(No Model.)

J. R. MORRISON.

TUBE MAKING MACHINE.

No. 603,486. Patented May 3, 1898.

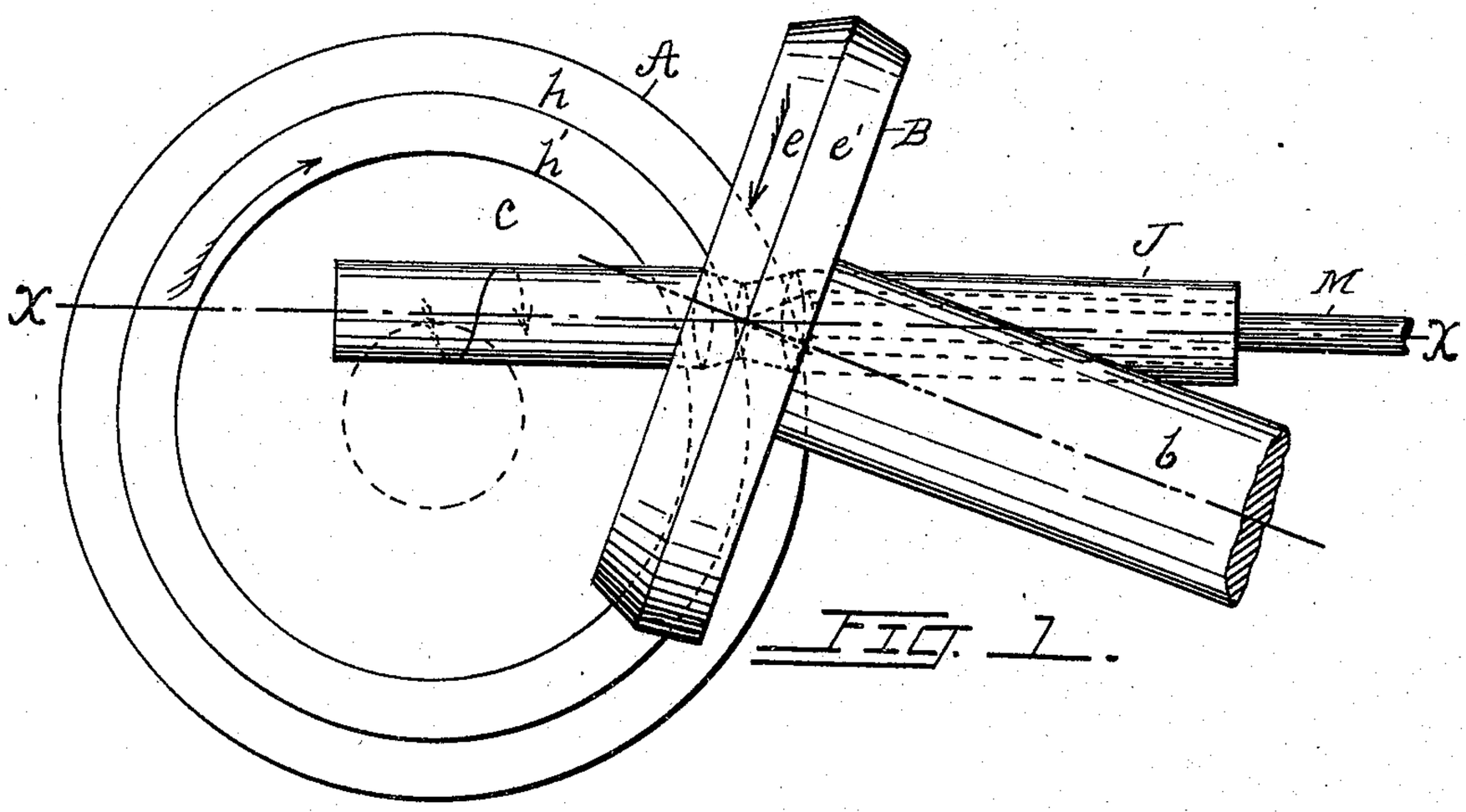

Fig. 1.

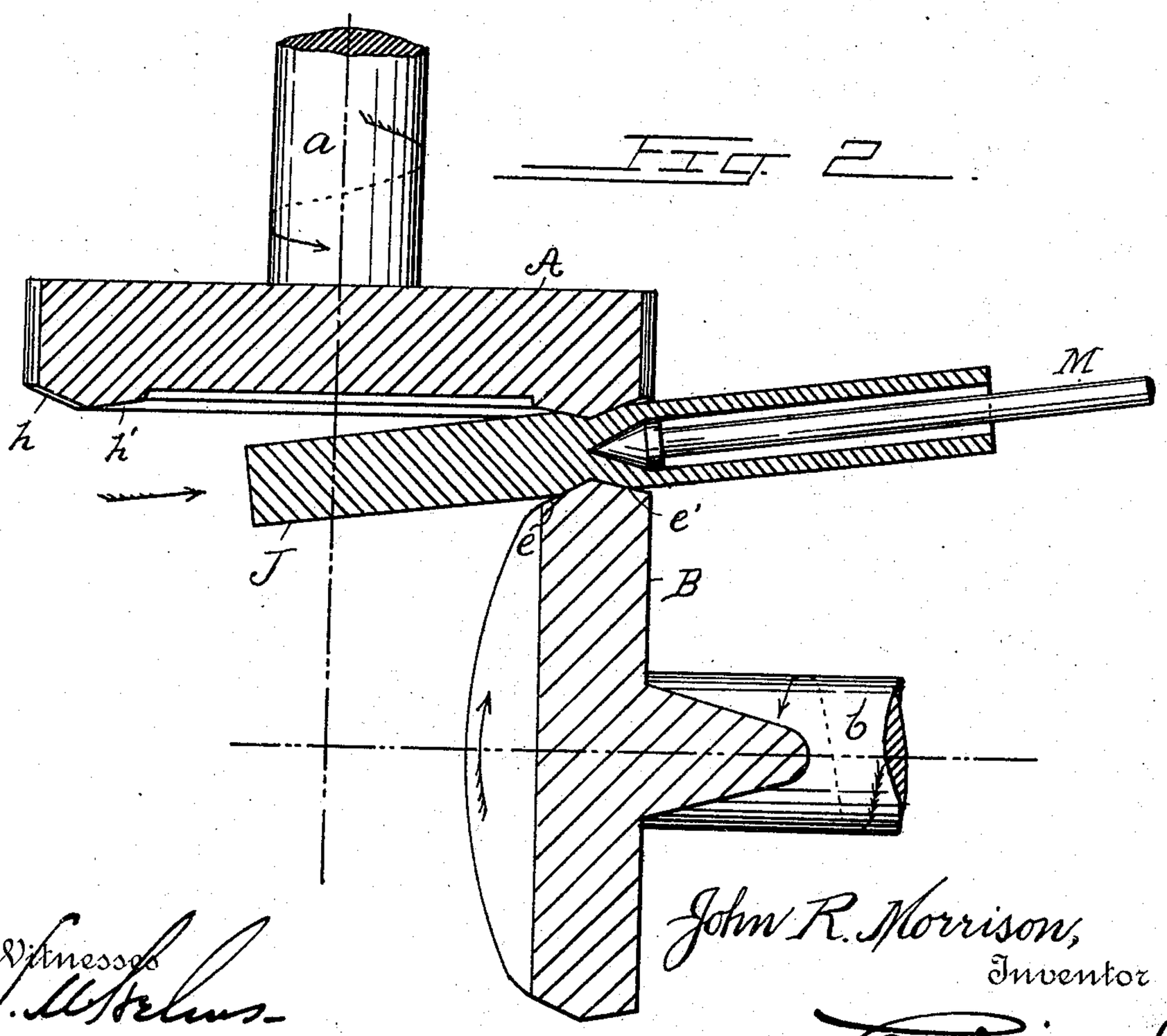

Fig. 2.

Witnesses
T. W. Helms
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UNITED STATES PATENT OFFICE.

JOHN R. MORRISON, OF AUBURN, PENNSYLVANIA, ASSIGNOR TO THE AUBURN BOLT AND NUT WORKS, OF SAME PLACE.

TUBE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,486, dated May 3, 1898.

Application filed May 27, 1897. Serial No. 638,406. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. MORRISON, a subject of the Queen of Great Britain, residing at Auburn, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Mechanism for Making Tubes from Metallic Billets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in mechanism for making tubes from metallic ingots, billets, or blanks and by means of which the primary formation of such tubes is produced.

My intention in the present construction is to form tubes from metallic ingots, billets, or blanks by means of rolls or disks, between the working faces of which such billets or blanks are passed endwise and by the action of which the tubular formation is initiated.

The present invention consists in the combination, with properly-proportioned disks or rolls, of a mandrel so situated as to enter the hole or cavity produced in the blank by the action of said disks or rolls, but which does not aid materially in the formation of said hole, its object being to serve as a guide and regulator, tending to maintain a uniform diameter throughout said billet or blank.

Inasmuch as the general construction of the machine is not important, is well understood by those familiar with the art to which this present invention pertains, and forms no part of the invention herein claimed, I have shown in the accompanying drawings nothing more than the relative arrangement of the disks or rolls and the mandrel.

In the drawings herewith, Figure 1 is an end view or elevation of a pair of disks embracing a billet and showing the mandrel in position. Fig. 2 is a longitudinal sectional view taken on line X X of Fig. 1.

The disks A and B are centrally mounted on the ends of shafts *a* and *b*, which shafts are located with reference to each other in such a position that the vertical planes of their axial lines are at right angles, though horizontally the shaft *b* is arranged at an inclination to the shaft *a*.

The disks are rotated by means of any suitable gearing (not shown) in the direction of the arrows thereon, and the billet or blank to be operated upon is embraced by said disks at a point some distance above the center horizontally of the disk A and at right angles to its axial line.

The center line of the billet while in process of forming it into a tube crosses the axial line of the shaft *b* at the point where the periphery of the disk B bears against it.

The disks, being rotated in the direction indicated by the arrows thereon, will give to the billet a rotary motion, by means of which the initiatory formation of the tube is produced, and by reason of the engagement by said disks of the billet some distance above the axial line of the disk A and by reason of the inclination of the disk B it will also be given a longitudinal movement and a uniform rotation will be imparted thereto, which action is desirable when blanks or billets thus operated upon are to be subsequently reduced by cold-drawing.

The face *c* of the disk A is formed with a slight circumferential projection near its periphery, which is composed of two beveled surfaces *h* and *h'*, these surfaces combined forming the working face of the disk.

The working surface of the disk B is the periphery thereof, and this is beveled in the same manner as disk A.

The inner beveled surface *h* of the disk A is arranged at the same angle with relation to the face of the disk as is the surface *e'* to the axial line of the disk B, and likewise the surface *h'* is arranged at the same angle with relation to the face of the disk A as is the surface *e* to the axial line of the disk B.

In operation the billet J is fed into the space between the disks in the direction of the arrow R. The first effect produced by the action of the disks is the reduction of its diameter as it is drawn into and forced through the narrow space between the beveled working faces of the disks. By this action the primary formation of the tube is produced, and as the mandrel is so located as to enter

the cavity formed by such action the continued rotation will feed the billet onward between the disks and the mandrel will find its way along the line of said hole and regulate the diameter and general direction thereof.

It will of course be understood that the proportions of the disks, as well as the arrangement of their working faces, may be varied to suit different conditions of work to be performed and that the exact arrangement shown in the accompanying drawings need not be followed in all cases.

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

In an apparatus for forming tubes from metallic billets or blanks, two disks, rotating shafts carrying said disks, said shafts located with reference to each other in such a position that the vertical planes of their axial lines are at right angles, the axial line of one of said shafts being also arranged in a horizontal plane, the axial line of the other shaft being inclined to the horizontal, said disks adapted to embrace a billet between their working faces, and a mandrel arranged on the axial line of said billet, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN R. MORRISON.

Witnesses:
ED. A. KELLY,
LOUIS ALLGAIER.