3 Sheets—Sheet 1.

J. SCHINNELLER & L. FITZPATRICK.

MACHINES FOR MAKING CHAIN-LINKS.

No. 194,181. Patented Aug. 14, 1877.

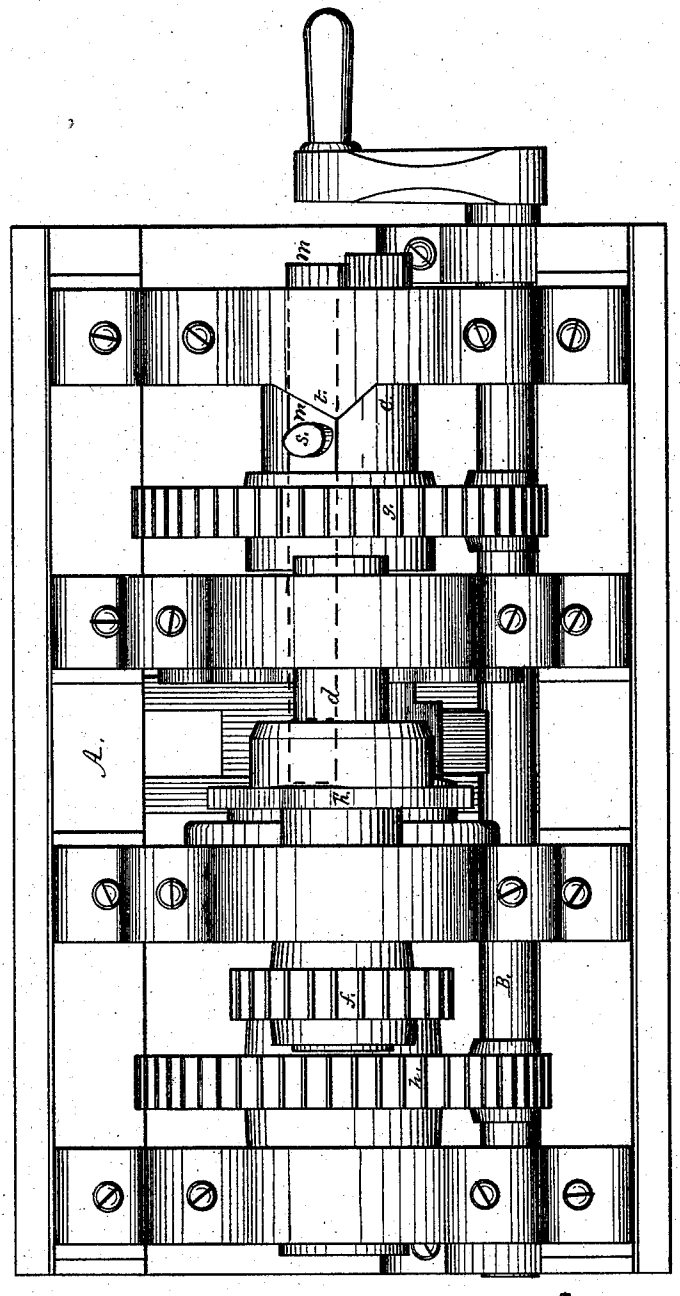


Fig. 1.

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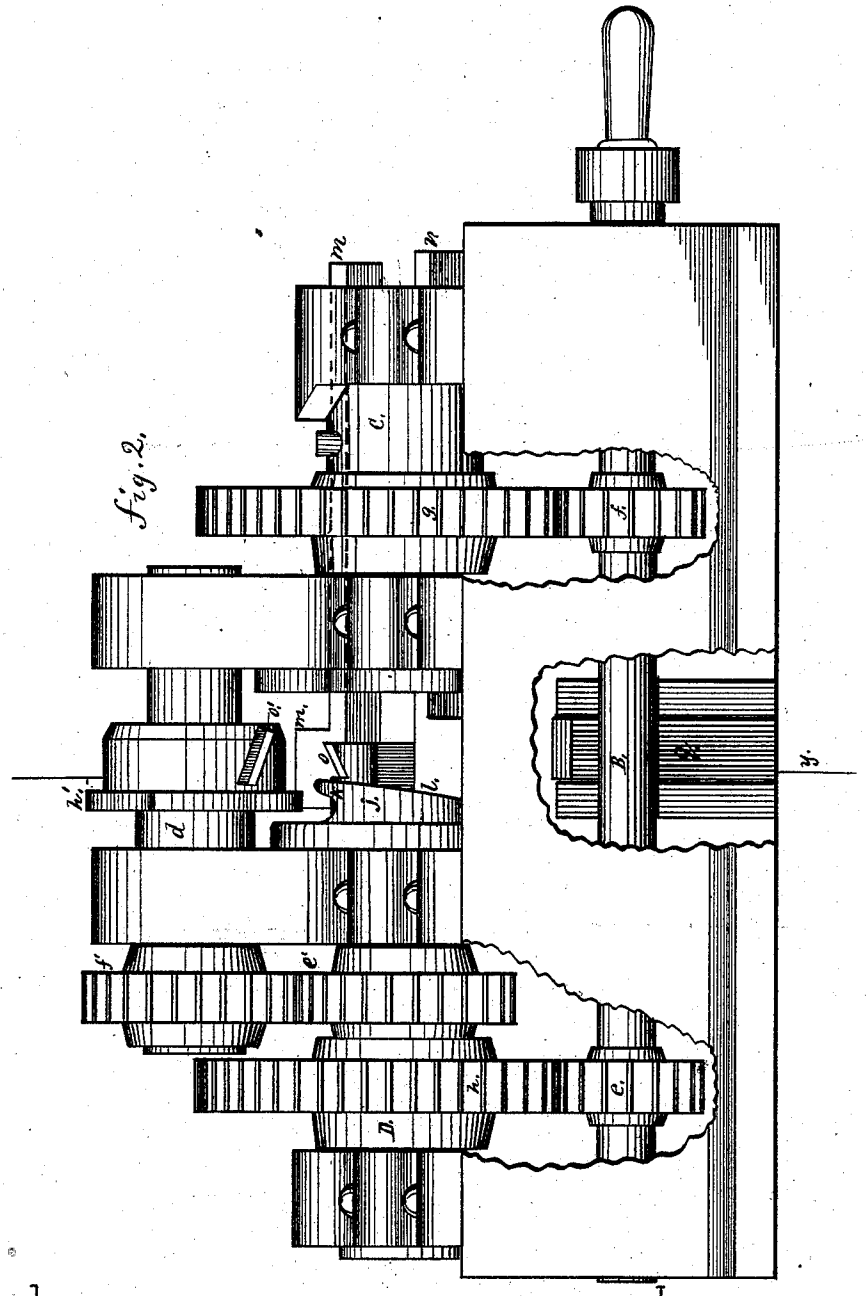
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Fig. 2.



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Fig. 3.

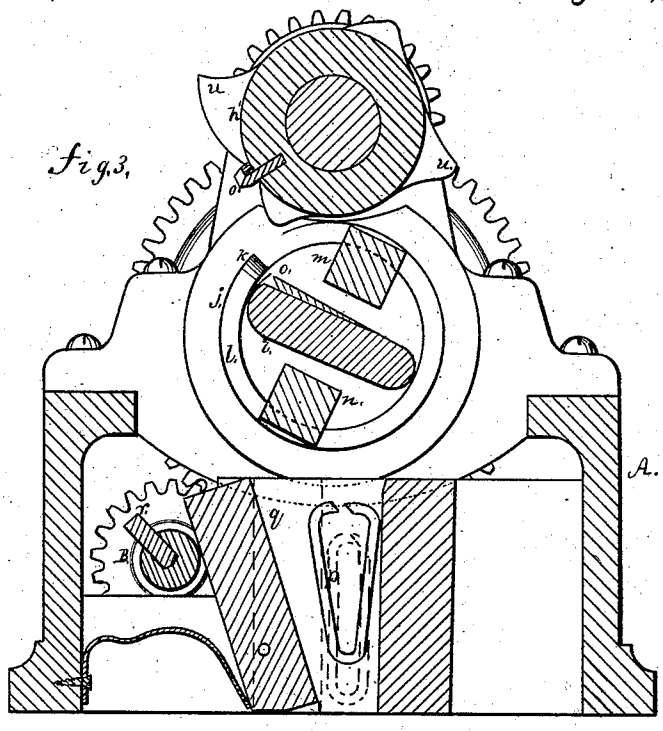


fig. 5

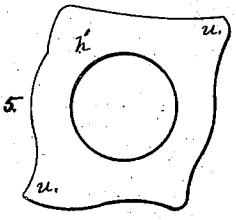
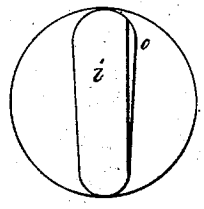


fig. 4.



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UNITED STATES PATENT OFFICE.

JACOB SCHINNELLER, OF PITTSBURG, PENNSYLVANIA, AND LUKE FITZPATRICK, OF BENWOOD, WEST VIRGINIA.

IMPROVEMENT IN MACHINES FOR MAKING CHAIN-LINKS.

Specification forming part of Letters Patent No. **194,181**, dated August 14, 1877; application filed June 9, 1877.

To all whom it may concern:

Be it known that we, JACOB SCHINNELLER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, and LUKE FITZPATRICK, of Benwood, county of Marshall, State of West Virginia, have invented a new and useful Improvement in Machines for Making Chain-Links; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our invention relates to an improvement in machine for making chain-links; and consists in a rotary mandrel provided with a cutter, and moving within a guide, the outer face of which is provided with an incline for discharging from the mandrel the link as it is formed, and for moving back holders, in combination with a revolving die, the axis of which is provided with a cutter, which operates conjointly with the cutter on the rotating mandrel, for the purpose of separating the link and cutting the desired scarf for welding, which link subsequently drops from the mandrel into a conveying-chute, where it is properly closed in its passage through said chute, the whole being operated through the medium of suitable driving-gear and eccentrics.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

In the accompanying drawings, which form part of our specification, Figure 1 is a top view of our improved machine for making chain-links. Fig. 2 is a side elevation of the same, representing the relative position of the several parts when in position for receiving the iron for forming the link. Fig. 3 is a vertical transverse section at line *y* of Fig. 2. Fig. 4 represents a face view of the mandrel. Fig. 5 is a face view of the roller.

In the drawings, A represents the frame of the machine, provided with suitable bearings for the shafts B, C, D, and *d*. On the shaft B are two driving-wheels, *e f*, which gear into wheels *g h* on the shafts C D. On the shaft D is also a wheel, *e'*, which gears into a wheel, *f'*, for rotating the shaft *d* and die or roller *h'*. On the inner end of the shaft D is placed the mandrel *i*, which rotates within a guide, *j*, having a recess at *k* for the reception of the iron for forming the links. The outer face of the guide *j* is provided with an inclined face, *l*, for throwing back the holders *m n*, and for forcing the links off the mandrel. The mandrel, when viewed endwise, is of oval form, and is provided with a cutter, *o*. The longitudinal contour of the mandrel gives an oval-shaped opening to the link, the larger part being at the scarfed end, as shown in full lines, Fig. 3, which link, after being discharged from the mandrel, drops into the chute *p* with its larger end uppermost, as shown in said figure, and somewhat open. As it is essential to close the same before welding—that is to say, to bring the scarfed ends over each other by closing or compressing the sides of the link, as indicated in dotted lines, Fig. 3, where the closed link is represented as ready to pass from the chute—the chute will be closed upon the same by means of the pivoted side *q*, which is moved forward by the eccentric *r* on the shaft B, and is thrown back into its original position by means of a spring at its lower end. In this operation the link will be forced from the mandrel by reason of the inclined guide which surrounds it, the said mandrel being adjusted, with reference to the chute and guide, so that the link will be forced off and fall when it is in a vertical position, or nearly so, and thus readily drop into the chute, where its sides are compressed, as herein described.

The oval form of the mandrel will allow for the desired lap to the link when closed, so as to bring the scarfs over or alongside of each other, thereby giving the same form to each end of the link, and uniformity throughout its contour. The link, when discharged from the chute, is in form for welding. The shaft C is provided with recesses, in which are placed holders *m n*, provided with projections *s*, which, coming in contact with the projection *t*, move them alternately over the iron on the mandrel *i*. The form of the die or roller *h'* is clearly shown in Figs. 3 and 5, and in outline is of such form that its points *u* will wipe the iron, causing it to closely hug the mandrel *i* as it is being wound around it. The axis or back

support of the die or roller *h'* is provided with a cutter, *o'*, which operates in conjunction with the cutter in the mandrel *i* for separating the links formed around the mandrel. The holders *m n* should have sufficient play at their inner ends to allow them to pass easily over the iron as it is wound around the mandrel *i*.

Having thus described the construction of the several parts of our improvement, and the relation that they bear to each other, we will proceed to describe the operation, which is as follows: The iron is heated to a suitable degree and placed in the recess *k* of the guide *j*, forced in under the holder *m* or *n*, as the case may be, and the revolving of the mandrel *i* winds the iron around it. The roller or die *h'* rotating with the mandrel *i*, the points *u* press the iron close to the walls of the mandrel. The end of the link, coming in contact with the incline face *l* of the guide *j*, forces the formed iron between the cutters *o* and *o'*, which will cut the desired scarf and separate the formed link from the bar or rod being fed, which separated link drops down into the conveying-chute *p*, one side of which is moved forward by the eccentric on the shaft B, which closes the link, so as to bring the scarfs over each other, and in position for being finally closed by the welding process. After the link has been thus closed it drops from the machine into a suitable receptacle.

Having thus described the nature, construction, and operation of our improvement, what we claim is—

1. The mandrel *i*, adapted to form the links of a chain, and adjusted to rotate within the guide *j*, in combination with the irregularly-shaped die or roller *h'*, constructed to rotate and smooth down the metal upon the mandrel as it is being wound thereon, substantially as shown and herein described.

2. In combination with the mandrel, binding-roll, inclined guide, and holders, the cutters *o o'*, situated beyond the point of bite of the roll and mandrel, as and for the purpose set forth.

3. The revolving mandrel *i*, in combination with the die or roller *h'* and holders *m n*, operating with relation to the mandrel *i*, substantially as herein described, and for the purpose set forth.

4. In a machine for making chain-links, the chute *p*, provided with a pivoted side, *q*, adapted by means of a cam or eccentric movement, as set forth, to close upon the link when the same falls into the chute, in combination with the rotating mandrel *i* and guide adapted to force the links therefrom, all substantially as specified.

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