E. V. O'NEILL.

Reversible Rotary Cutters.

No. 139,417. Patented May 27, 1873.

Fig. 1.

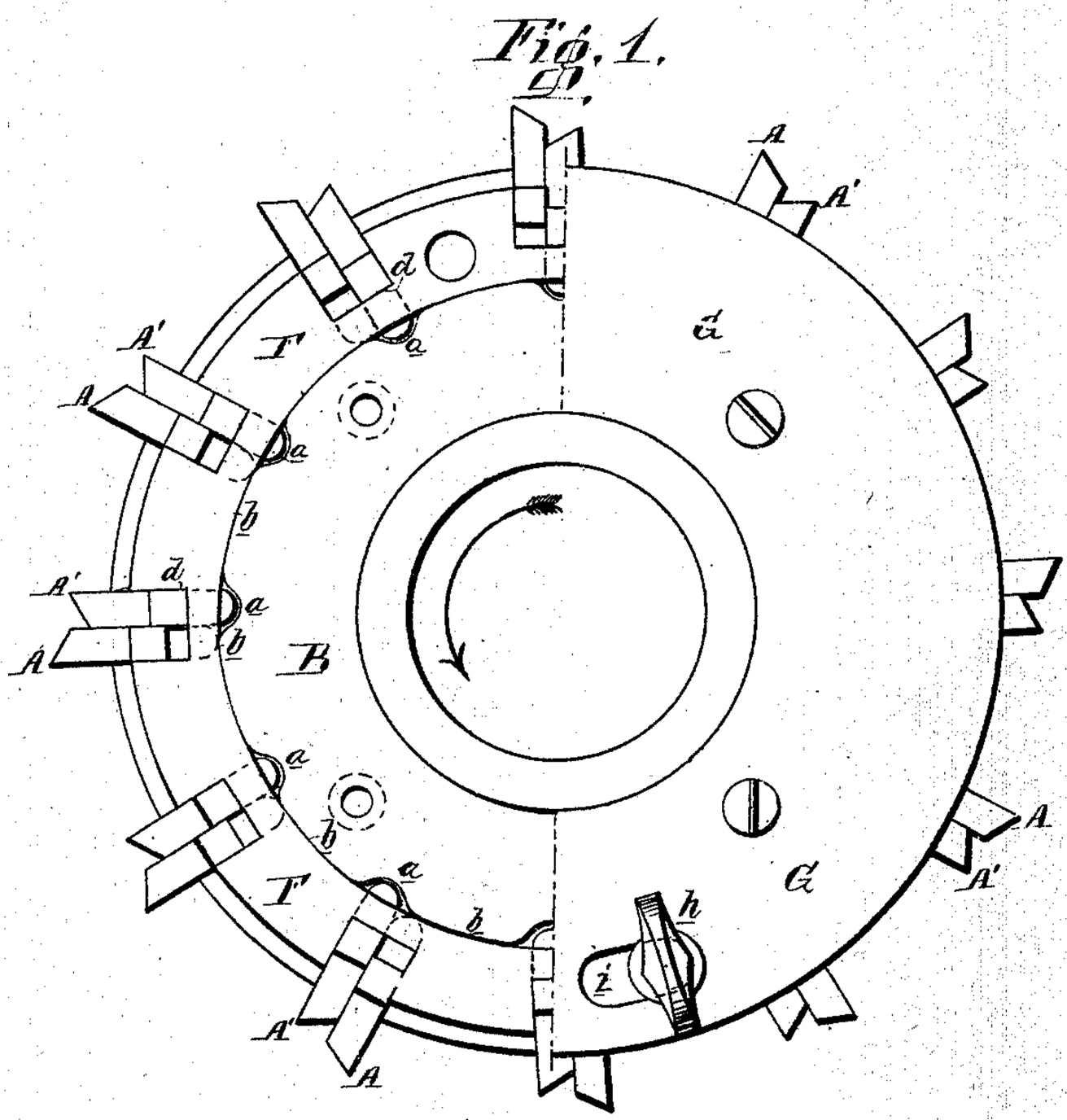
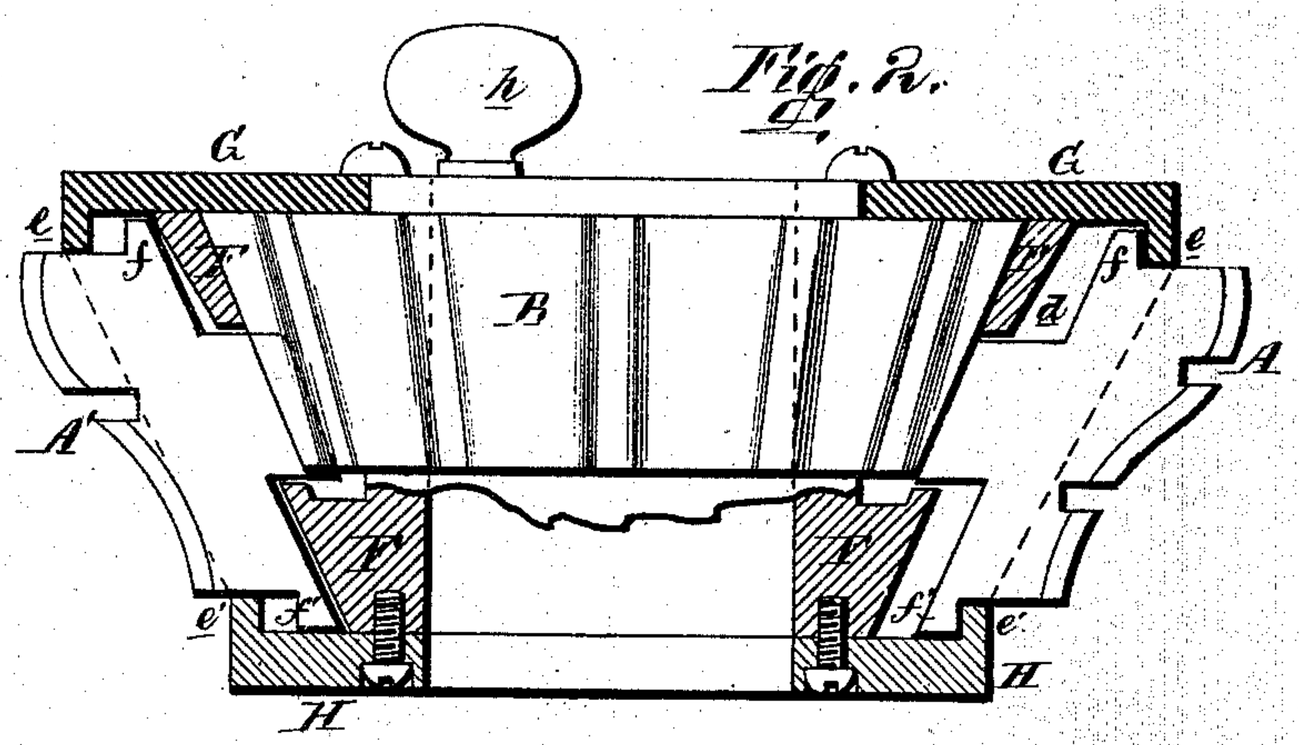


Fig. 2.



WITNESSES. Hubert Howson
Harry Smith

Edward V. O'Neill
by his attys
Howson and Sm.

UNITED STATES PATENT OFFICE.

EDWARD V. O'NEILL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, JAMES KELLY, AND ROBERT PILKINGTON, OF SAME PLACE.

IMPROVEMENT IN REVERSIBLE ROTARY CUTTERS.

Specification forming part of Letters Patent No. **139,417**, dated May 27, 1873; application filed February 27, 1873.

To all whom it may concern:

Be it known that I, EDWARD V. O'NEILL, of Philadelphia, Pennsylvania, have invented an Improvement in Reversible Rotary Cutters, of which the following is a specification:

My invention relates to that class of rotary cutting-tools which are provided with two sets of radiating blades; one set to cut when the tool is rotated in one direction, and the other when it is rotated in the opposite direction; and the object of my invention is to prevent the grinding away and dulling of the cutting-edges of the reversed set of cutters by contact with the marble or other material, or the chipping of the latter by the same, while the cutters of the other set are in operation.

I accomplish this object in the manner plainly shown in the plan view, Figure 1 of the accompanying drawing, by rendering the blades A and A′ of the two sets adjustable toward and from the center of the tool, so that the reversed set may be drawn in, and the operating set projected outward, the simultaneous adjustment of the whole number of blades of both sets being effected by a partial rotation in one direction or the other, of a hub, B, provided with alternate recesses and projections *a* and *b* adapted to the inner ends of the blades. The blades are in the present instance arranged in pairs, back to back, as plainly shown in Fig. 1, with their cutting edges beveled in opposite directions, the blades A being arranged to cut when the tool is rotated in the direction of the arrow, and the blades A′ when it is reversed or rotated in the opposite direction. Each pair of blades is adapted to and arranged to slide in a single radial recess, *d*, formed in the stock F of the tool, the said blades being retained in these recesses by the flanges *e* and *e′* of the two plates G and H, which overlap the projections *f* and *f′* at the opposite ends of the blades, as plainly shown in the sectional view, Fig. 2. The rotating hub B is conical in the present instance, and is adapted to a correspondingly-shaped recess in the stock F, in which it can be turned to a limited extent by means of a thumb-screw, *h*, extending through a slot, *i*, in the plate G, the said thumb-screw also serving as a means of securing the hub after adjustment. When the parts are in the position shown in Fig. 1 the extended blades A, which have a solid end bearing against the projections *b* of the hub, operate upon the marble stone or other material to be cut, when the tool is rotated in the direction of the arrow, while the inner ends of the reversed blades A′ are received within the recesses *a* of the hub, and are thus retracted sufficiently to prevent their cutting edges from being brought in contact with the marble, the dulling of the said blades, or the chipping of the marble by the same being thus prevented. When the cutter is to be operated in a reverse direction, the hub B is turned to the limited extent necessary to force the blades A′ outwardly, and to bring the recesses *a* of the said hub opposite the inner ends of the blades A so that the latter may be retracted sufficiently to protect their cutting-edges.

I prefer to arrange the blades in pairs, as shown in the drawing; but each blade may, if desired, be adapted to a separate recess in the stock F. In such case, however, unless the blades were very close together there would have to be a separate recess and projection *a* and *b*, in the adjustable hub for each blade.

I claim as my invention:

1. A reversible rotary cutter in which two sets of blades are arranged radially, and are combined with operating devices as described, so that one set of blades is retracted when the other is extended, as set forth.

2. In a rotary cutter, the combination, substantially as described, of two sets of adjustable blades, A and A′, with an adjustable hub, B, formed with recesses and projections *a* and *b* adapted to the inner ends of the said blades.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD V. O'NEILL.

Witnesses:

EDWARD R. WORRELL,

DANIEL W. GILBERT.