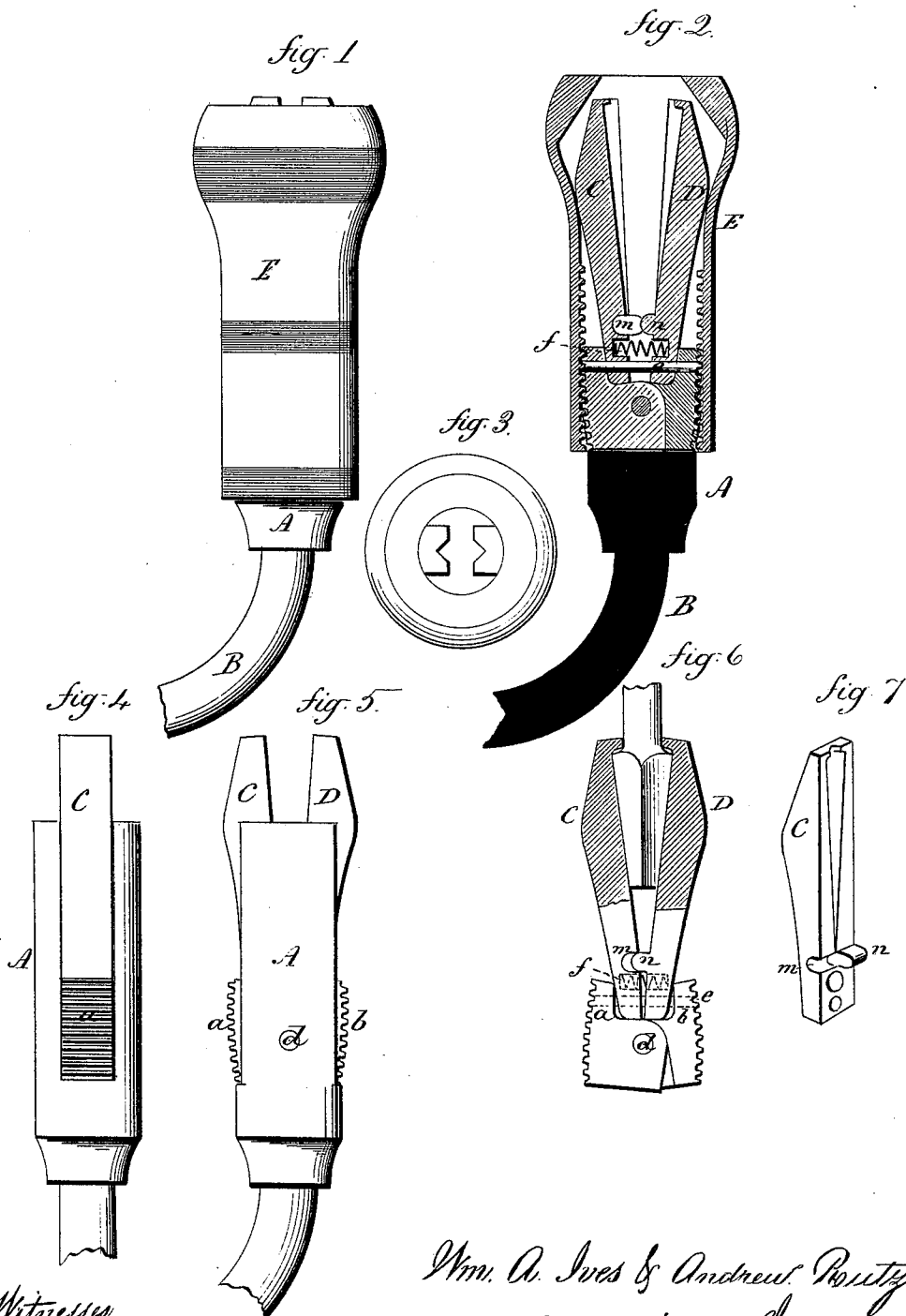


W. A. IVES & A. RUTZ.
BIT-BRACES.

No. 175,105.

Patented March 21, 1876.



Witnesses.

J. H. Humway.
Clara Broughton.

Wm. A. Ives & Andrew Rutz.
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UNITED STATES PATENT OFFICE.

WILLIAM A. IVES AND ANDREW RUTZ, OF NEW HAVEN, CONNECTICUT,
ASSIGNORS TO WILLIAM A. IVES & CO., OF SAME PLACE.

IMPROVEMENT IN BIT-BRACES.

Specification forming part of Letters Patent No. **175,105**, dated March 21, 1876; application filed
November 30, 1875.

To all whom it may concern:

Be it known that we, WILLIAM A. IVES and ANDREW RUTZ, both of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Bit-Braces; and we do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, side view; Fig. 2, vertical central section; Fig. 3, end view; Figs. 4, 5, 6, and 7, detached views.

This invention relates to an improvement in that class of bit-braces in which the tang of the bit is grasped between a pair of jaws; and the invention consists, principally, in the mechanism for operating the jaws, as more fully hereinafter set forth, and as recited in the claims.

A is the body of the socket, here represented as forming a part of the bow B. This is constructed with a longitudinal slot, as seen in Fig. 4, extending from the outer end toward the base. Into this slot a pair of auxiliary jaws, *a b*, are hung upon a pivot, *d*, and the outer surface made slightly convex, and toothed to form a rack shaped edge, as seen in Figs. 4, 5, and 6.

Between the upper ends of these auxiliary jaws the lower ends of the principal jaws C D are set, and secured by a transverse pintle, *e*, the jaws extending up through the slot in the body A. The upper ends of the jaws are inclined upon their outer surface, and on the inside constructed so as to grasp the tang and spindle of the bit. Between the lower ends of the jaws, above the pintle *e*, a spring, *f*, is arranged, the tendency of which is to force the jaws from each other. Over these jaws and the body A the sleeve E is set. This sleeve is internally threaded throughout its lower portion, corresponding to the teeth on the auxiliary jaws *a b*, the teeth of those jaws projecting beyond the surface of the body. The diameter of the sleeve inside the thread should correspond very nearly to the body A, but so as to pass freely on over the body, to engage

the teeth of the auxiliary jaws. The mouth of the sleeve E is inclined or conical-shaped in the inside, as seen in Fig. 2; hence, when the sleeve is turned so as to run onto the jaws A B, the inner surface of the mouth of the sleeve will bear upon the incline of the jaws C D, and cause them to close or approach each other.

The tangs of different bits vary to a considerable extent; hence it is impossible to shape the interior of the jaws to give them an incline which will grasp varying tangs throughout their length without closing or separating the jaws at their inner end to change the angle of the jaws relative to each other; hence it is necessary to close the lower end of the jaws more or less, to so change the angle of the jaws that they will conform to the taper of the tang. To do this is the object of the auxiliary jaws *a b*.

When the tang is inserted, and the sleeve turned on to bring the jaws upon the larger end of the tang, that end of the jaws then rests; but by further turning the sleeve, the thread within the sleeve draws upon the teeth of the auxiliary jaws *a b*, causing them to turn upon the pivot *d*, their upper ends to be alike thrown inward, and carry with them the lower end of the jaws, until the jaws closely grasp the tang throughout. This extent of movement of the lower end of the jaws depends entirely upon the taper of the tang: in tangs of little taper the movement would be less, and correspondingly greater in tangs of more taper. This movement of the auxiliary jaw insures a like movement of the inner end of each of the jaws C D, so that the bit is positively brought into line with the axis of the socket.

When the jaws are wide open and free, as in Fig. 2, the spring *f* would be exposed, and liable to be struck by the tang in placing it between the jaws. To prevent the possibility of this each jaw is constructed on its meeting surface with a lug, *n*, on one side, just above the spring, and projecting inward, extending, say, half-way across the face, and the remainder of the face correspondingly recessed, as at *m*. Both jaws being made alike and set together, the lug *n* of one corresponds, and comes in line with the recess of the other, as

seen in Fig. 6, and so as to form a guard above the spring, to prevent anything inserted at the mouth from interfering with it.

While we have represented the sleeve as the part moving axially to close the jaws, the sleeve or its mouth may be made a part of the brace, and the body A with the jaws detached from the brace, and moved axially by turning an external nut; yet we prefer that the body should be the stationary part, and the whole sleeve to move as we have described.

It is not essential to all the parts of this invention that the auxiliary jaws *a b* be separate from each other and hinged, as described; they may be a single piece made fast in or a part of the body A, with the principal jaws C D secured in the recess by the pintle *e*, in the same manner as shown; but in that case the same positive axial position of the bit would not be attained. The spring *f* is not positively essential to the operation of the jaws C D, but is a convenience for automatically opening the jaws.

We are aware that it is not new to construct a bit-brace with jaws to grasp a tang, com-

bined with a sleeve operating upon the conical or inclined outer surfaces of the jaws, to open and close them, and therefore we do not claim such construction.

We claim—

1. In a bit-brace, the combination of the following elements: the longitudinally-slotted socket or body A, the auxiliary jaws *a b*, hinged in the said slot, with their outer surface curved and threaded, as described, the principal jaws C D, hung between the ends of the said auxiliary jaws, and the sleeve E, threaded upon the inside, corresponding to the teeth or thread on the edge of the auxiliary jaws, and contracted at its mouth, substantially as described.

2. The grasping-jaws of a bit-brace, each constructed with a lug, *n*, and a corresponding recess, *m*, upon their meeting surfaces, substantially as and for the purpose described.

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Witnesses:

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