(No Model.) 2 Sheets—Sheet 1.

J. M. RILEY.

TUBE MACHINE.

No. 435,078. Patented Aug. 26, 1890.

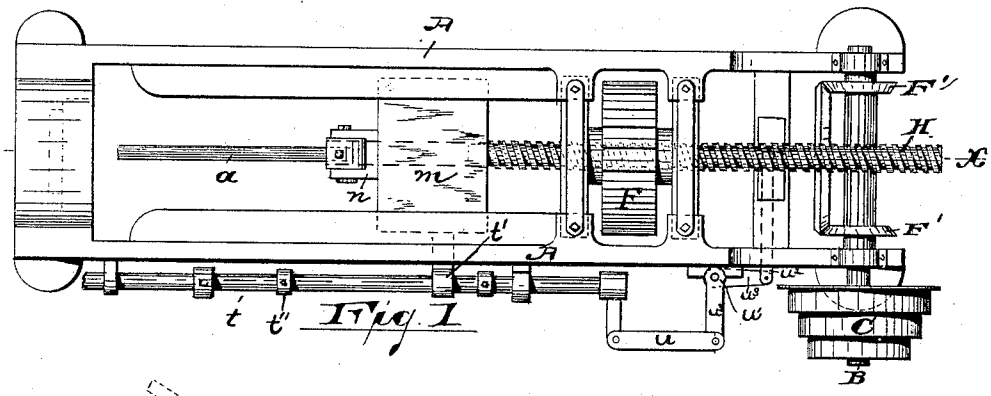


Fig. 1

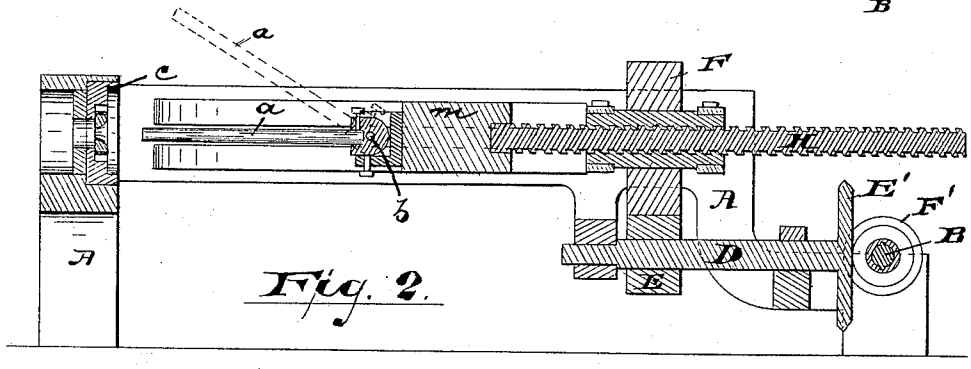


Fig. 2.

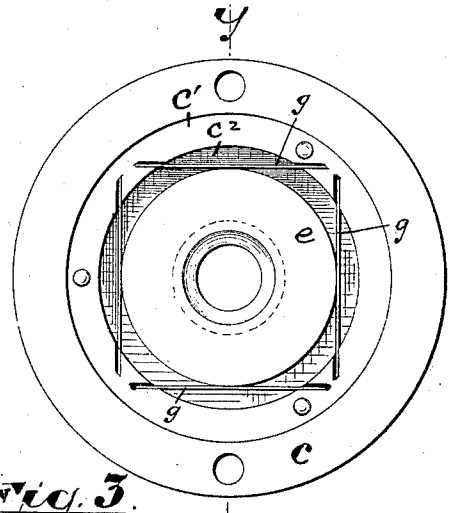


Fig. 3.

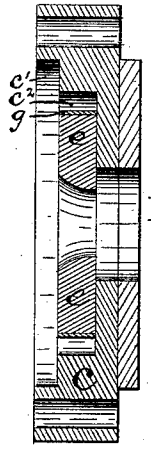


Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

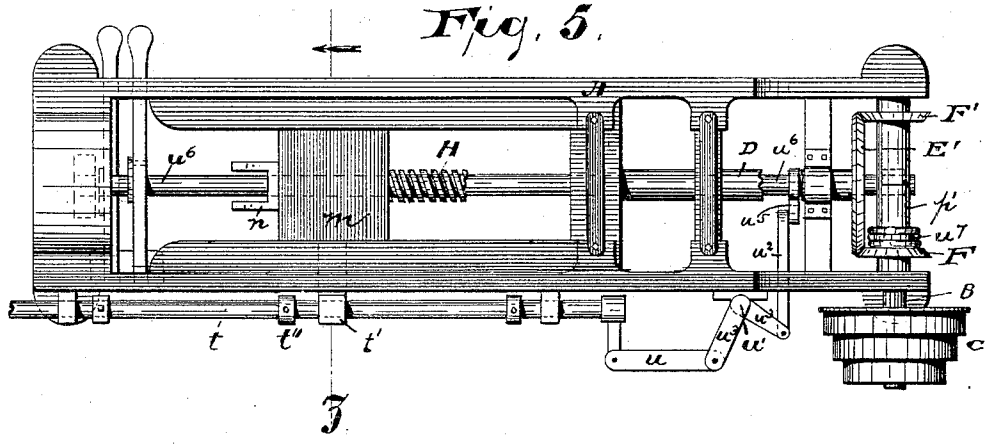


Fig. 6.

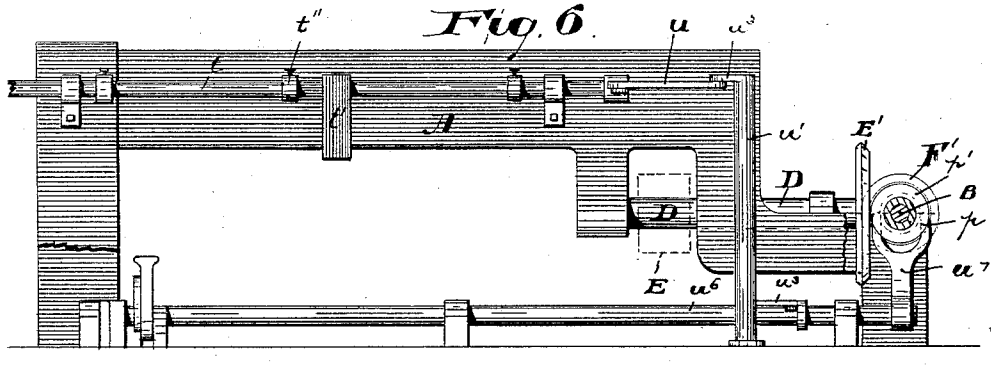
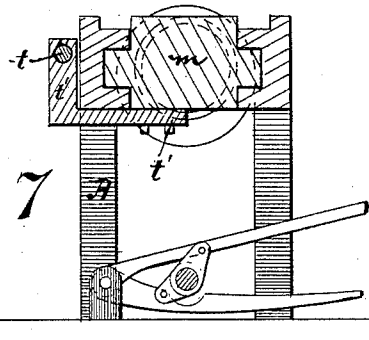


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN M. RILEY, OF KEARNEY, NEW JERSEY.

TUBE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 435,078, dated August 26, 1890.

Application filed May 21, 1890. Serial No. 352,624. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. RILEY, a citizen of the United States, residing at Kearney, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Tube-Machines; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of the invention is to facilitate the drawing out or lengthening of metal tubes in a rapid manner with ease of manipulation and adjustment and a saving of expense.

The invention consists of the improved triblet and draw-head and the combination and arrangement of the various parts thereof in a tube-machine, as hereinafter more fully set forth, and finally embodied in the claims.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a top plan view of a tube-machine embodying my improvement. Fig. 2 is a longitudinal section through line *x* of Fig. 1, showing the raised triblet in dotted lines. Fig. 3 is an enlarged plan view of the draw-head, showing the springs for holding the die; and Fig. 4 is a section through line *y* of Fig. 3. Fig. 5 is a plan of the machine with certain of the upper parts removed to more perfectly disclose other lower parts. Fig. 6 is a side elevation of the same parts, and Fig. 7 is a section taken on line *z*.

In said drawings, A represents the frame of the machine with main driving-shaft B and driving-pulleys C. Arranged at right angles with said main shaft D is a shaft carrying-gear-wheels E E′, which mesh into gear-wheels F F′ and thereby operating a screw-shaft H, to the inner end of which is attached a cross-head *m*, to which is secured a jaw *n*. To said jaw is hinged a movable triblet *a* by a pivot *b*, by means of which the same can be raised up, as shown in dotted lines in Fig. 2, for the purpose hereinafter described.

At the head of the machine and directly opposite or in line with the free end of the triblet is secured by any desired means a plate *c*, having recesses *c′* and *c²*, and within the latter is secured or held a die or shaping block *e*. I have shown this die in Fig. 3 as circular; but it can be made square, polygnal, or any form desired, as will be manifest.

Arranged in any suitable positions at its sides and secured to the plate *c* are springs *g*. I have shown the springs *g* in Figs. 3 and 4 as flat; but either flat, spiral, or any other shape of spring may be used for the same purpose and with the same effect. The action of the springs holds the die *e* in proper position for the action of the triblet, even though the latter should be slightly out of line.

On the driving-shaft B is arranged a friction or lock clutch *p*, as shown in Fig. 1, for giving a forward and backward movement to the shaft H through its connecting mechanism when required for the adjusting of another tube.

By my improved construction very long tubes can be drawn, and the triblet being pivoted to the jaw on the cross-head of the screw-shaft the ready and quick replacement of another tube to be drawn is effected without the extreme backward action of the screw-shaft carrying the triblet, as in former tube-machines, it being only necessary to move the free end of the triblet backward until it is free and clear from the die, when the triblet can be turned upon its pivot and another tube be placed thereon, as will be manifest.

In operation the triblet is raised on its pivot to the position shown in dotted lines in Fig. 2. The tube to be drawn is then placed on the triblet and the latter swung down into a horizontal position, as shown in Fig. 1. The tube on the triblet is then forced by the action of the screw-shaft against and into the die, which is of a lesser diameter, and is stretched or extended to the required length. The screw-shaft is then reversed until the free end of the triblet has passed beyond the face of the die, when said triblet is again turned up and another tube placed upon it and the operation repeated.

By my improved arrangement in having the die movable in the head, so as to automatically accommodate itself to the tube and triblet by means of the springs, a perfect tube

is drawn and all danger avoided of cutting or splitting the tube should it or the triblet be slightly out of line.

The clutch p, by means of which the action of the shaft D is reversed, a backward and forward movement is automatically given to the cross-head m, may be of any ordinary construction and arrangement; but the peculiar combination of parts shown is preferred, in which t is a longitudinally-sliding rod adapted to be operated by the cross-head, the said rod having sleeves or bearings t', which are engaged by an arm t', attached to the cross-head and extending to a portion where it will engage said collars, Fig. 7. The said rod t is connected by a rod u with a vertical rod u', having arms u^3, arranged like those of a bell-crank, and the latter in turn is connected by means of a rod u^2 with a lever or crank u^5 on the longitudinal rod u^6, by means of which the said rod u^6 may be turned on its axis. Said rod u^4 is provided with a fork u^7, which engages the sliding sleeve p' of the clutch p, which sleeve enters into operative relation to the loose angle gear-wheels F' F', which when clutched engage the wheel E' and turn the shaft D, as before described. When the head m arrives near the end of either of its strokes, the arm t' engages one of the collars or bearings t'' and moves the rod longitudinally and the connecting-rods and levers sufficiently to throw one of the angle gear-wheels F' from and the other angle gear-wheel into engagement with the wheel E', whereby the motion of said wheel F' and the parts depending thereon will be reversed, as will be understood. A reversal of movement may be obtained at any time by means of pedals K', connected with the shaft or rod u^4.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a tube-machine, a triblet movable, adapted to operate as described, for the purposes set forth.

2. In a tube-machine, the combination of a screw or tube shaft, a jaw on the end of said shaft, and a triblet pivoted to said jaw, with means for operating said shaft and triblet, as described.

3. In a tube-machine, a die for drawing tubes movably secured in the head or end of the frame by springs of the machine, as described, and for the purposes set forth.

4. In a tube-machine, a tube-stretching mechanism combining therein a plate c, a die carried by said plate, springs for movably holding said die, and a triblet connected with the driving mechanism, as described, for the purposes set forth.

5. The combination of a die, a movable triblet, and means for operating said triblet, as described, and for the purposes set forth.

6. In a pipe or tube drawing machine, the combination, with a frame or bed, a cross-head m sliding thereon and means for moving the same longitudinally, and a triblet hinged or pivoted on said head and movable with the head to and from a die arranged longitudinally in line with the triblet, substantially as set forth.

7. In a pipe or tube machine, the combination, with an automatically adjustable or movable die, of a triblet arranged longitudinally in line with said die and movable to and from the same and also movable in a direction at right angles to its longitudinal movement, substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of April, 1890.

JOHN M. RILEY.

Witnesses:
OLIVER DRAKE,
OSCAR A. MICHEL.