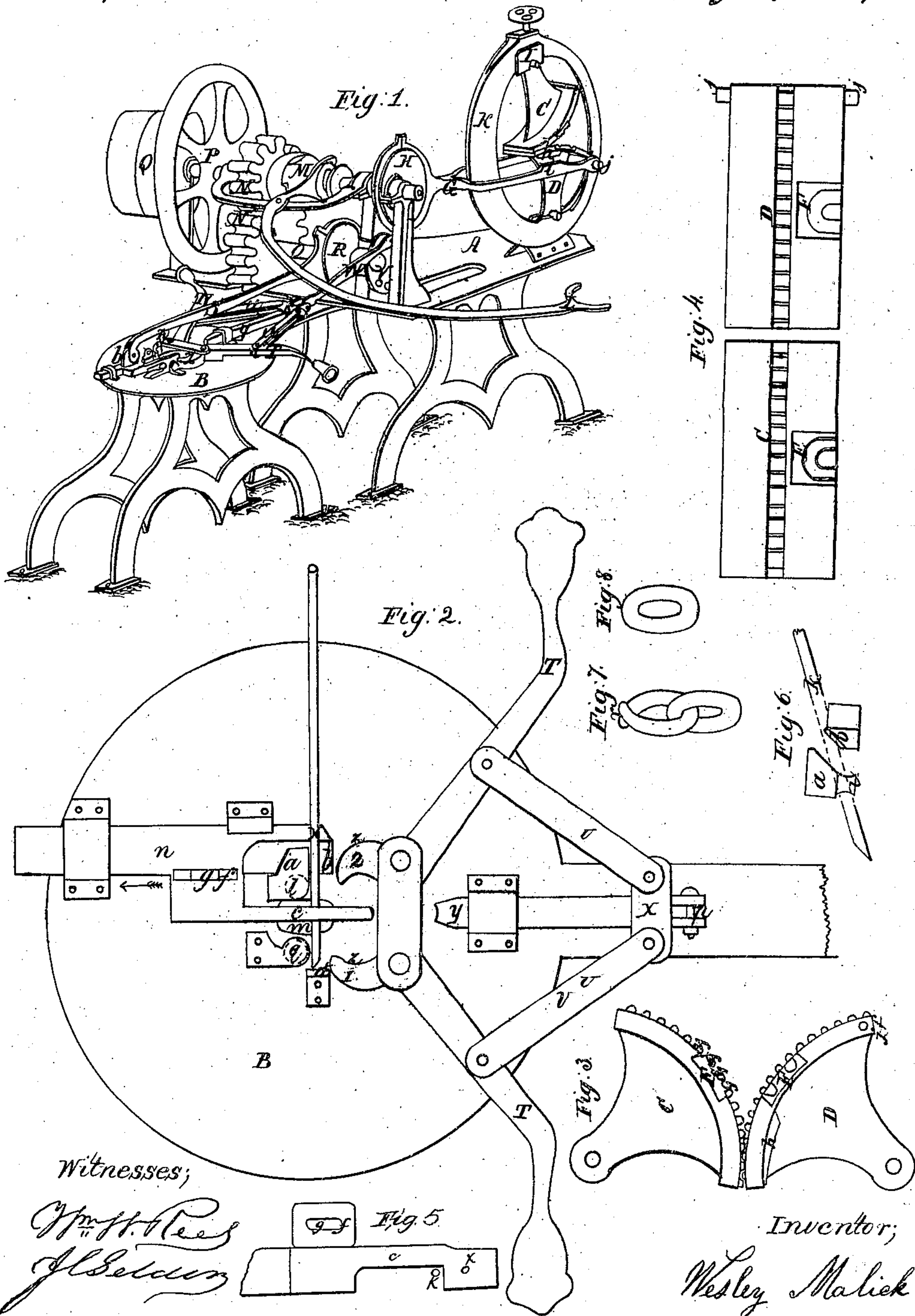


W. Malick.

Chain Mach.

N^o 93,213.

Patented Aug. 3, 1869.



United States Patent Office.

WESLEY MALICK, OF ERIE, PENNSYLVANIA.

Letters Patent No. 93,213, dated August 3, 1869.

IMPROVED MACHINE FOR MAKING CHAIN.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WESLEY MALICK, of Erie, in the county of Erie, and State of Pennsylvania, have invented new and useful Improvements in Machine for Making Chain; and I do hereby declare that the following is a full, true, and exact description of my invention, reference being had to the accompanying drawings, and the letters of reference marked thereon, in which—

Figure 1 is a perspective view.

Figure 2 is a top view of that portion of my machine denominated the bender.

Figure 3 is a side view of a portion of the welding-apparatus.

Figure 4 is a top or face view of the same, showing the faces of the two quadrant-shaped iron pressers C and D, and showing the position and shape of the male and female dies E and F. (Fig. 3 also shows the form and position of these dies.)

Figure 5 is a view of the finger-bar c and finger o, detached from the bender.

Figure 6 is a view of the shears or cutters a and b, with an iron rod, k, in position for being cut.

Figures 7 and 8 are chain-links.

The construction of my machine is as follows:

A and B are bed-plates resting on legs or framework.

K is a heavy iron frame in which rest the pressers C and D.

These pressers are usually constructed in the form shown in figs. 1 and 3, that is quadrant-shaped, with a wide face, on which are raised the cogs shown.

They are so placed in the frame K, that their faces press on each other, and the cogs gear, and the cog-work secures the uniform of the two pressers.

The bearings of these pressers are fitted in boxes, the upper one of which, I, is movable by the adjusting-screw J. It is raised or lowered at pleasure, thereby giving more or less pressure at the face of the pressers.

E and F are dies, which are dovetailed into the faces of the pressers C and D, and are removable.

These pressers, when moved, have an oscillating motion.

They receive their motion by the pitman G, which connects the eccentric H with the pins j j on the presser D.

This part of the machine is thrown in and out of gear by the long lever L, which moves the clutch M.

On the bed-plate B is fastened the bender, which consists of the sliding cutter-bar n, the cutters a and b, the finger-bar c and finger o, the friction-wheels e and l, the gauge d, the claws Z Z, the levers T T and U U, and the ram Y.

The levers U U are fastened in holes or slants in the levers T T, and also to the cross-bar X, which is secured to the ram Y.

The cutter-bar n and the finger-bar c are attached together, and both receive their motion by the pitman S, which connects the eccentric R on the shaft O with them, and is attached to them at the lug f, in which is the slant g.

The claws and ram Z Z and Y receive their motion from the crank-plate V, on the shaft O, by the pitman W, which connects with the ram Y at p.

The manner in which my machine is operated is as follows:

Attention being called to fig. 2, the machine is brought to the position indicated, i. e., with the ram Y drawn back, the claws Z Z opened, and the cutter-bar n and finger-bar c drawn up. The rod k is then shoved into the gauge d, passing back of the finger o, (in about the position shown by k, fig. 5,) and passing in front of the friction-rollers e and l, and then between the cutters a and b, resting as seen fig. in 2.

Fig. 6 shows an end view of the cutters a and b, with the rod k in position.

The next move of the machine is as follows:

The cutter-bar n and the finger-bar c move in the direction indicated by the arrow; the cutter b passes under the cutter a in the manner of shears, and the rod k, being between them, is cut in two diagonally. The finger o has by this time commenced pulling the piece of rod just cut in between the friction-rollers e and l. This brings the rod into about the shape of the letter U, when the machine being so timed; the claws Z Z grab the extremities of the U-shaped rod, and draw them together around the finger o, which is elliptical or link-shaped. The ram Y then strikes the two ends and sets them up close against the finger o, which gives the rod a perfect link shape. The claws and ram, by the action of the crank V, draw back, and the finger, on account of the slant g in the lug f, halts for an instant, and the link falls from the finger o, through the hole m in the bed-plate B, to the floor. The rod being fed in at an incline to the bed-plate, as shown in fig. 6, and being cut diagonally or scarfing, the link, when bent, is open sufficient to admit of a link being slipped in, as seen in fig. 7, and is scarfed ready for welding, as is seen at r, fig. 7.

The link thus formed is brought to a welding-heat, and placed with its open ends (e g r, fig. 7) in the female die F, on the face of the presser D, and that portion of the machine is at once thrown into gear by the operator moving the lever L with his leg. This brings the two dies together with great force. The pressure thus exercised and exerted on the link welds it.

Attention is called to the form of the dies E and F. F, it will be noticed, is a simple female die. It is, however, sunk deeper than half the thickness of the iron of the link.

E is a male die, and, as will be seen in figs. 3 and 4, is concave or grooved on its face, giving its profile view, as in fig. 3 at *y y y y*, a serrate appearance.

The object of this form of construction is, that when the dies are set together, the space in which the link is pressed is below the surface of the die F, which prevents a lip or bead being formed on the edge of the link by the highly-heated and soft iron being forced out between the faces of the two dies, as would be the case if the two dies were of the form of the die F. By this device the link is completely surrounded, the points or serrates *y y y y* reaching down the sides of the groove in the female die F, and entirely preventing any of the iron being squashed out by the pressure, thus making the link, at the point where it is welded, as round and smooth as at any other point.

Links, rings, and other similar things can be welded by using dies constructed in this way, by a drop-hammer, in place of the pressers C and D; also by trip-hammers and by rollers.

In fig. 1, at the points marked *h* and *i* on the presser D and the pitman G, is a pair of shears or cutters,

which are used for clipping the link when necessary, on account of imperfect bending or welding.

The dies E and F may be so constructed as to give each link the twist proper for forming twisted chain.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination of the former or finger *o*, clamps Z Z, ram Y, and friction-rollers *e l*, all arranged and operating together as set forth.

2. The combination of the concave dies E and F, shaped as described, and for the purposes set forth.

3. The construction and arrangement of the reciprocating yoke G, sectors C D, circular frame K, and adjusting-screw J, as shown and described.

4. The reciprocating finger bar *c*, hollowed out on its under side for the passage of the blank-bar, and provided with the former *o* upon its end, all substantially as shown and described.

5. The arrangement of the shears *h i*, respectively, on the reciprocating stirrup G, and vibrating sector G, as and for the purposes specified.

WESLEY MALICK.

Witnesses:

WM. W. REED,

J. C. SELDEN.