(No Model.)

J. REESE.

MACHINE FOR REDUCING WIRE.

No. 338,361. Patented Mar. 23, 1886.

FIGURE 1

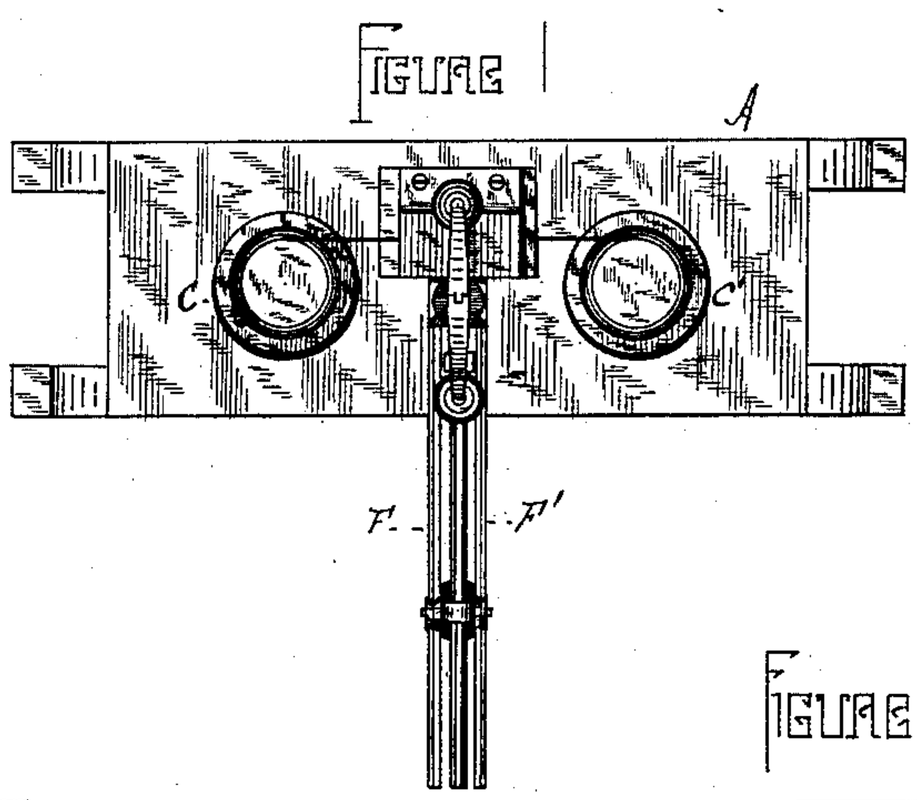


FIGURE 5

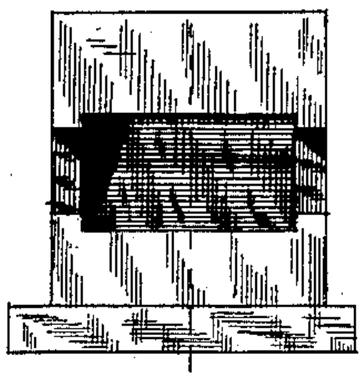


FIGURE 2

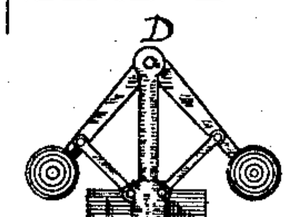
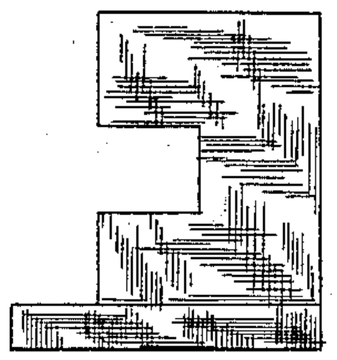


FIGURE 6



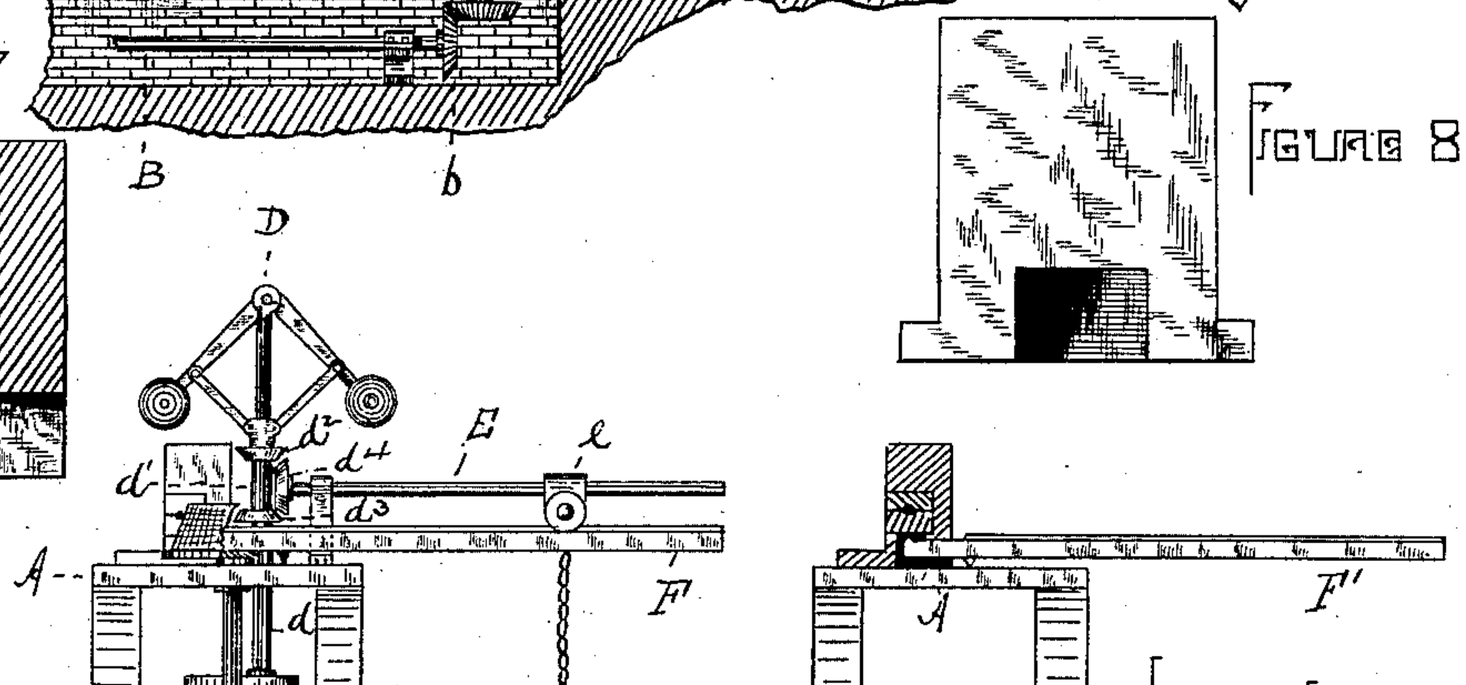


FIGURE 7

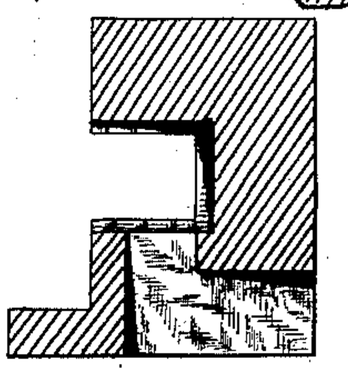


FIGURE 8

Witnesses

Walter Reese.
Frank M Reese

FIGURE 3

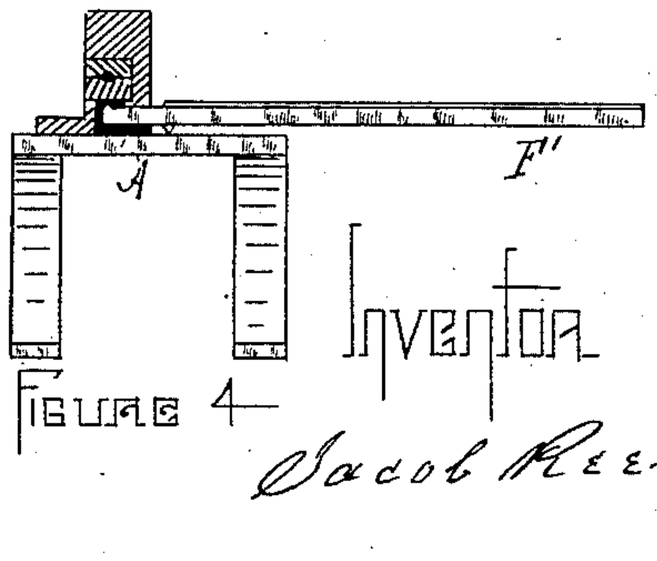


FIGURE 4

Inventor

Jacob Reese

UNITED STATES PATENT OFFICE.

JACOB REESE, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR REDUCING WIRE.

SPECIFICATION forming part of Letters Patent No. 338,361, dated March 23, 1886.

Application filed March 17, 1884. Serial No. 124,449. (No model.)

To all whom it may concern:

Be it known that I, JACOB REESE, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Drawing Metals; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 indicates a plan view of an improved metal-drawing apparatus designed to draw the metal through a two-part die which is automatically adjusted to exert a sufficient resistance to the passage of the metal to subject the latter, after its passage through the die, to a tension beyond its elastic limit, but below its breaking strain. Fig. 2 indicates a side elevation of the same. Fig. 3 indicates an end view of the same. Fig. 4 indicates a detached view, partly in section, of the two-part adjustable resisting-die mounted in a die-frame attached to the upper surface of the drawing-table, and of the die-adjusting lever, which has its fulcrum against the upper surface of the drawing-table, and operates at one of its ends against the lower surface of the lower half of the two-part die. Fig. 5 indicates an enlarged side elevation of the die-frame. Fig. 6 indicates an end view of the same. Fig. 7 indicates a central vertical cross-sectional view of the same. Fig. 8 indicates a rear side elevation of the die-frame.

Like letters of reference indicate like parts wherever they occur.

My invention relates to a new and useful mode of drawing metals, which consists, essentially, in drawing the metal through a two-part die or other adjustable mechanism, which is so adjusted as to retard the forward passage of the metal and bring a strain upon the latter during its passage from the die to the receiving-spool beyond its elastic limit, but below its point of rupture; secondly, to new and useful mechanism adapted to the use of said method.

I shall now describe the construction and operation of the mechanism I design to use in the practice of my invention, so that others skilled in the art may make and use the same.

In the drawings, A indicates the table which supports the drawing mechanism.

B indicates the main driving-shaft, provided with a beveled gear-wheel, *b*, which meshes into and communicates motion to the beveled gear-wheel *b'*, mounted on the lower end of the vertical spindle b^2, which is suitably journaled near its upper and lower ends in the frame A and in the shop-floor.

C indicates the receiving or drawing spool, which is keyed or otherwise securely attached to the upper end of the vertical spindle b^2.

C' indicates the delivering reel or spool, mounted on the upper end of a free rotative vertical spindle, *c*, which is suitably journaled in the frame A and in the shop-floor, and is provided with a pulley, *c'*, for the transmission of motion through the medium of a belt, c^2, to the pulley c^3, mounted on a vertical rotative governor spindle or shaft, *d*, which is also suitably journaled in the frame A and the shop-floor at a point about midway between the drawing and receiving spools or reels.

D indicates the governor for regulating the pressure of the dies upon the wire as it is drawn from the delivering to the receiving spool. This governor may be of any ordinary construction adapted to elevate and depress a rotative sleeve, *d'*, mounted on the governor-spindle *d*, in such a manner as to throw the friction-gears d^2 and d^3, mounted at the upper and lower ends of the sleeve, into and out of contact with the beveled friction-gear d^4, in order to impart reverse rotative movements to the screw-threaded weight-adjusting shaft E, and thereby throw the weighted carriage *e* nearer or farther from the fulcrums of the die-adjusting levers F and F'.

F and F' (see Fig. 1) indicate a set of adjusting-levers, which extend at one end through apertures in the rear side of the die-frame, as indicated in Figs. 7 and 4, and engage against the base of the lower die, so as to impart an upward pressure to the same. These die-pressure-regulating levers are fulcrumed against the upper surface of the table A and support the weight of the weight-carrier *e*, so that it will be readily understood that the pressure of the dies upon the metal will be increased and diminished in proportion to the backward and forward movement of the weighted carriage from the fulcrums of the levers F and F'.

The operation of the improvement is as follows: A coil of wire or wire rod is placed on the delivery-spool and one end of the wire is

secured thereto. The free end of the coil is then passed through the apertures of the dies, (which are relieved from pressure previously to facilitate this operation,) and is fastened to the receiving spool or pulley. The weighted carriage *e* is then run out upon the levers F and F′, to force the lower die with the desired amount of pressure against the metal. The mechanism now being in condition for operating, power is applied to the main driving-shaft, causing it to rotate, and imparting a rotary movement to the drawing or receiving drum or spool. This immediately commences to wind up the wire, and the tension produced thereby draws the wire through the resisting-dies and communicates a rotary motion to the delivery-spool. Assuming that the receiving-reel is drawing the metal to it at a speed of four hundred and forty feet per minute, and that the pressure of the dies upon the metal is sufficiently great to produce enough tension on the wire to reduce its cross-sectional area ten per cent. during its passage from the dies to the receiving-spool, then in such case the delivering-spool will only rotate at a sufficient speed to deliver four hundred feet of wire per minute to the compressing-dies; hence it follows that an increased speed of delivery indicates that the pressure of the dies is too light to draw the metal to the desired degree, and a decreased delivery-speed indicates that the pressure and tension upon the metal are above the normal standard. Assuming, however, that a uniform reduction of ten per cent. is taking place, then the delivering-reel will rotate at a rate of speed just sufficient to throw the gears on the sleeve of the governor out of contact with the gear on the end of the screw-threaded shaft, which moves the weight-carriage on the die-compressing levers, and consequently the tension and pressure upon the metal will remain unaltered during the drawing operation; but whenever the delivery-speed is accelerated or retarded, the governor will throw the lower or the upper sleeve-gear into contact with the weight-regulating mechanism, and accordingly diminish or increase the pressure and tension upon the metal until the reduction is again brought to the normal standard.

I do not herein claim drawing metals without compression by subjecting them simply to a traveling tension beyond their elastic limit, but below their point of fracture; but

What I do claim is—

1. The method herein described for drawing metals, which consists, essentially, in drawing the metal through a two-part die or equivalent compressing mechanism adapted and adjusted to bring a tensile strain upon the metal above its elastic limit, but below its point of rupture, while passing from the dies to the receiving drum or spool.

2. The combination, in a machine for drawing wire, of the two-part dies, the die-frame provided with an aperture through its base for the reception of the end of a lever, and the die-adjusting lever, constructed and arranged to operate substantially as herein set forth.

JACOB REESE.

Witnesses:
FRANK M. REESE,
WALTER REESE.