

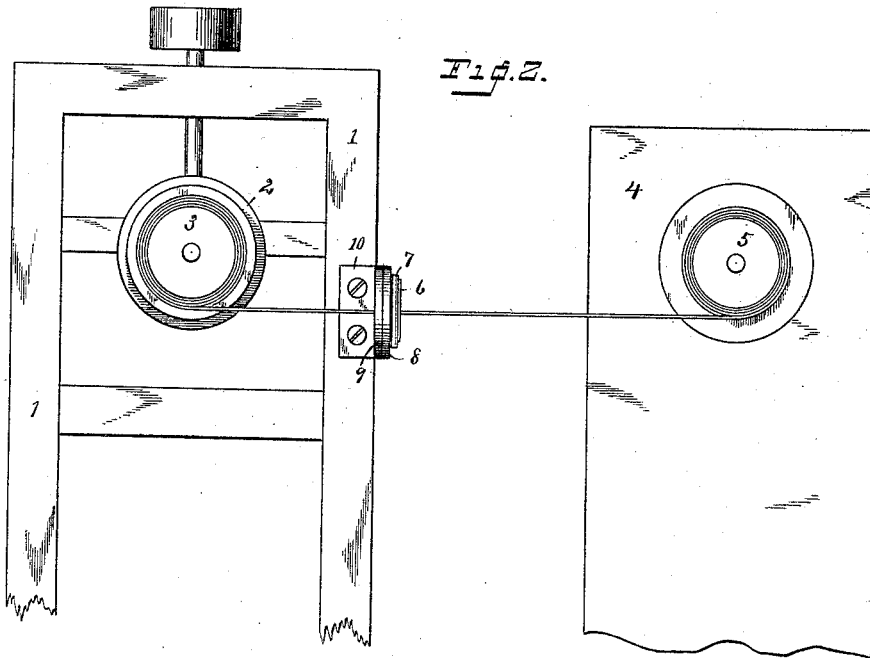
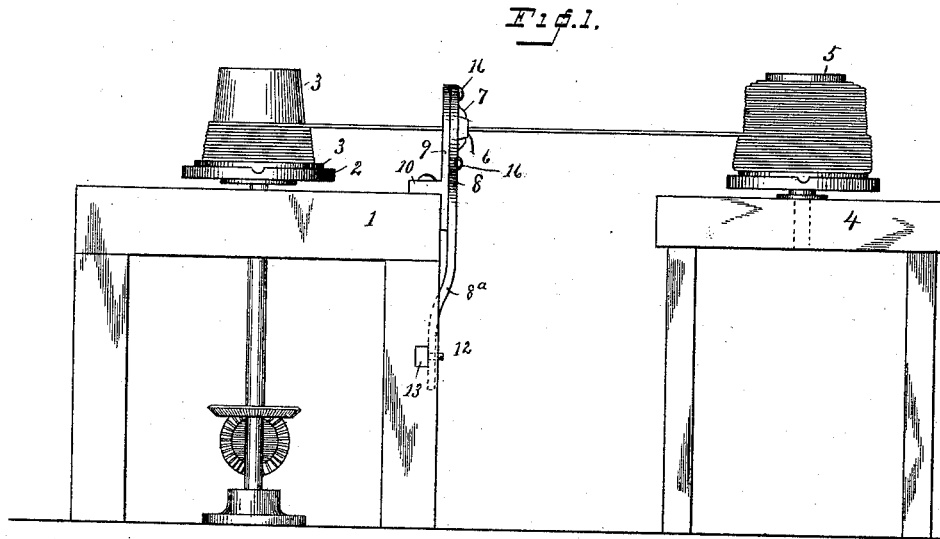
(No Model.)

2 Sheets—Sheet 1.

L. T. WOOSTER.
DIE FOR DRAWING WIRE.

No. 423,016.

Patented Mar. 11, 1890.



WITNESSES

G. M. Newman,
Arley S. Munson.

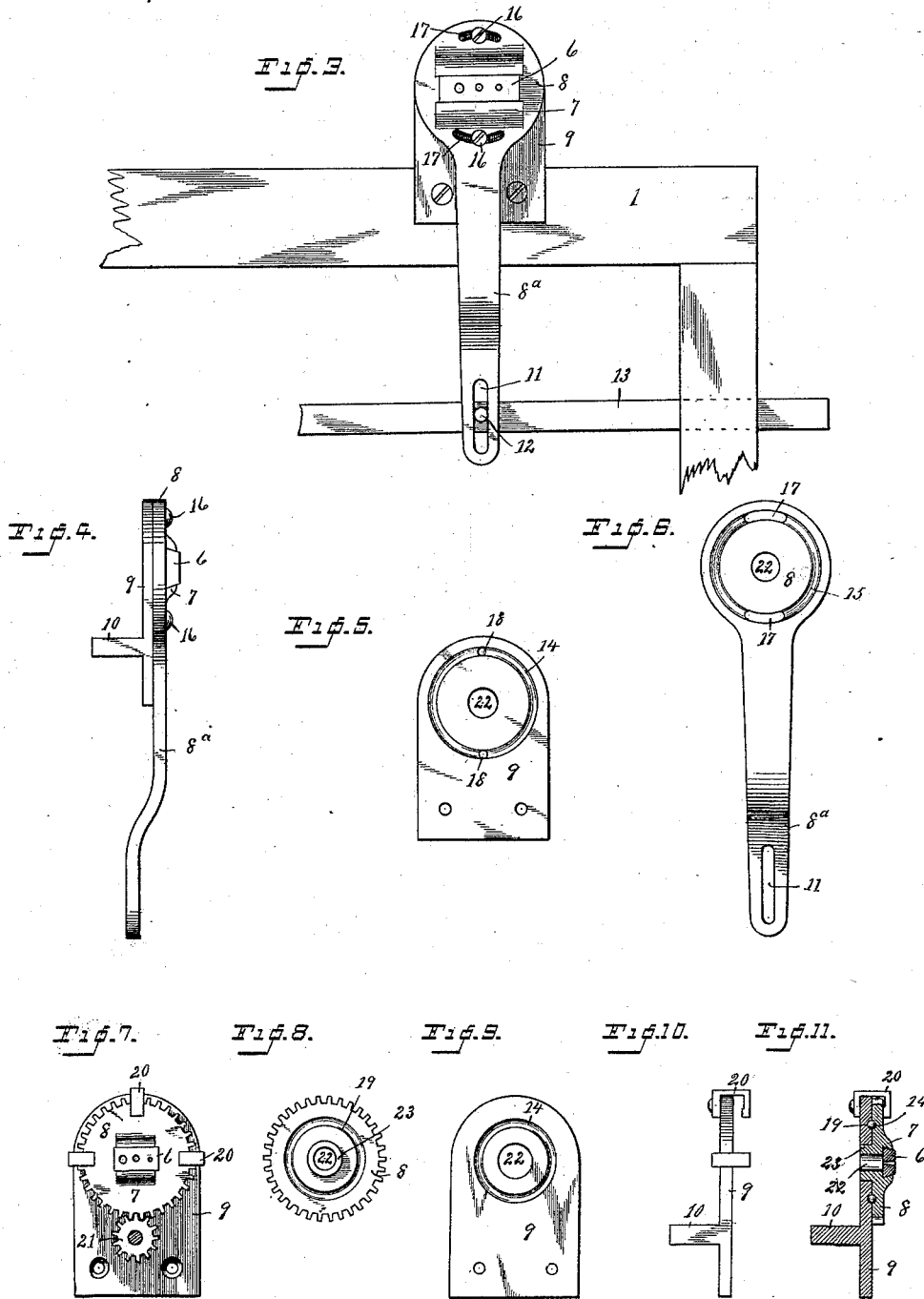
INVENTOR

Letson J. Wooster
By J. M. Wooster atty.

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C. M. Newman,
Ashley S. Munson.

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Att'y.

UNITED STATES PATENT OFFICE.

LETSOME T. WOOSTER, OF SEYMOUR, CONNECTICUT, ASSIGNOR TO THE SEYMOUR MANUFACTURING COMPANY, OF SAME PLACE.

DIE FOR DRAWING WIRE.

SPECIFICATION forming part of Letters Patent No. 423,016, dated March 11, 1890.

Application filed October 24, 1889. Serial No. 323,006. (No model.)

To all whom it may concern:

Be it known that I, LETSOME T. WOOSTER, a citizen of the United States, residing at Seymour, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Dies for Wire-Drawing; 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 has for its object the production of a die for wire-drawing which will enable manufacturers to produce smooth and finely-finished wire which shall be of uniform size at both ends of the coil. Two of the most serious difficulties in wire-drawing as heretofore performed are the clogging of the die and the wearing of the die. It not infrequently happens that small particles of the metal of the wire—such as small slivers from the surface thereof—adhere to the inner surface of the die and partially fill it, so that the surface of the wire is badly scratched, and the last end of the coil will run from one-half to one number smaller than the first end. This is called by wire-drawers "sucking in the hole." The other difficulty is the chafing of the die by the surface of the wire and the cutting or wearing out of the hole through the die, so as to cause the last end of the coil to run considerably larger than the first end. These difficulties I wholly overcome by my novel axially-moving die, and also produce a wire of very much finer quality, thereby increasing the tensile strength and the ductility of the wire greatly. The matter of finish imparted to the surface of the wire is a matter of vital importance in almost every use to which the wire is liable to be placed, this being particularly true in the manufacture of rivet and screw blanks, in which the slightest scratch on the surface of the wire will cause the heads of the completed rivets or screws to crack, thereby rendering them useless. In order to overcome these objections, I have devised an axially-moving die, which I will now describe, referring by numbers to the accompanying drawings forming part of this specification, in which—

Figure 1 is a side elevation illustrating my novel die in use; Fig. 2, a plan view corresponding therewith; Fig. 3, an elevation, on an enlarged scale, of the face of the die and the axially-movable carrying-plate, the attaching-plate, &c., in position on a wire-bench; Fig. 4, a side elevation of said parts detached; Fig. 5, a face view of the attaching-plate detached; Fig. 6, a reversed face view of the axially-movable carrying-plate; and Figs. 7, 8, 9, 10, and 11 are detail views illustrating another form of my novel invention, in which the die rotates instead of oscillates, and in which both attaching-plate and carrying-plate are provided with grooves to receive a set of anti-friction balls.

1 denotes a wire-bench; 2, a turn-table; 3, a wire-block thereon; 4, a table; 5, a reel thereon from which the wire is drawn through my novel die and coiled upon the block. These parts, with the exception of the die, are not of the essence of my invention and may be of any special or preferred form.

6 denotes a die-block, which is shown as provided with three drawing-holes, each producing a different number of wire. This die-block is held between guides 7 on the outer face of a carrying-plate 8, which is suitably secured to an attaching-plate 9, so as to permit oscillation or rotation of the carrying-plate. This attaching-plate is preferably provided with an extension 10, adapted to rest upon the top of the bench, both plate and extension being firmly screwed or bolted to the bench.

The gist of my invention lies in imparting to the carrying-plate and die an axial movement, either oscillatory or rotary. I thereby avoid clogging up of the die-hole by slivers of metal, and also avoid wearing away of the die by roughness of the wire. I find, furthermore, that by constantly changing the axial position of the die relatively to the wire that is being drawn I produce a wire free from scratches, finer, smoother, and more perfectly finished than has heretofore been possible with any die known to wire-manufacturers.

In the forms shown in Figs. 1 to 6, inclusive, an oscillatory motion is imparted to the carrying-plate, which of course may be imparted in any suitable manner without de-

parting from the principle of my invention. I have shown exceedingly simple mechanism for imparting this movement to the die and carrying-plate.

5 8^a is an arm formed integral with or rigidly secured to the carrying-plate 8. At the outer end of this arm is a slot 11, which is engaged by a pin 12 upon a reciprocating rod or strip 13. Reciprocatory movement of this rod may
10 be imparted in any suitable manner. As it is not of the essence of my invention, I have not deemed it to require illustration. In this form I have shown attaching-plate 9 as provided with a circular groove 14 and the
15 carrying-plate as provided with curved projections 15, adapted to register with this groove. Screws 16 pass through slots 17 in the carrying-plate and engage holes 18 in the attaching-plate, so as to hold the parts firmly in
20 position, but at the same time permit free oscillation of the carrying-plate and die-block.

In the form illustrated in Figs. 7 to 11, inclusive, the construction is substantially the same, with the exception that a continuous
25 rotary movement is imparted to the carrying-plate and die-block instead of an oscillatory movement, as in the other form. In this form the carrying-plate is provided with gear-teeth on its periphery and is engaged
30 by a pinion 21, to which rotary movement is imparted in any suitable manner. (Not shown, as it is not of the essence of my invention.)

35 Instead of a projection 15, as in the other form, to engage groove 14, I provide a carrying-plate in this form with a circular groove

19, corresponding with grooves 14 in the attaching-plate, and in the circular space formed thereby place a series of anti-friction balls, as clearly shown in Fig. 11.

23 denotes a hub upon the carrying-plate, 40 adapted to engage the hole 22 in the attaching-plate, through which the wire passes, the holes of the wire through the carrying-plate and the attaching-plate in both forms being indicated by 22. In Fig. 9, however, this
45 hole is shown as made larger than in the other form, so as to receive the hub 23.

20 denotes fingers secured to the attaching-plate and projecting over the face of the carrying-plate, whereby the latter is held in
50 position on hub 23, leaving said plate, however, free to rotate.

It will of course be apparent that various changes may be made in the details of construction without departing in the slightest
55 from the principle of my invention.

I claim—

The combination, with the die-block and a carrying-plate therefor, having a central opening for the wire to pass through, of an
60 attaching-plate having a similar opening and means, substantially as described and shown, for securing said plates together and imparting axial movement to the carrying-plate.

In testimony whereof I affix my signature 65 in presence of two witnesses.

LETSOME T. WOOSTER.

Witnesses:

G. E. MATTHIES,
GEO. H. SHELTON.