No. 843,430. PATENTED FEB. 5, 1907.

V. BAIL.

COUNTERBORING TOOL.

APPLICATION FILED AUG. 6, 1906.

Fig. 2.

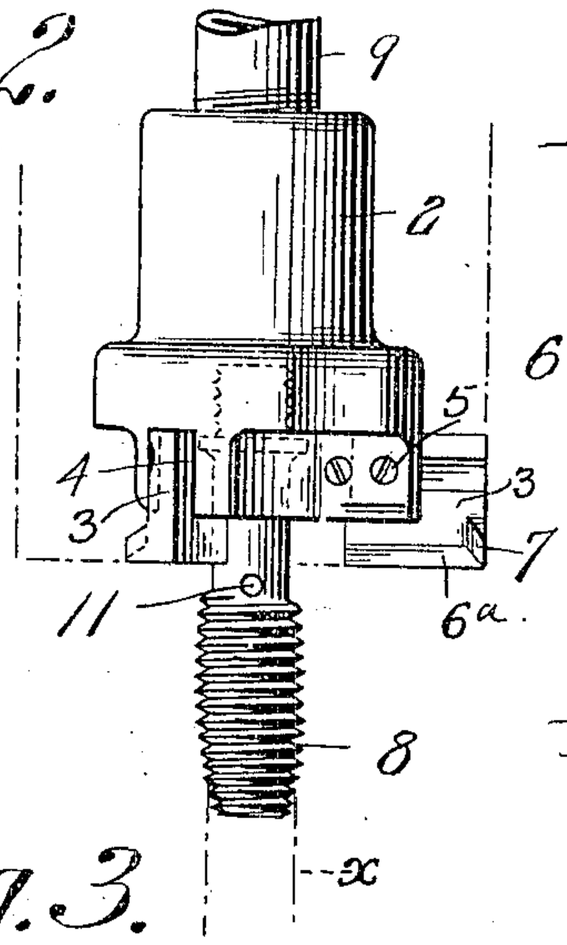

Fig. 4.

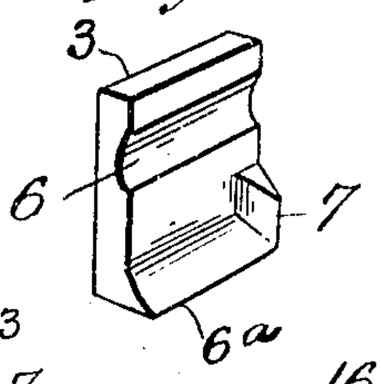

Fig. 1.

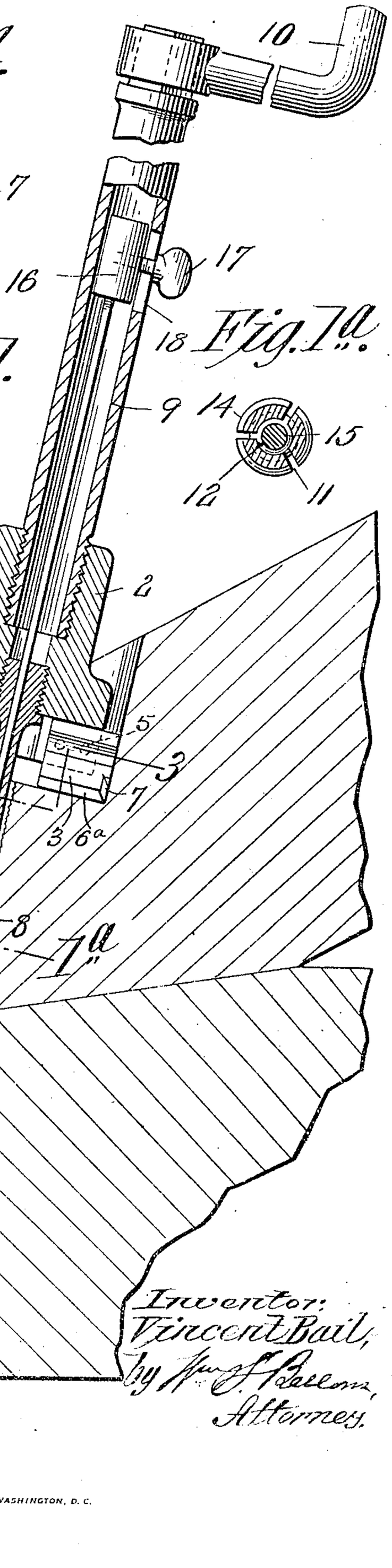

Fig. 1a.

Fig. 3.

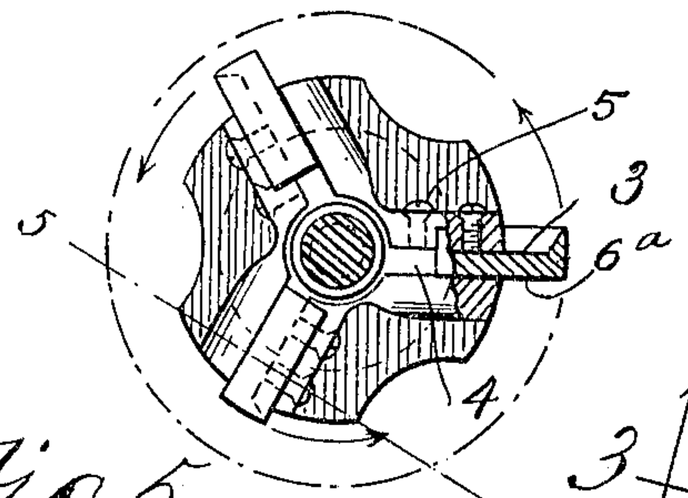

Fig. 5.

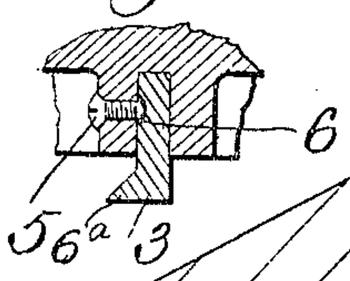

Fig. 1a.

Witnesses:
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UNITED STATES PATENT OFFICE.

VINCENT BAIL, OF HOLYOKE, MASSACHUSETTS.

COUNTERBORING-TOOL.

No. 843,430. Specification of Letters Patent. Patented Feb. 5, 1907.

Application filed August 6, 1906. Serial No. 329,315.

To all whom it may concern:

Be it known that I, VINCENT BAIL, a citizen of the United States of America, and a resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Counterboring-Tools, of which the following is a full, clear, and exact description.

The present invention relates to counterboring-tools of that type which are designed to form seats or recesses for the reception of nuts and tie-washers for truss-rods and the like, and has for its object to provide a tool of simple construction, one which may be conveniently manipulated, and by means of which counterbores may be rapidly and accurately cut or sunk.

In order that my invention may be clearly understood by those skilled in the art, I have illustrated one embodiment of the same in the drawings herewith, in which drawings—

Figure 1 is a sectional view of the tool in operation, certain parts being shown in elevation for clearness. Fig. 1ª is a cross-sectional view on line 1ª 1ª, Fig. 1, on increased scale, to show the construction of feed-bit. Fig. 2 is a side elevation of the tool-stock and feed-bit. Fig. 3 is a cross-sectional view on line 3 3, Fig. 1, looking in the direction of the arrows, to show the tool-stock and cutters. Fig. 4 is a detail perspective view of one of the cutters. Fig. 5 is a detail cross-sectional view on line 5 5, Fig. 3, and illustrates the manner of securing the cutters to the tool-stock.

Referring to the drawings by numerals, like numbers indicating like parts in the several views, 2 indicates the body or tool-stock, which may be of suitable size and shape, being herein shown as a bored cylindrical section having an enlarged lower end provided with radially-disposed wings on its lower face. In the present embodiment this tool-stock is provided with three countersinking-cutters 3, which are radially adjustable in seats 4 in the wings on the face of the tool-stock 2, suitable binding-screws 5 being provided, by means of which the cutters 3 may be secured in adjusted position, said cutters 3 having grooves 6 in their shanks to receive the screws 5, the active face of the cutters 3 being preferably formed, as shown in Fig. 4, with horizontal sinking-lips 6ª and vertical trimming-lips 7. It is obvious that these cutters 3 may be adjusted radially to suit the needs of the work or the judgment of the operator; but I find that a highly efficient and satisfactory arrangement is that shown in Fig. 3, in which the cutters are radially offset relative to one another, so as to cut radially succeeding circumferential areas.

In order to secure a proper feed of the tool in working, I provided a feed-bit 8, which is designed to enter the hole x, about which the counterbore is to be sunk, said bit 8 being preferably screw-threaded in the bore of the tool-stock 2 at its lower end, so as to be readily removable for repairs or interchanging. The tool-stock 2 is provided at its upper end with a handle 9, having suitable tool-rotating means—as, for example, a crank 10, as shown in Fig. 1.

The feed-bit 8 may be made as shown in Fig. 2, in which figure it is illustrated as a solid properly-threaded bit having an aperture 11 for insertion of a pin-wrench to remove and insert the bit, or it may be formed as shown in Figs. 1 and 1ª, in which figures it comprises a relatively long hollow stem 12, slit at its lower threaded end, so as to form expansible spring-limbs 14, which are expanded by means of a cored core-rod 15 traversing the stem of the bit and entering the handle 9, said core-rod 15 having a head 16 at its upper end, which is provided with a set-screw 17, extending through a slot 18 in the wall of the handle 9, so that the core-rod 15 may be readily manipulated to expand or release the spring-limbs 14 of the bit and secured in any adjusted position.

The form of feed-bit shown in Figs. 1 and 1ª is particularly useful in that it permits the use of a long feed-bit stem, which gives a desirable steadiness of action to the tool, and yet enables the workman to bring the counterboring-cutters to their work without first driving the long feed-bit down the hole x, for it will be seen that by releasing the spring-limbs 14 of the bit it may be freely thrust into the hole x and the cutters 3 brought into contact with the work, whereupon the core-rod 15 will be drawn up to expand the slit end of the bit, which will then catch in the walls of hole x and feed the tool when the handle 9 is rotated. Furthermore, the expansible bit enables me to counterbore holes of different diameters, as it may within certain limits be expanded or contracted to work in holes of various sizes.

It is thought unnecessary to describe the operation of the tool, as the action of the same is clear from the description above given.

While I have set forth a particular embodiment of my invention, and that the best now known to me, I do not limit myself to the details of construction herein illustrated and described except in so far as I am limited by the prior art to which this invention belongs.

Having disclosed my invention, I claim—

1. In a tool of the class described and in combination, a tool-stock, counterboring-cutters carried thereby, and an expansible feed-bit mounted centrally of said tool-stock to center and feed the tool.

2. In a tool of the class described and in combination, a tool-stock, counterboring-cutters carried thereby, a centrally-placed feed-bit carried by said stock and having expansible limbs at its lower end, and means for spreading said limbs and holding them in expanded condition.

3. In a tool of the class described and in combination, a tool-stock, counterboring-cutters carried thereby, a hollow feed-bit having expansible limbs, a core-rod to spread said limbs, and means for securing said core-rod in adjusted position.

4. In a tool of the class described and in combination, a tool-stock, counterboring-cutters carried thereby, an operating-handle secured to said stock, a hollow feed-bit having spring-limbs secured to said stock, a core-rod traversing said bit and handle and adapted to spread said spring-limbs, and means for securing said core-rod in adjusted position.

5. In a tool of the class described and in combination, a tool-stock having a bore; counterboring-cutters carried by said stock, a hollow operating-handle having a slotted wall secured to said stock; a hollow feed-bit having a slitted lower end to form expansible limbs secured to said stock; a longitudinally-adjustable core-rod having a coned head to spread said limbs traversing said bit, stock, and handle; and a set-screw engaging said core-rod through the slotted wall of the handle to secure the core-rod in adjusted positions.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

VINCENT BAIL.

Witnesses:

WM. S. BELLOWS,

G. R. DRISCOLL.