

No. 609,147.

Patented Aug. 16, 1898.

E. IVINS.

MACHINE FOR MANUFACTURING SEAMLESS DRAWN TUBES.

(Application filed Aug. 3, 1897.)

(No Model.)

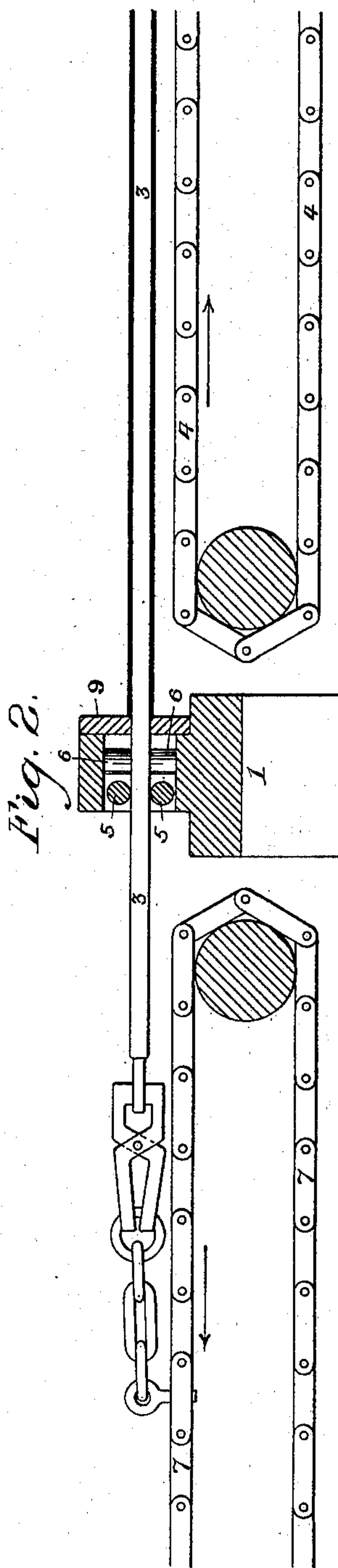
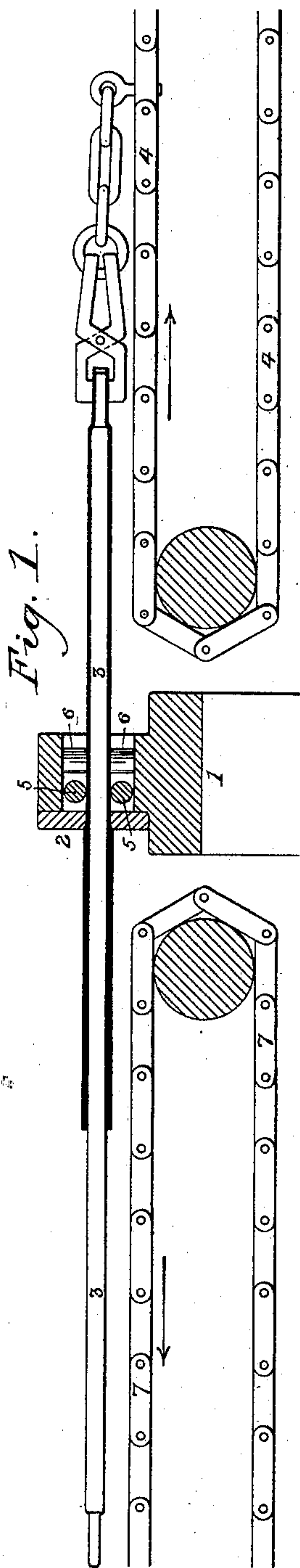


Fig. 4.

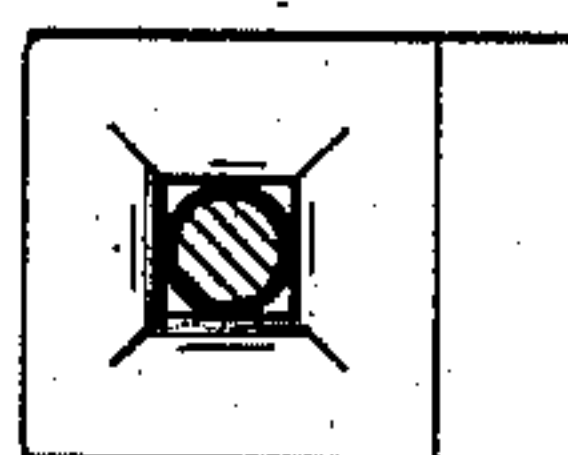
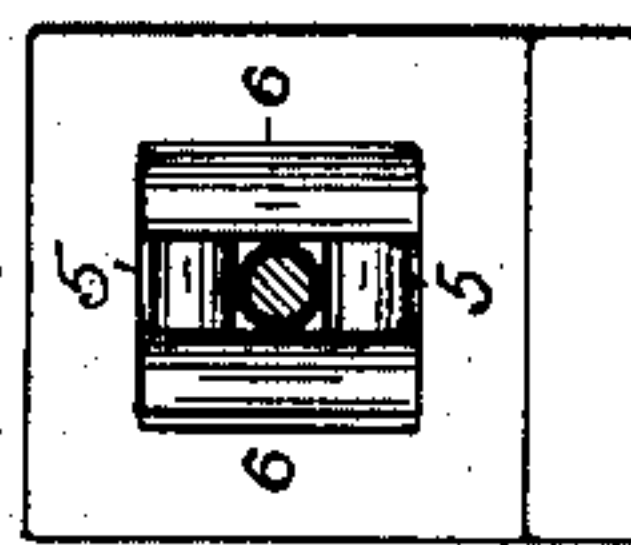


Fig. 3.



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ELLWOOD IVINS, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR MANUFACTURING SEAMLESS DRAWN TUBES.

SPECIFICATION forming part of Letters Patent No. 609,147, dated August 16, 1898.

Application filed August 3, 1897. Serial No. 646,929. (No model.)

To all whom it may concern:

Be it known that I, ELLWOOD IVINS, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in the Manufacture of Seamless Drawn Metal Tubes, of which the following is a specification.

My invention relates to that class of tube-drawing machines in which the tube as it is
10 drawn through the die-plate is compressed upon a traveling core or mandrel, the object of my invention being to provide means whereby the tube can be readily stripped from this mandrel when the drawing operation has been completed. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a diagrammatic view of sufficient of a draw-bench to illustrate my invention, this view showing the drawing of the tube. Fig. 2 is a similar view illustrating the stripping of the tube from the core or mandrel. Fig. 3 is an end view of the roller-head
25 forming part of the machine, and Fig. 4 is a view illustrating a modification of the invention.

Part of the fixed structure of an ordinary draw-bench is represented at 1 in Figs. 1 and
30 2, this structure providing a suitable bearing for the draw-plate 2, through which the tube is to be drawn, said tube prior to the drawing operation being mounted upon a core or mandrel 3, which is drawn through
35 the die-plate with the tube by means of a suitable connection with a draft-chain 4. The effect of this operation is to squeeze the tube down firmly upon the core or mandrel. Hence after the drawing operation the removal of
40 the core or mandrel will be impossible unless the tube is first expanded to some extent, so as to free the mandrel in some measure from its hold. I therefore combine with the draw-head means for acting upon the tube immediately after it issues from the draw-plate, so
45 as to expand said tube. Hence by the time the drawing operation is completed the drawn tube will be expanded throughout its entire length and the core or mandrel can be removed from the same. The means which I prefer to adopt for effecting this expansion
50 of the tube is a series of rollers 5 5 and 6 6,

the pair of rollers 6 6 being arranged at right angles to the rollers 5 5 and the rollers being so disposed that they will bear upon the tube
55 at four equidistant points (see Fig. 3) and will compress said tube at these points sufficiently to cause it to bulge or spread between the points of contact, whereby the hold of the tube upon the core or mandrel is so reduced
60 that said core or mandrel can, after the passage of the tube through the rollers, be readily withdrawn by power suitably applied to the end of the mandrel opposite that to which power was applied in drawing the tube. 65

In order to effect the ready withdrawal of the core, I use a supplementary draft-chain 7 in front of the draw-head, this chain traveling in a direction the reverse of the direction of movement of the chain 4. Hence
70 when the tube and its core or mandrel have been drawn through the die-plate and rollers 5 and 6 a stripper-die 9 may be applied to the draw-head, as shown in Fig. 2, and the rear end of the core or mandrel passed through
75 the same and connected by suitable means to the rearwardly-traveling draft-chain 7, the stripper-plate presenting an unbroken circular opening for the passage of the mandrel and being such as to arrest the movement of
80 the tube, so that the core or mandrel will be withdrawn from the same and when so withdrawn will occupy a position in front of the draw-head, where a new tube can be applied to it. By this means any handling of the
85 drawn tube, with its inclosed core or mandrel, is rendered unnecessary, since there is no need of carrying the tube from the rear of the draw-head to the front of the same or for turning the tube and its inclosed mandrel
90 end for end in order to permit of the withdrawal of the mandrel. Hence the whole operation can be very cheaply and expeditiously performed.

Instead of using two pairs of rollers arranged at right angles to each other as a
95 means of expanding the tube after drawing the same, I may use but a single pair of rolls or three rolls arranged to form a triangle, or I may employ more than four rolls, if desired, or in
100 place of the rolls I may employ a solid head having a central opening through which the tube is drawn, this opening being so shaped as to impart pressure to the tube at two or

more points on its periphery, an instance of this construction being shown in Fig. 4. It will be evident, also, that my invention is applicable to that class of tube-drawing machines in which the drawing or reduction of the tube is effected by means of grooved rollers instead of by a draw-plate. Hence by the term "draw-plate" as used in the claim I mean to include any means which may be employed for pressing the metal of the tube down upon the mandrel in order to effect the reduction in the size or thickness of the walls of the tube.

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

The combination in a draw-bench of two

oppositely-moving draft-chains, an interposed fixed structure having a set of pressure-rolls adapted to bearings therein, and having on each side of said rolls a bearing or seat, a removable reducing draw-plate adapted to one of said seats, and a removable stripping draw-plate adapted to the other seat, and presenting an unbroken circular opening for the passage of the mandrel, in stripping the tube from the latter, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELLWOOD IVINS.

Witnesses:

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