sides of the plungers to prevent them from turning independently of each other whereby when the proper thumb nut is rotated the plunger having screw thread connection therewith will receive a longitudinal movement which projects its working end beyond the ends of the other plungers. The openings *a*, in the sides of the plungers 3, 4, 5 and 6 are elongated in the direction of the length of the plungers to admit of the plungers having a relatively longitudinal movement, the pin *a* limiting the movements of the plungers by engagement with the closed ends of the elongated openings. The pin or screw A is carried by or attached to the plunger 2. The latter may form the handle, but being of steel which is easily corroded it is preferred to surround the same by a sleeve or casing 7 which is highly polished and finished to enable the fingers to obtain a firm grasp thereon when using the tool. Each of the plungers except the outer plunger 2, has a threaded portion which enters a correspondingly internally threaded thumb nut. The plungers are of graduated lengths to correspond with the relative positions of the thumb nuts 8, 9, 10 and 11 which are placed

end to end in a progressive series. These thumb nuts are of the same diameter and size to give a uniform appearance to the completed tool and are connected to prevent longitudinal separation or displacement. The nut 11 has a neck *b* which fits within the enlarged end of the nut 10. The opposing sides of the neck 11 and the walls of the nut 10 surrounding the said neck have annular grooves in coincident relation. An elliptical spring B is provided and interlocks with the two annular grooves and secures the two nuts together without interfering with their full rotary movements. The other thumb nuts are secured together in precisely the same manner as the nuts 10 and 11.

The plunger 2, has spring arms *c* at the inner end which terminate in lateral extensions that spring outward and enter an annular groove within the nut 11. Openings *d* are provided in the sides of the nut 11 and opposite the inner annular groove and at diametrically opposite points so that when it is required to remove the plunger 2 from the nut 11 a pronged instrument has its points thrust through the said openings and against the enlarged ends of the spring arms *c* which have been positioned opposite the said openings *d*. By compressing the spring arms the enlarged ends thereof are cleared of the annular groove and the plunger can be easily withdrawn by pulling apart the nut and plunger. Each of the nuts 8, 9 and 10 have similar springs in the sides to admit of access to compress the interlocking springs B to permit of their separation when required.

The inner plunger 6 is extended to form a stem 12 which receives a cap-jewel setter D and a slide E. The latter is similar in appearance to the thumb nuts and is connected by a pin or screw *e* with an oiler F which is adapted to slide within the inner plunger 6. The pin or screw *e* passes through a slot *f* in the stem 12 which limits the movements of the oiler F. The oiler is a wire having a gold point to prevent poisoning the oil.

The cap-jewel setter D has its end portions of different area to adapt it to the setting of cap-jewels of different sizes, and is reversibly mounted on a stem 12, which is annularly grooved near the end to retain the cap-jewel setter in place and prevent its being accidentally misplaced. The intermediate enlargement has an annular groove in its edge in which is seated a spring 13 one end of which is bent and entered in an opening, the other end bearing on a headed stud *d* which is mounted in an opening in the said enlargement and moves radially therein. The inner end of the stud is rounded and is adapted to enter the annular groove in the stem 12 and retain the cap-jewel setter in place thereon.

The stake G is hollow and has a broad base and is made of aluminum which is light and of such a character as not to injure the jewels. The cap-jewel setter is of the same metal to

prevent marring or otherwise injuring the cap-jewels. The stake being hollow receives the jewels as they are detached and prevents them from getting lost. The tool is used in the ordinary manner. For large jewels the plunger 2 is used, the other plunger being withdrawn from an operative or working position. For the smallest jewels the plunger 6 is projected into a working position beyond the ends of the other plungers by rotating the nut 8. For operating on jewels intermediate and small and largest sizes, the proper plunger is projected by rotating the nut in connection therewith. The part D is used only when placing the cap-jewels in place.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A watchmaker's tool embodying in a single organized structure a series of jewel setters of graduated sizes, means for projecting the required jewel setter into working position, an oiler housed and protected by the jewel setters, means for bringing the oiler into operative position, and a cap-jewel setter supported by and forming part of the tool structure, substantially as specified.

2. A watchmaker's tool embodying in its structural organization a series of jewel setters of graduated sizes related to mutually brace and strengthen each other, and independent means for projecting each jewel setter into working position, substantially as set forth.

3. A watchmaker's tool embodying in its organization a series of tubular jewel setters of graduated sizes arranged the one within the other in concentric relation, and means for moving one jewel setter with respect to the others to project it into working position, substantially as described.

4. A watchmaker's tool comprising a series of tubular plungers arranged the one within the other, the relatively longitudinal movable plungers having a threaded portion, and a series of thumb nuts, one for each plunger, substantially as described.

5. A watchmaker's tool comprising a series of tubular plungers arranged the one within the other, the relatively longitudinal movable plungers having a threaded portion, a pin passing through elongated openings in the plungers to hold them from independent rotary movement, and a series of thumb nuts, one for each plunger to project the required plunger into working position, substantially as described.

6. The combination with a series of concentric plungers having threaded portions, of a series of thumb nuts, the one having a neck portion to enter the enlarged end of the other, and an interlocking device projected across the joint between the meeting parts of the nuts, substantially as described.

7. The combination with a cap jewel setting tool having an annular grooved stem, of a re-

versible cap-jewel setter having a spring actuated stud to lock the same on the stem, substantially as described.

5 8. A watchmaker's tool embodying in its construction a tubular jewel setter, an oiler adapted to slide within the said tubular jewel setter to be protected and housed thereby, and means to project the oiler into working

position when required, substantially as specified.

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

WILLIAM HELLBERG.

Witnesses:

H. F. ROSING,
E. L. MATTSON.