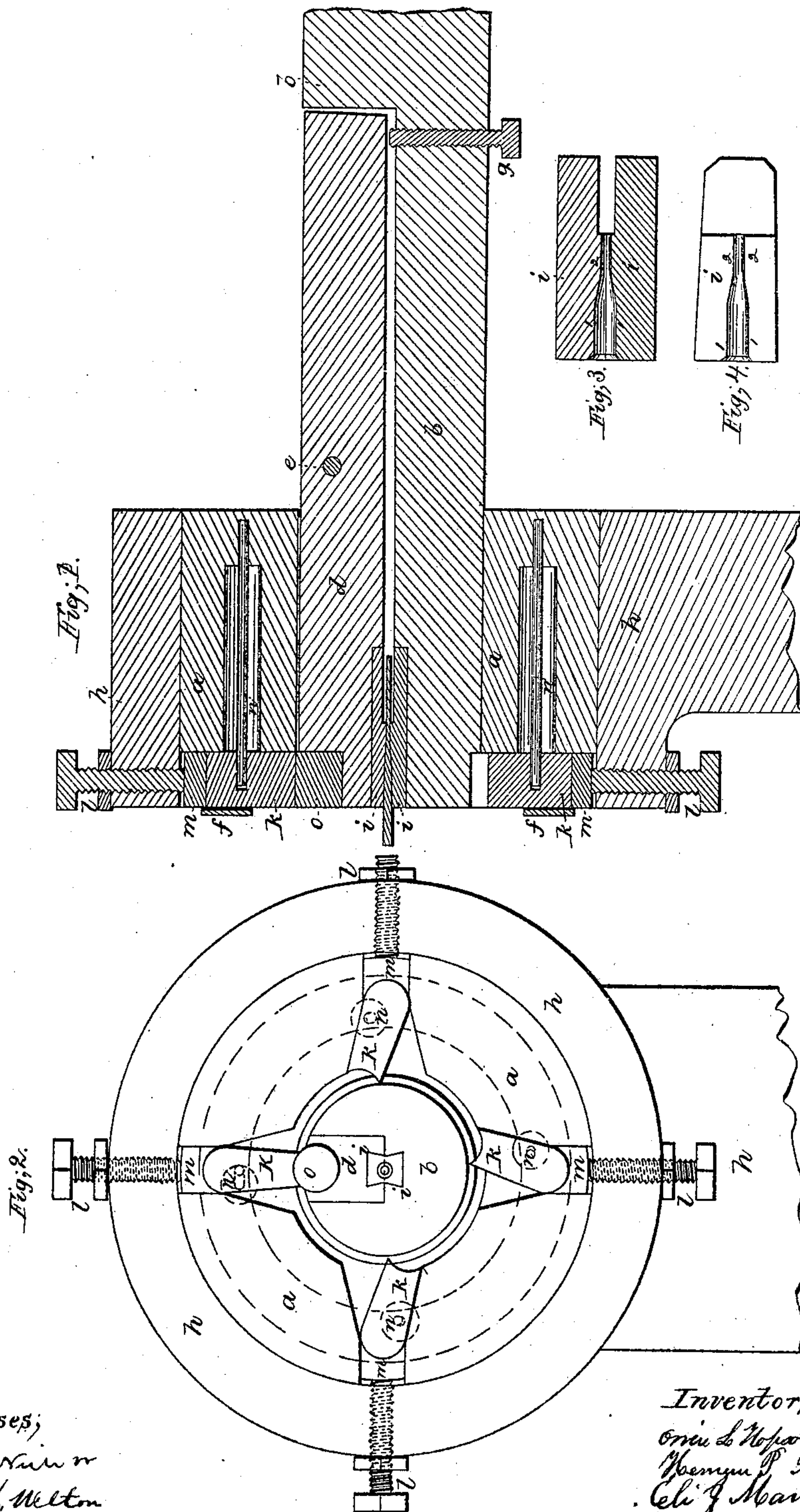


O. L. HOPSON, H. P. BROOKS & E. J. MANVILLE.
MACHINE FOR REDUCING OR POINTING WIRES.

No. 52,493.

Patented Feb. 6, 1866.



Witnesses,
John A. Hillier
Melrose, N.H.

Inventors;
O. L. Hopson
H. P. Brooks
E. J. Manville

UNITED STATES PATENT OFFICE.

ORRIN L. HOPSON AND ELI J. MANVILLE, OF WATERBURY, AND HEMAN P. BROOKS, OF WOLCOTTVILLE, ASSIGNORS TO ORRIN L. HOPSON, OF WATERBURY, AND HEMAN P. BROOKS, OF WOLCOTTVILLE, CONNECTICUT.

IMPROVED MACHINE FOR REDUCING OR POINTING WIRES.

Specification forming part of Letters Patent No. 52,493, dated February 6, 1866.

To all whom it may concern:

Be it known that we, ORRIN L. HOPSON, of Waterbury, in the county of New Haven and State of Connecticut, HEMAN P. BROOKS, of Wolcottville, in the county of Litchfield, and ELI JOSIAH MANVILLE, of Waterbury aforesaid, have invented, made, and applied to use a certain new and useful Improvement in Machines for Compressing Articles of Metal; and we do hereby declare the following to be a full, clear, and exact description of our said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a longitudinal section of our improved compressing apparatus. Fig. 2 is an end view of the same. Fig. 3 is a section of one of the dies separately in larger size; and Fig. 4 is a view of the face of the die.

Similar marks of reference denote the same parts.

Our invention is an improvement upon that for which Letters Patent were granted to the said Hopson and Brooks, August 9, 1864. In the said patent a revolving die is set forth, acted upon by stationary cams to close said die and compress a point or other metallic article.

Our present invention has for its object the compression of articles of metal, such as the ends of rods for wire-drawers, steel rods for forming sewing-machine needles, pointing wires for hatchel-teeth, cotton-gins, &c., and for producing any other round article of metal capable of being formed by a series of compressions in a divided die.

In compressing articles of hard material or of a large size considerable power is required, and the wearing-surface must be a large extent or it will be quickly worn away or crushed.

Our invention consists in a series of toggle-blocks formed so as to act against and close the die with which they come in contact, and return to their former position after the said die has passed from contact with each one successively. We also arrange our die-carrier in such a manner that the revolution thereof will keep the die together by centrifugal force when not in use but in motion, thereby avoiding the noise incident to the use of the machine patented as aforesaid.

We construct our dies in such a manner that

the rod or other article to be compressed is held in a central position to the reducing portion of the die, so that the axis of the reduced portion will be a prolongation of the axis of the portion that is not reduced.

In the drawings, *h* is a circular stationary ring, within which is the head-block *a*, that has a hole through its center receiving the shaft *b*, which is supported at the opposite end in any suitable box or bearing and revolved by competent power.

In one side of the shaft *b* is a longitudinal recess, receiving the moving jaw *d* on the fulcrum *e*, which jaw *d* carries one-half of the divided die *i*, and the other half of the die is set in a recess at the end of the shaft *b*, so that the opening in said die is on the line of the axis of the shaft *b*.

The location of the fulcrum *e* of the jaw *d* is such that the inner end shall be rather the longest or heaviest, so that the centrifugal force shall tend to keep the dies *i i* shut, and *g* is a screw to determine the amount said dies may be opened by forcing in the wire or other piece of metal, and hence the reduction of the metal each time the dies are pressed together will be determined at the same time.

In the outer end of the jaw *d* is a circular cavity receiving the small cylinder or pin *o*, upon which the wear comes principally, and hence the same is to be made of the best and hardest steel, and may be removed when worn out and replaced by another.

In the block *a* there are recesses receiving the toggle-blocks *k*, the inner ends of which are fluted to correspond with the pin *o*, and the outer ends are formed semicircularly, setting against and within corresponding recesses in the blocks *m*.

l l are adjusting-screws and set-nuts, acting through the ring *h* upon the blocks *m*.

In the block *a* are cavities in which springs *n* are placed, that tend to press the blocks *k* toward one side of the cavities in which they are contained, so that as the shaft *b* revolves and the pin *o* comes in contact with the ends of these toggle-blocks successively they swing and close the jaw, compressing the piece of metal placed between the dies *i i*, and as the pin *o* continues to move by the rotation of the shaft *b* the same passes away from the

moving end of the toggle-block and its spring throws it back to the normal position to take the jaw when it comes around again.

We have shown four of these toggle-blocks *k*, but a greater or less number might be used, and we employ a ring or plate, *f*, to keep them in place, and the same may reach almost to the dies *i*, to exclude dust and dirt.

The dies *i i* are formed so that the reduction of the metal will be on the line of the metal from which the reduced article is formed. We effect this by means of a recess, *l l*, in the die, that is of the size, or nearly so, of the wire or rod made use of, and the hole *2* is of the size and shape of the needle or other article formed by said dies, and the two portions of the die are axial or on line with each other, so that the sewing-machine needle shall be formed as a true central elongation of the wire employed, and other articles the same way.

If in any character of machinery the block and toggle-blocks could be revolved with the article to be pointed, then the shaft *b* and dies *i i* might stand still.

The surfaces exposed to wear are much larger than in the aforesaid patent, the power to close the jaw is very great, being derived from a toggle-joint, and hence the power of the apparatus is increased and the device capable of use in cases requiring considerable power.

What we claim, and desire to secure by Letters Patent, is—

1. A series of toggle-blocks, *k*, mounted substantially as specified, in combination with the die *i*, shaft *b*, and jaw *e*, substantially as and for the purposes set forth.

2. The combination of the blocks *m* and screws *l* with the toggle-blocks *k* and die *i i*, as and for the purposes specified.

3. The springs *n*, fitted as specified, in combination with the toggle-blocks *k* and die *i*, as specified.

4. The jaw *d* on the center *e*, carrying half the divided die *i* at one end, in combination with the adjusting-screw *g*, applied to the opposite end of the jaw *d*, as and for the purposes specified.

5. The cylinder or pin *o*, in combination with the jaw *d* and toggle or cam blocks *k*, for the purposes and as specified.

In witness whereof we have hereunto set our signatures this 24th day of June, A. D. 1865.

ORRIN L. HOPSON.
HEMAN P. BROOKS.
ELI J. MANVILLE.

Witnesses:

JOHN O'NEILE, Jr.,
NELSON J. WELTON.