

(No Model.)

W. LYON.  
BIT AND DRILL STOCK.

No. 250,670.

Patented Dec. 13, 1881.

Fig. 1.

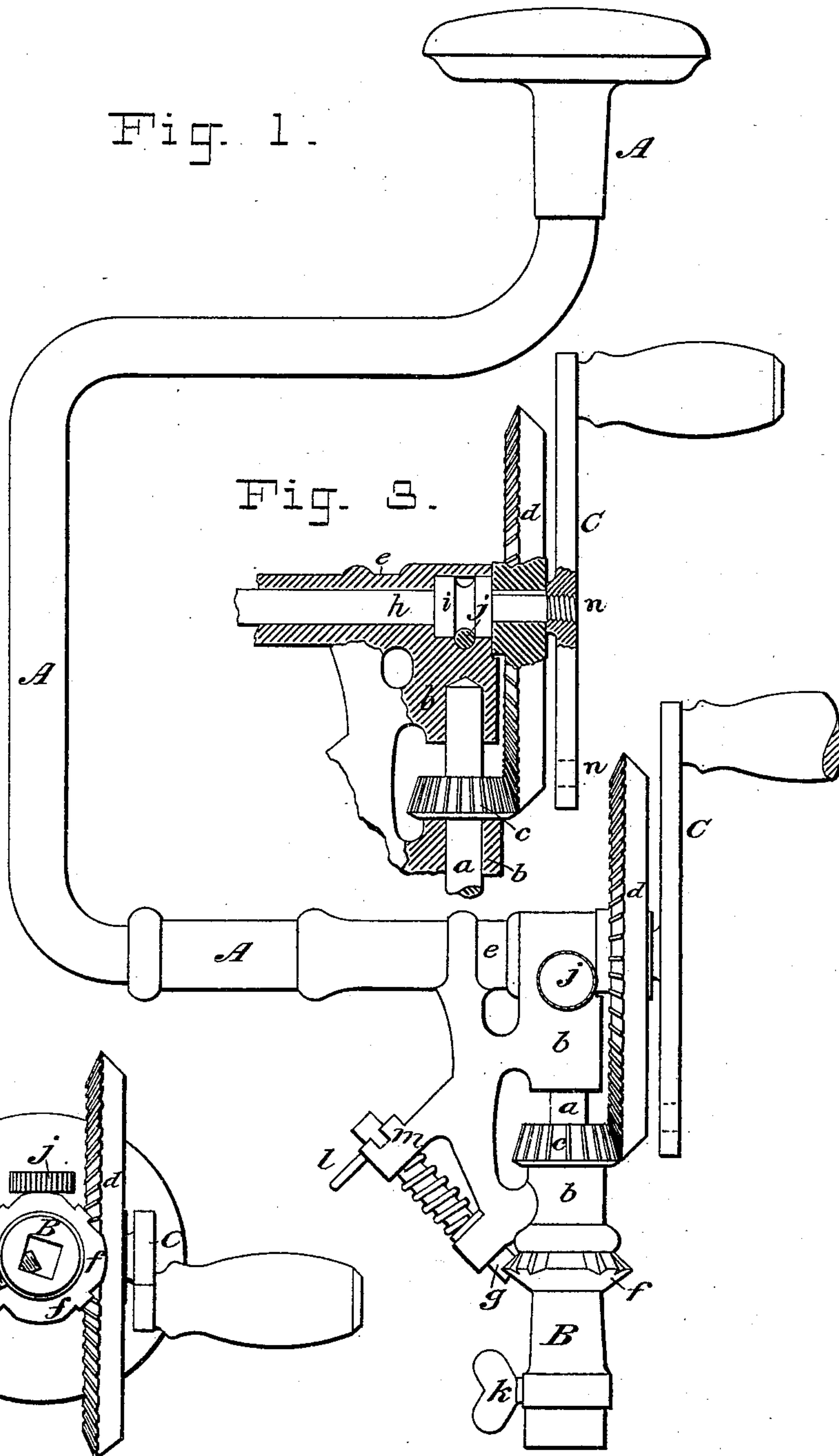
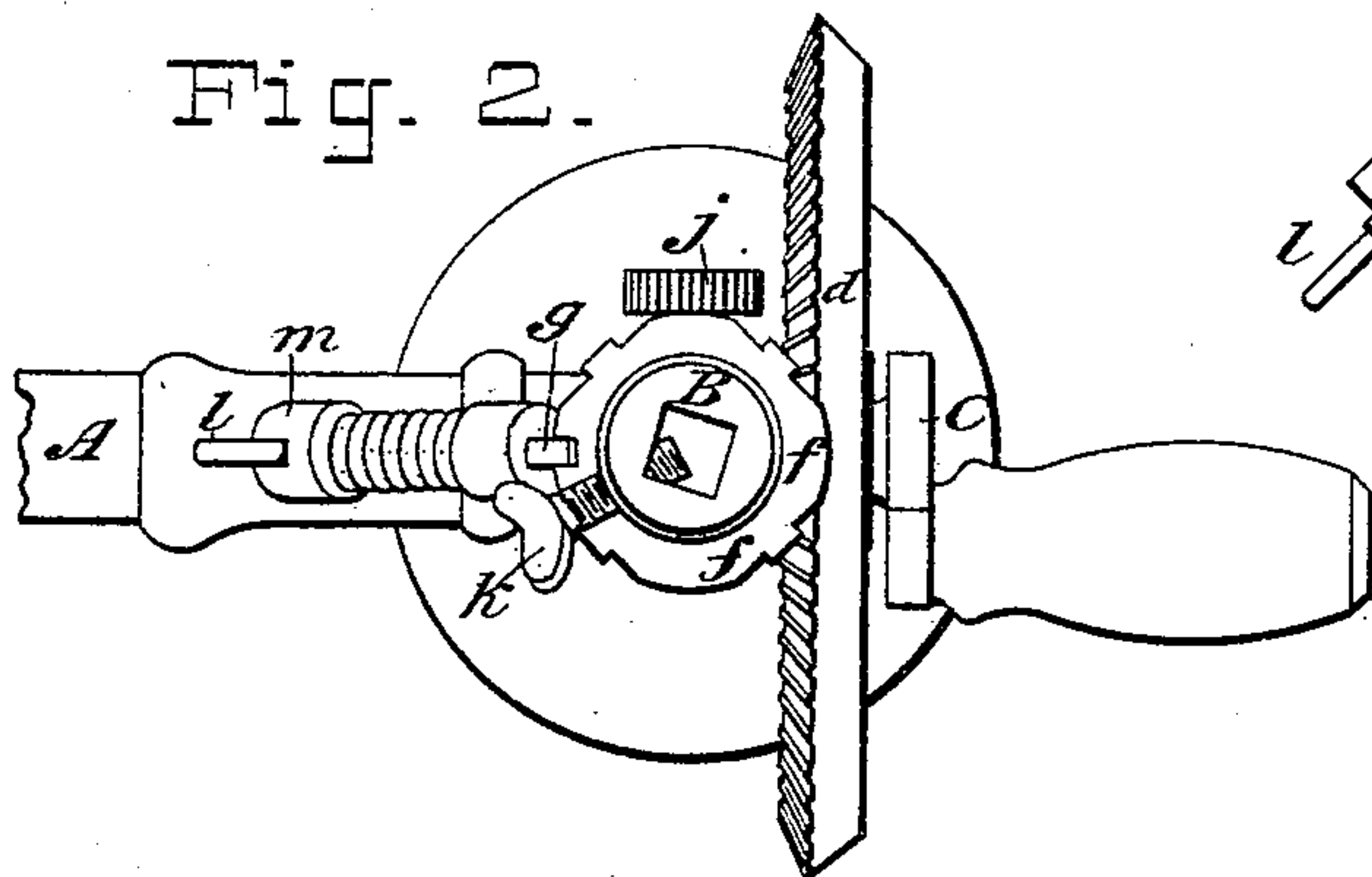


Fig. 2.



INVENTOR:

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## BIT AND DRILL STOCK.

SPECIFICATION forming part of Letters Patent No. 250,670, dated December 13, 1881.

Application filed August 2, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, WALLACE LYON, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a Combined Bit Stock or Brace and Multiplying-Drill Mechanism, of which the following is a specification.

My invention relates to a combination of a bit brace or stock provided with a socket for an auger-bit and multiplying-gear mechanism and socket or chuck, which may be rotated independently of the bit-stock for use in drilling metals. The same socket serves for the auger-bit and the drill, or a drill-chuck may be fitted to the socket.

In the drawings which serve to illustrate my invention, Figure 1 is a side elevation of the combined tool, complete, and Fig. 2 is a plan or end view of the rotative portions of the tool. Fig. 3 is a sectional view, showing the mode of mounting the removable bevel-wheel of the multiplying-gear.

Let A represent a brace or bit stock of the usual kind, but provided with a rotative socket or chuck, B, instead of a fixed one, as is usual in such tools. This socket has a spindle, *a*, which has bearings at *b b* in the stock, and on this spindle is fixed a bevel-pinion, *c*, arranged to mesh with a larger bevel-wheel, *d*, mounted in bearings in the bar of the stock at *e*. The socket is provided with a circular projecting flange, *f*, in which is formed a notch or recess capable of being engaged by a spring-detent, *g*, as shown. The bevel-wheel *d* is removable, and by reference to Fig. 3 it will be seen that it is secured to the end of a spindle, *h*, which has formed on it an enlargement, *i*, in which is cut a circumferential groove. This enlargement rests and revolves in an enlargement of the bearing-socket in the brace-bar, and a screw, *j*, with a cylindrical shank, is arranged to screw into the bar in such a manner that its shank engages the groove in the spindle or arbor, as shown. This screw prevents the wheel and its spindle from being removed, but permits it to revolve freely, as will be readily understood.

When the tool is to be used as a bit-stock the wheel *d* may be readily removed by first removing the screw *j* and then slipping the spin-

dle from its socket or bearing. The auger-bit may then be inserted in the socket B, secured in place by the screw *k*, and used as with an ordinary bit-stock.

When the tool is to be used as a drill, especially when the drill is small and rapid rotation is desired, the wheel *d* is replaced, the detent *g* drawn back out of the notch in the flange *f*, and retained in that position by turning it axially until the pin *l* at its rear end is released from its notch and rests on the higher part of the bearing *m*, and the tool is ready for use.

The drills may in some cases be secured directly in the socket B; but ordinarily where they are slender, as in the case of small twist-drills, they will be secured in a chuck, and the spindle or shank of the chuck will be fitted into the socket B, and secured by the set-screw in the manner of an auger-bit.

In addition to the function of the detent *g*, above described, it also serves as a spring-pawl to engage ratchet-teeth on the flange *f*, whereby the tool may be employed as a ratchet-drill. To enable the detent to perform this function, its tip is beveled off, and it is made to turn on its axis, so that the beveled end is properly presented to the ratchet-notches, and it is retained in this position by the engagement of the pin *l* with a suitably-arranged notch or recess in the bearing *m*. The flange *f* may be provided with a double set of ratchet-notches, arranged oppositely, as shown, and the pawl-detent may be arranged to turn axially, so as to present its beveled end properly to either set, whereby the tool may be used as a right-hand or left-hand ratchet-drill at will. This feature of the ratchet is not my invention however, and I make no claim to it as a distinct device.

Any form of detent or fastening may be employed to prevent the independent rotation of the socket B when used as a bit-holder, and it is not necessary that the bevel-wheel *d* be removed when not in use for drilling. It is preferably removed, however, as it encumbers the tool.

Other methods than that shown for securing the wheel *d* in place may also be employed in lieu of that shown—as, for instance, a stud or



pin with a head on its outer end may be passed through the wheel into the socket and there held by a set-screw.

C is the crank for rotating the wheel *d*. I  
5 prefer to attach this to the wheel by screwing it onto the end of the spindle *h*, to which the wheel is fixed. This enables me to employ more or less leverage for larger or smaller drills, as the crank is or may be provided with  
10 two or more holes, *nn*, to engage the end of the spindle *h*, whereby its throw may be varied, as will be readily understood.

Having thus described my invention, I claim—

15 1. The combination of the brace A, rotative socket B, bevel-pinion *c*, fixed to the socket, larger bevel-wheel *d*, notched ratchet-flange *f*, fixed to the socket, and a spring-pawl arranged to engage the said flange and form a shifting  
20 automatic ratchet-detent to prevent the rotation of the socket except as desired by the operator, substantially as and for the purposes set forth.

2. The combination, with the brace, the independently-rotating socket, the locking de- 25 vice, and the pinion on the socket-spindle, of the wheel *d*, the spindle *h*, provided with a peripherally-grooved enlargement, *i*, and arranged to fit into a bearing in bar of the brace, and the screw *j*, all arranged to operate sub- 30 stantially as and for the purposes set forth.

3. The combination of the brace, the socket mounted rotatively therein and provided with a notched flange or projection, *f*, the spring- 35 detent *g*, arranged to engage a notch in the flange, and provided with a pin, *l*, the notched or recessed bearing *m*, pinion *c*, and wheel *d*, all arranged substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of the subscribing 40 witnesses.

WALLACE LYON.

Witnesses:

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CARL WARTH.