W. F. Cornell,

Ratchet Drill,

No. 81,145. Patented Aug. 18, 1868.

Fig. 1.

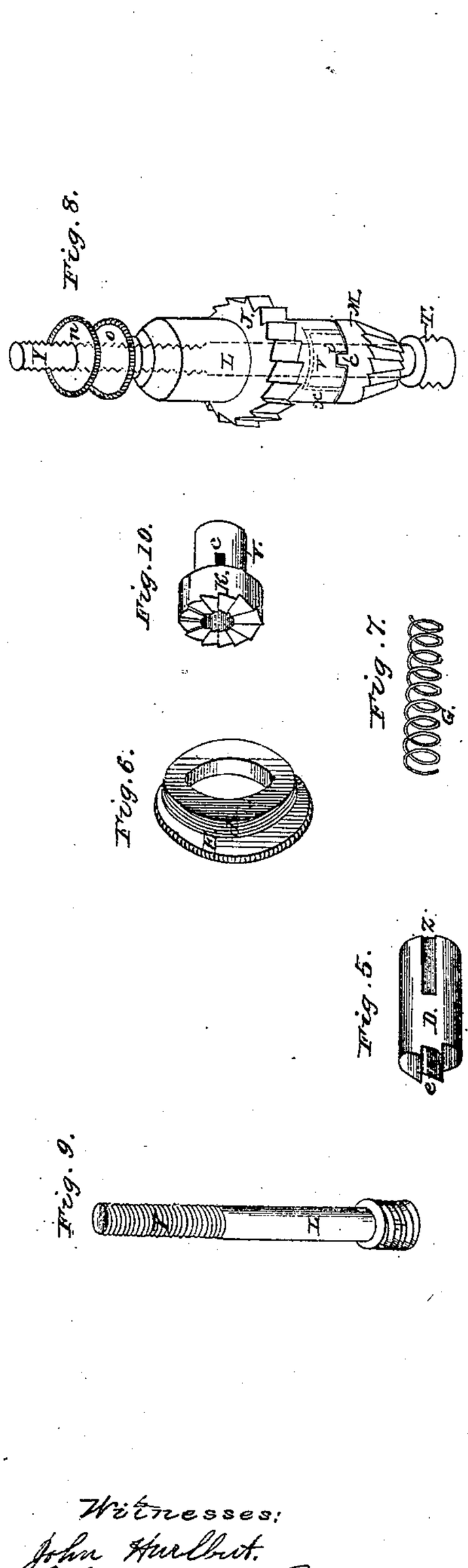

Fig. 2.

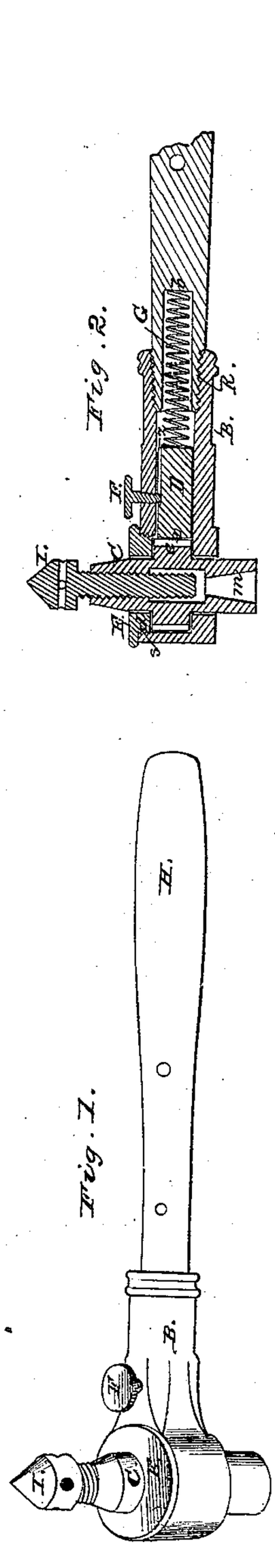

Fig. 3.

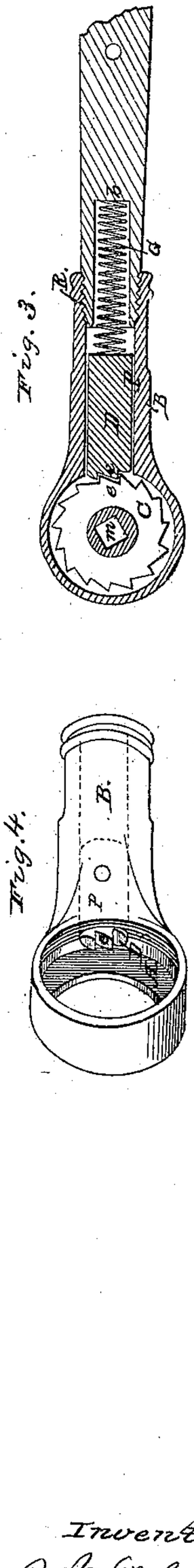

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Witnesses:
John Hurlbut.
Charles B. Palmer.

Inventor:
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United States Patent Office.

WILLIAM F. CORNELL, OF ADRIAN, MICHIGAN, ASSIGNOR TO HIMSELF AND SILAS HURLBUT, OF SAME PLACE.

Letters Patent No. 81,145, *dated August* 18, 1868.

IMPROVED RATCHET-BRACE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM F. CORNELL, of the city of Adrian, in the county of Lenawee, and State of Michigan, have invented a new and useful Improvement in Ratchet-Braces; and I do hereby declare the following to be a full, clear, and exact description of the same, which will enable others skilled in the art to make and use my invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, like letters referring to like parts.

My invention consists in a ratchet-brace for drilling, countersinking, and counterboring, to be used by machinists, boiler-makers, and others, so constructed that by the use of one screw-ring cap and pinch-screw either the ratchet-drill shaft or ratchet-countersink shaft can be placed in the ratchet-brace.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 represents a perspective view of a ratchet-brace embodying my invention.

Figure 2 represents a view of the centre being divided perpendicularly, by which all parts of the ratchet-brace for drilling can be seen.

Figure 3 represents a view of the centre being divided horizontally, showing the ratchet-shaft and teeth, also the pawl and teeth and spiral spring.

Figure 4 represents a cylindrical socket A, with its thread *s* and arm B, with pawl D in the horizontal cylindrical socket P of arm B.

Figure 5 represents a round pawl, D, with its teeth *e* and groove *z*.

Figure 6 represents a screw-ring cap E, with the thread *d* on the ring.

Figure 7 represents a spiral spring.

Figure 8 represents a ratchet-shaft with countersink M attached, and spindle L in the centre, also thumb-nuts *n* and *o*.

Figure 9 represents a spindle, L, with thread T on large end, and thread Y on spindle L.

Figure 10 represents a counterbore, K, with its shank V and feather *c*, so as to fit in the cylindrical socket X in the bottom end of ratchet-shaft C.

Having thus described the construction of my improved ratchet-brace, I will now describe its operation and use.

First. In order to use my improved ratchet-brace to drill, counterbore, or countersink, I put the shank of the drill, counterbore, or countersink, in the slightly-tapered square hole *m*, in the bottom end of ratchet-shaft C, in a direction parallel to its axis. Then place the conical point of feed-screw I against a frame or knee, and the cutting-end of said tool on the work, and move the handle H to one side, (to the right side,) and the teeth *e*, on pawl D, catch the teeth *e* of ratchet-shaft C, and the ratchet C is rotated in that direction. Then I push the handle H to the other side, (to the left,) and the inclined plane on the back of the teeth *e* and *e* is allowed to pass by means of the spiral spring G. The spiral spring G brings the pawl D to its work again, when the operation is repeated, one end of said spring G setting against the shoulder *b* in the hollow end of handle H, and the other against the end of pawl D. The tools are kept to their work by means of the feed-screw I.

Second. In order to use said ratchet-brace to counterbore or countersink over tapped holes, I set the pinch-screw F against pawl D, which keeps pawl D in its socket P, to save the annoyance of pawl D coming out while changing the ratchet-shafts C and C. I next unscrew the screw-ring cap E, and take ratchet-shaft C from the cylindrical socket A, and put ratchet-shaft C in said socket A, screw on screw-ring cap E, unloose pinch-screw F, which allows all parts to work. I then screw thumb-nut *n* to the top of spindle L, also thumb-nut *o* up and jamb against thumb-nut *n*. So, by turning both the nuts, *n* and *o*, I can screw the large end, T, of spindle L into a tapped hole to be countersunk or counterbored. I then unloose thumb-nut *o*, and screw down to top of ratchet-shaft C; this brings the cutters of countersink M or counterbore K to their work, and are fed by

thumb-nut *o*. The ratchet-shaft C revolves on spindle L. The counterbore and countersink-tool can be made in any desired shape. The shank V of counterbore K and countersink M is made to fit in the cylindrical socket X in the lower end of ratchet-shaft C, and is united by feather *c* on the shank V and shoulder of counterbore K, which fits in seat *i* of ratchet-shaft C. The ratchet-shaft C may be made with the countersink M and counterbore K solid, or a ratchet-shaft for each brace, in which case the pinch-screw F would be of no use. The object of the round pawl D operating in the horizontal cylindrical socket P, is, that the circle in the socket P and on pawl D can allow pawl D to rotate so that the faces of the teeth *e* and *e* can have an equal pressure, top and bottom.

Claims.

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

1. The combination of the socketed arm B, ratchet-wheel J, and shaft C, and feed-screw I, substantially as and for the purpose set forth.

2. The combination of the screw-ring cap E with the cylindrical socket A, and ratchet-shaft C, substantially as and for the purpose set forth.

3. The combination of the counterbore K or countersink M with ratchet-shaft C, wheel J, the cylindrical socket X, shank V, feather *c*, and seat *i*, for the purpose as set forth and described.

4. The combination of the thumb-nuts *n* and *o* with spindle L, constructed in the manner and for the purpose as set forth and described.

WM. F. CORNELL.

Witnesses:

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