

(Model.)

J. GÖRGEN, J. REIFF & R. KEMPIN.

MACHINE FOR FORMING SEAMLESS TUBES.

No. 549,356.

Patented Nov. 5, 1895.

Fig. 1.

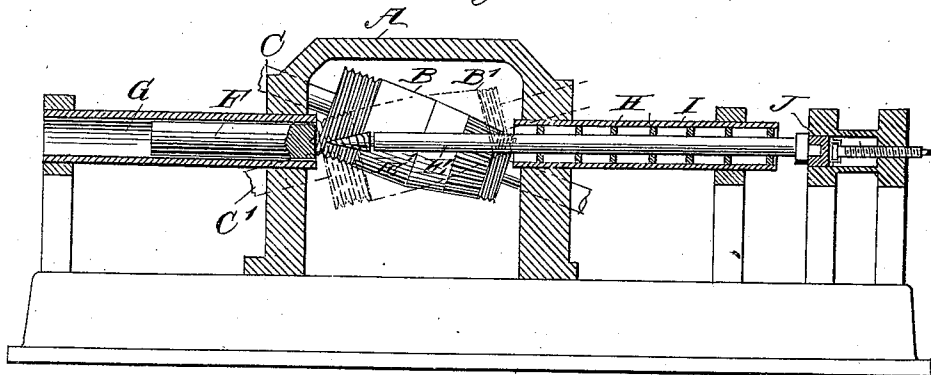


Fig. 2.

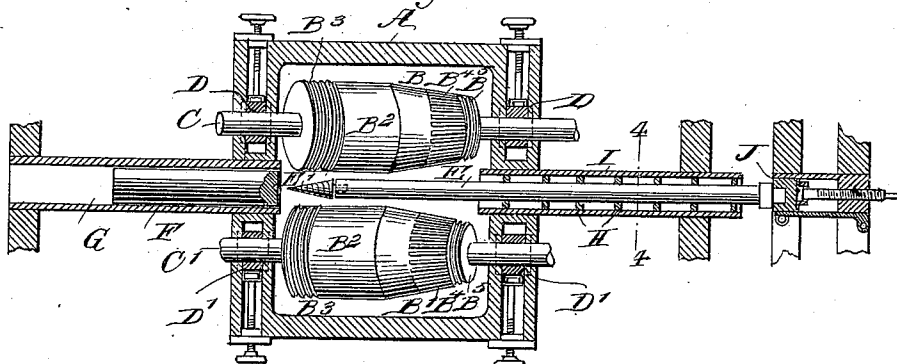


Fig. 3.

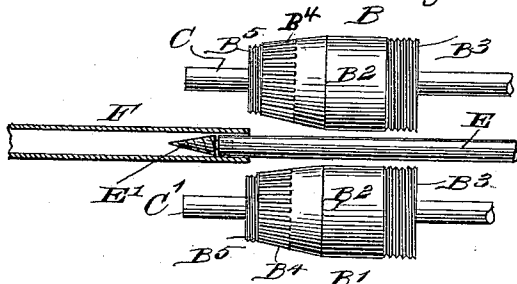


Fig. 4.

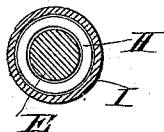
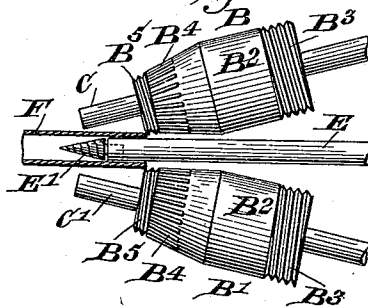


Fig. 5.



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MACHINE FOR FORMING SEAMLESS TUBES.

SPECIFICATION forming part of Letters Patent No. 549,356, dated November 5, 1895.

Application filed July 9, 1894. Serial No. 516,999. (Model.)

To all whom it may concern:

Be it known that we, JOHANN GÖRGEN, JACOB REIFF, and REINOLD KEMPIN, of Kewanee, in the county of Henry and State of Illinois, have invented a new and Improved Machine for Forming Seamless Tubes, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine for forming solid metallic blanks into seamless tubes, the machine being very simple and durable in construction and effective in operation.

The invention consists principally of cylindrical drawing-rolls, each formed with a threaded end adapted to engage the blank and draw it forward over the mandrel and between the smooth surfaces of the rolls.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a sectional plan view of the same. Fig. 3 is a sectional plan showing the drawing-rolls reversed, but not yet adjusted, for the purpose of elongating and polishing the tube, the tube being shown in section. Fig. 4 is an enlarged transverse section of the mandrel-supporting and pipe-receiving tube; and Fig. 5 is a view similar to Fig. 3, but showing the rolls adjusted for elongating and polishing the tube.

The improved machine is provided with a suitably-constructed frame A, in which are journaled the drawing-rolls B and B', inclined with relation to each other, as indicated in Fig. 1, but having their shafts normally arranged in parallel vertical planes. (See Fig. 2.) Each roll B or B' is provided with a smooth cylindrical body portion B², terminating at one end in the threaded part B³ and at its other end in a conical portion B⁴, partly fluted and terminating at its small end in the threaded part B⁵. The rolls B and B' are secured on shafts C and C', respectively, journaled in bearings D and D', respectively, held trans-

versely adjustable in the frame A, as indicated in Fig. 2, so that the rolls may be moved nearer to each other or farther apart, according to the size of the tube to be formed.

Between the rolls B and B' is arranged a mandrel E, extending horizontally and formed at its front end with a threaded point E', adapted to engage the inner end of the solid metallic blank F, held in a feed trough or tube G, arranged in alignment with the mandrel E. The rear part of the mandrel E has its bearing in a series of washers H, held in a tube I, fixed in the frame A, the said washers being placed suitable distances apart, so as to support the mandrel E up to the beginning of the rolls B and B', as shown in Figs. 1 and 2. The rear end of the mandrel E rests against a removable abutment J of suitable construction, so as to hold the mandrel E in the proper position during the time the tube is formed.

The operation is as follows: When the several parts are in the position as shown in Figs. 1 and 2, and a rotary motion is given to the rolls B and B' by a suitable mechanism connected with their shafts C C', and the operator pushes the metallic blank F forward in the trough G, then the threaded parts B³ of the rolls B and B' take hold of the inner end of the blank and draw the same forward onto the point E' of the mandrel E, it being understood that the metallic blank has been heated previous to putting it into the trough G. The action of the rolls B and B' on the blank F rotates the same and causes its formation into a tube over the mandrel E, the tube finally coming in contact with the smooth surfaces of the parts B² of the rolls, so that a smooth exterior surface is given to the tube to be formed. As the blank is drawn forward and the tube is formed, it finally passes into the tube I and against the first washer H, which is pushed rearward on the advance movement of the tube to be formed, until finally the tube is finished and all the washers are pushed rearward in the tube I. Thus it will be seen that the mandrel E is properly supported in the washers H, as the tube is formed from the blank, and the tube formed from the latter finally passes into the tube I. When the rear end of the blank F leaves the smooth

parts B² of the rolls B B', then the tube is finished and the operator now removes the abutment J to permit of sliding the finished tube, mandrel, and washers out of the tube

5 I. After this the mandrel E is again inserted in the tube I with the washers H in place, as described and shown in Fig. 2, and then the abutment J is again moved on the rear end of the mandrel, so that the machine is now
10 ready to treat a second metallic blank for forming a tube in the manner described. After a tube is formed it can readily be polished by a set of rolls B B' in the manner indicated in Figs. 3 and 5. For this purpose
15 the position of each roll is reversed, as shown in Fig. 3, and then the left-hand ends of the rolls are brought nearer together and the right-hand ends farther apart, the pipe being so placed that the threaded portions B³ will
20 take hold of it and feed it forward to the fluted portions B⁴. Owing to the pressure exerted by these fluted portions the pipe will be elongated, its wall becoming thinner at the same time, while the mandrel E forms a
25 support for the pipe to preserve the cylindrical shape and the original size of its bore. The marks produced on the pipe by the threaded portions B³ and fluted portions B⁴ are removed and a smooth polished appearance
30 given to the pipe when it comes in contact with the smooth portions of the rolls. Thus it will be seen that the same rolls serve to produce the pipe and to finish it.

It will be seen that a machine of the construction described is very simple and quickly
35 forms a solid metallic blank into a tube.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

40 1. A drawing roll for the manufacture of

seamless tubes, provided with threaded ends and a smooth cylindrical portion between the said ends, substantially as described.

2. A drawing roll for the manufacture of seamless tubes, provided with threaded ends
45 of different diameters, a smooth cylindrical portion adjacent to one of the threaded portions, and a conical portion between the cylindrical portion and the other threaded portion,
50 substantially as described.

3. A drawing roll for the manufacture of seamless tubes, provided with threaded ends of different diameters, a smooth cylindrical
55 portion adjacent to one of the threaded portions, and a longitudinally fluted conical portion between the cylindrical portion and the other threaded portion, substantially as described.

4. A machine for forming seamless tubes, provided with a mandrel support comprising
60 a tube, and washers constructed to surround and support the mandrel, said washers being fitted in the said tube and adapted to slide therein by the forwardly moving finished
65 tube, substantially as shown and described.

5. A drawing roll, provided with threaded ends of different diameters, substantially as described.

6. A drawing roll, provided with a cylindrical end portion and a conical end portion,
70 each of said portions being screw threaded at its outer extremity, and smooth at its inner extremity, substantially as described.

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