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 MEANS OF PRODUCING SEAMLESS HOLLOW BODIES.
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976,529.

Patented Nov. 22, 1910.

Fig. 1.

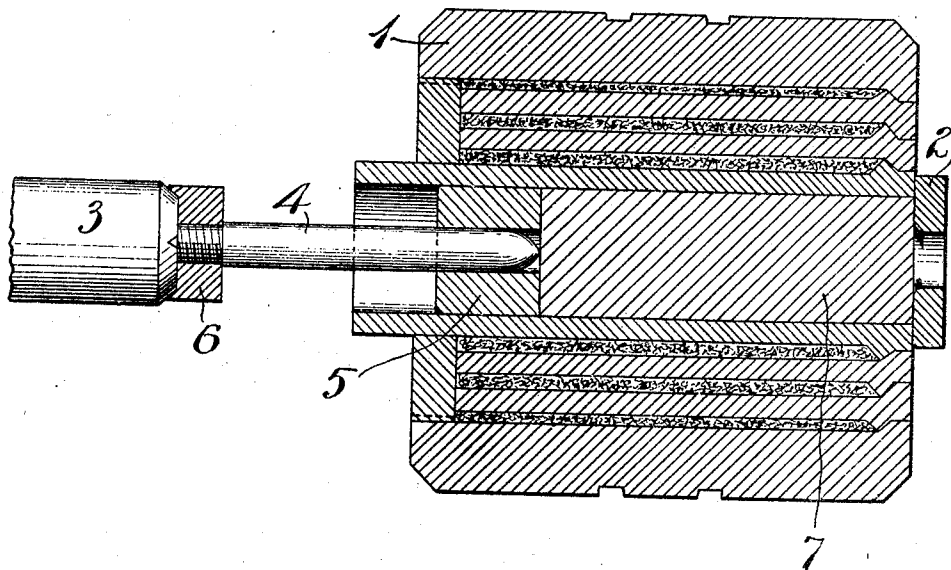
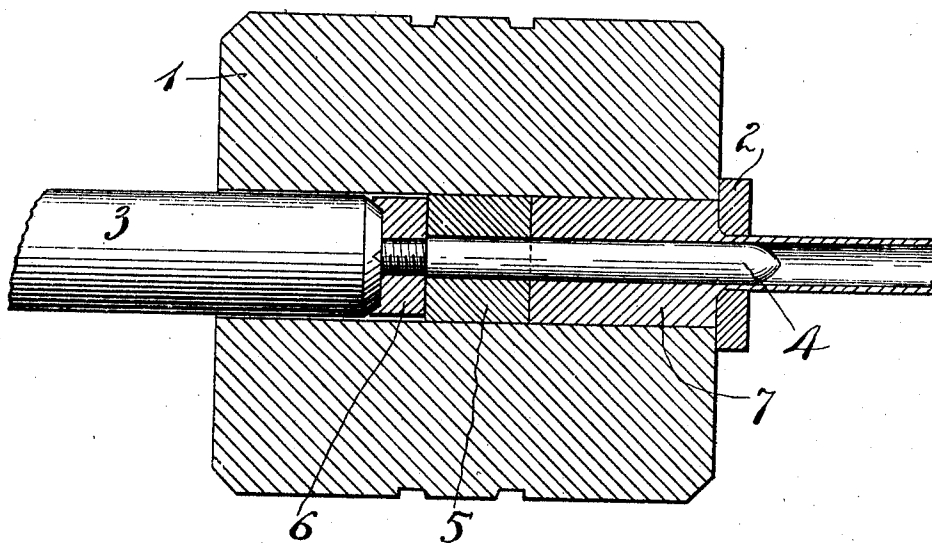


Fig. 2.



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UNITED STATES PATENT OFFICE.

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MEANS OF PRODUCING SEAMLESS HOLLOW BODIES.

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To all whom it may concern:

Be it known that I, WILLIAM WESTERMAN, a citizen of the United States, residing at Ansonia, New Haven county, Connecticut, have invented certain new and useful Improvements in Means of Producing Seamless Hollow Bodies, of which the following is a full, clear, and exact description.

My invention relates to improvements in a means of producing tubular or hollow bodies.

The object of the invention is to provide a simple, effective and durable means for producing seamless, hollow bodies, and for giving to said bodies externally and internally any desired cross-sectional shape.

In the accompanying drawings, Figure 1 is a longitudinal vertical section, conventionally illustrating my invention and such parts of the machine as will be necessary to a complete understanding of the same; Fig. 2 is a similar view showing the parts in a position in which they appear while the process of making the hollow body is going on.

1 represents a container of suitable construction and of sufficient strength to withstand severe pressures. Through the container is a bore.

2 is a die arranged at the outlet end of the bore. The passage through this die may be of any desired outline.

3 is a plunger operated by any suitable mechanism capable of forcing the same ahead with a powerful pressure.

4 is a mandrel arranged in front of the plunger 3.

5 is what I term a "dummy," the same being adapted in size to the bore of the container 1 and capable of being moved longitudinally therein. The mandrel 4 passes through the dummy 5, the latter serving to guide and center said mandrel during the entire process. The mandrel may have, at its rear, a head 6 arranged to make a suitable connection with the plunger 3, but preferably not permanently connected therewith.

7 represents a billet of hot metal contained within the bore of the container 1 and between the dummy and the die 2.

In operation the mandrel is advanced through the bore of the dummy 5. As it is forced ahead it pierces and displaces the metal of the billet until finally said mandrel enters the space within the die 2. At or

about such time the head 6 reaches the dummy 5. As the plunger continues to advance under the powerful pressure from behind, the dummy 5 is also advanced, forcing the metal of the billet 7 forwardly. Since its only outlet is through the space between the mandrel 4 and the die 2, this hot metal thus extruded necessarily follows that course and takes a cross section both externally and internally corresponding to the outlet of the die 2 and mandrel 4, respectively. This pressure may be continued until the metal of the billet 7 is forced entirely from the container 1. The product emerging from the die 2 will, as above indicated, assume and retain a cross-sectional shape, depending upon the outline of the die 2 and mandrel 4, either of which latter may be varied, as desired, to give the cross section sought.

During the piercing of the billet by the mandrel and the displacement of the metal incidentally thereto, a certain small portion of the same may possibly be advanced through the die opening, but during this operation and before the end of the mandrel enters the die, the displacement of the metal of the billet may also be in a rearwardly direction, the dummy 5 receding until such a time as it may be engaged by the head 6. Since this occurs at approximately the time that the end of the mandrel 4 enters die 2, it follows that from then on the only outlet for the metal will be through the die and all the metal subsequently displaced will assume a cross section, depending upon the outline of said die and mandrel.

What I claim is:

1. In a machine for producing hollow tubular bodies, a container having a bore therein, a die carried by said container in line with said bore, a mandrel, and means for forcing said mandrel into said bore through said die, and a loosely mounted dummy slidable in said bore and arranged to receive and guide said mandrel and a shoulder on one of said parts arranged to force said dummy forwardly with said mandrel when said shoulder engages said dummy.

2. In a machine of the character described, a container having a bore therethrough, a die arranged in line with said bore, a mandrel arranged in line with said die, a loosely mounted dummy slidable on the mandrel, a power-driven plunger carrying said man-

drel, and a head arranged to fit said bore and behind said mandrel said mandrel and dummy being both forced forwardly by said plunger at a certain time.

5 3. In a machine of the character described, a container having a bore therethrough, a die in line with said bore at the outlet end, a power-driven plunger, a mandrel arranged to coöperate with said die, and a head on
10 the mandrel arranged to fit said bore and a dummy making a sliding fit on said mandrel and in said bore, said plunger advancing both mandrel and dummy.

15 4. In a machine of the character described, a container having a bore therethrough, a

die at the outlet end of said bore having a passage of suitable outline, a mandrel of suitable cross-sectional outline, a power-driven plunger coöperating with said mandrel to force the same through the bore of
20 said container, and a dummy slidably mounted in said bore and on said mandrel, and an abutment on said mandrel arranged to engage said dummy whereby said mandrel and dummy will advance simultaneously at
25 certain times.

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