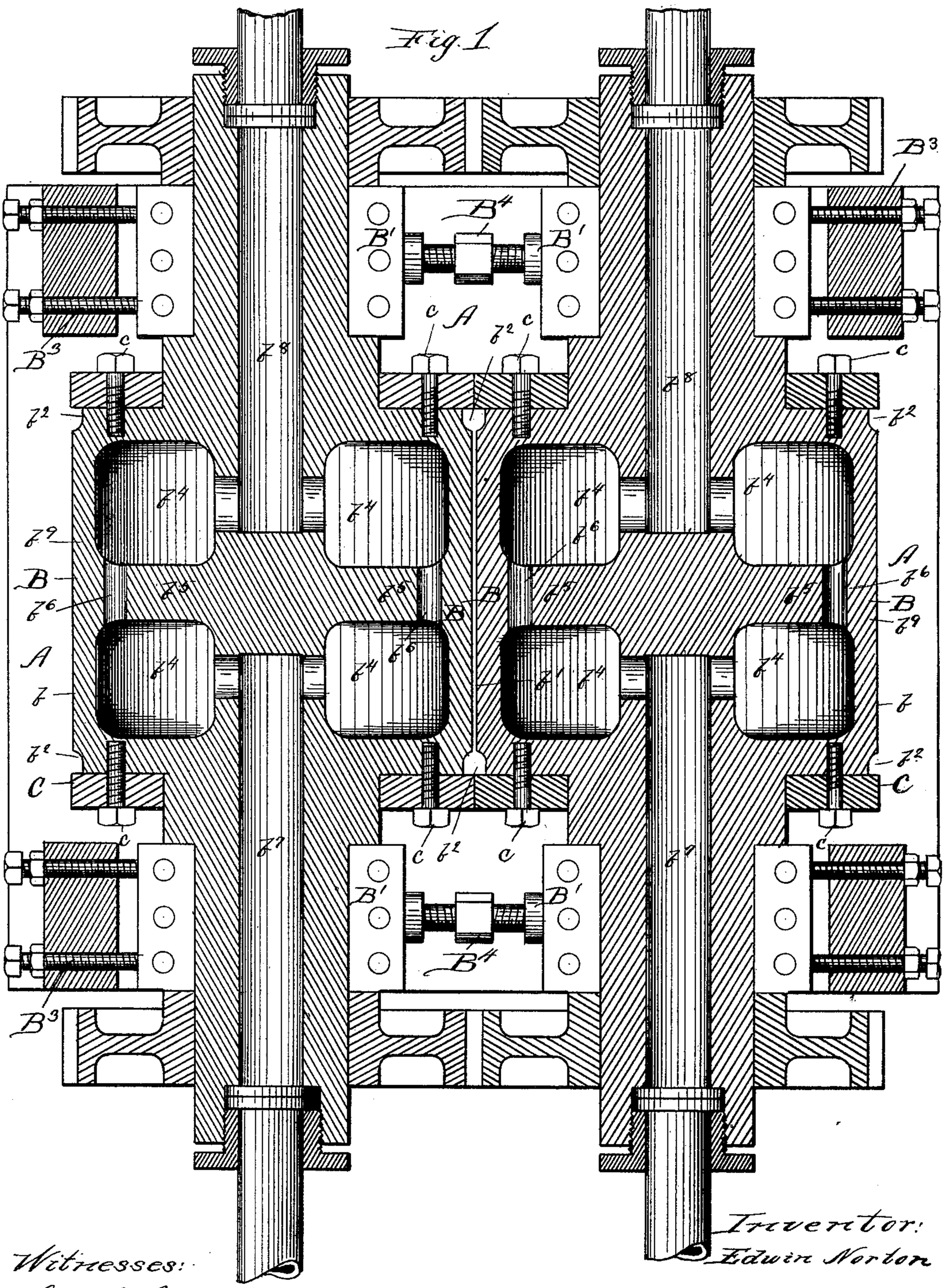
(No Model.) 2 Sheets—Sheet 1.

E. NORTON.

APPARATUS FOR ROLLING SHEET METAL FROM FLUID METAL.

No. 406,947. Patented July 16, 1889.

Fig. 1



Witnesses:
Lew. E. Curtis.
Mack a. Claflin

Inventor:
Edwin Norton
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His Attorneys.

(No Model.) 2 Sheets—Sheet 2.

E. NORTON.

APPARATUS FOR ROLLING SHEET METAL FROM FLUID METAL.

No. 406,947. Patented July 16, 1889.

Fig. 2.

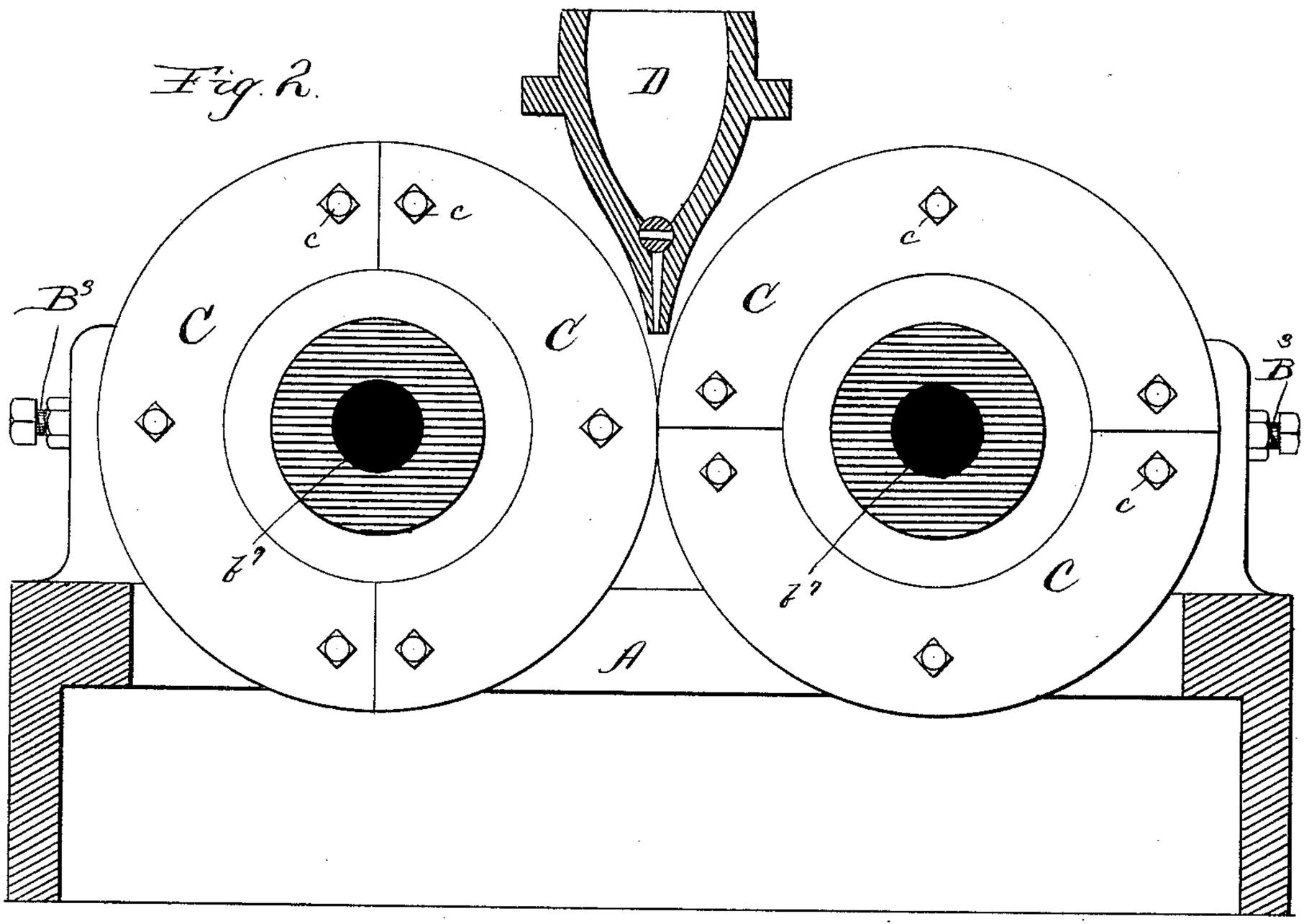


Fig. 3.

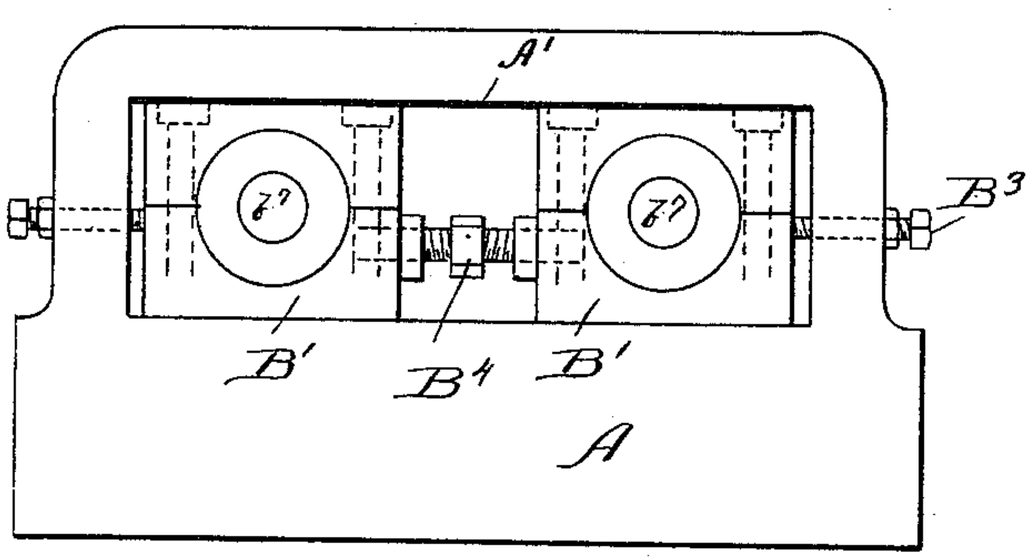
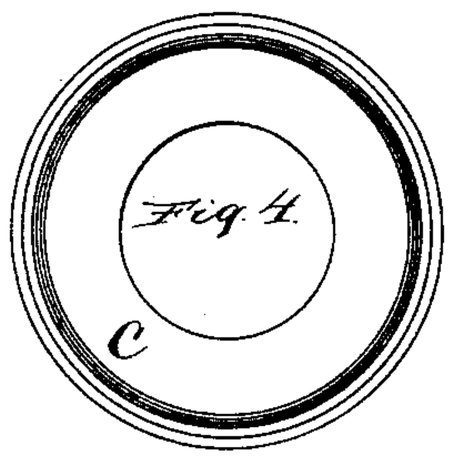


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWIN NORTON, OF MAYWOOD, ASSIGNOR TO HIMSELF, AND OLIVER W. NORTON, OF CHICAGO, ILLINOIS.

APPARATUS FOR ROLLING SHEET METAL FROM FLUID METAL.

SPECIFICATION forming part of Letters Patent No. 406,947, dated July 16, 1889.

Application filed May 9, 1889. Serial No. 310,109. (No model.)

To all whom it may concern:

Be it known that I, EDWIN NORTON, a citizen of the United States, residing in Maywood, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Apparatus for Rolling Sheet-Metal Plates from Fluid Metal, of which the following is a specification.

My invention relates to improvements in apparatus for rolling sheet-metal plates from fluid metal, and more particularly to improvements upon the apparatus shown and described in Patent No. 382,321 of May 8, 1888, and that shown and described in the application of myself and John G. Hodgson, Serial No. 306,206, filed April 6, 1889. In the machine shown in said last-mentioned application the revolving rolls between which the stream of molten metal is poured and by which it is set and rolled or converted into a strip of sheet or plate metal are furnished with stop collars or flanges which roll together, and thus regulate the distance between the working-faces of the rolls and the consequent thickness of the sheet metal produced. In such machines, however, these stop collars or flanges are non-adjustable and irremovable, and it is necessary to employ a separate and distinct pair of rolls for each different thickness of sheet or plate produced.

The object of the present improvement is to so construct the mill or machine that the same rolls may be used for making metal plates of different thicknesses, while at the same time the rolls are provided with rigid stops to positively limit or govern the thickness of the plate produced.

To this end my invention consists in providing the rolls with removable or adjustable stop collars or flanges which roll together to limit the thickness of the sheet produced, so that the rolls may be adjusted to produce a plate of less or greater thickness by simply removing the stop-collars and replacing them by others of a greater or less thickness. By thus providing the rolls with a series of stop-collars of varying thicknesses the same mill is adapted to produce plates of any thickness desired.

Another feature of my improvement consists in providing the rolls with a central transverse supporting-web having openings through it for the passage of the water, and which thus serves not only for deflecting the water, so as to cause it to pass to the periphery of the wheel in its course through the roll, but also to support and strengthen the peripheral wall of the roll, which is very desirable, especially in making wide sheets. In making very wide sheets or plates of metal a greater number than one of these central supporting and water-deflecting webs may be employed.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a central horizontal section through the axis of the rolls of a mill embodying my invention. Fig. 2 is a vertical section on line 2 2 of Fig. 1. Fig. 3 is a detail elevation showing the box for the rolls and means for adjusting the same, and Fig. 4 shows a series of the removable stop-collars suitable for making a variety of different thicknesses of plate.

In the drawings, A represents the frame of the machine, which may be of any suitable form or construction.

B B are the two revolving rolls between which the fluid metal is poured from the bowl or pouring-vessel D.

C C are the removable stop-collars, secured to the rolls B upon each side of the working-faces *b b* of the rolls. These stop-collars roll together and limit the distance of space *b'* between the rolls. The annular grooves b^2 between the stop-collars C and the working-faces *b* of the roll are designed to afford room for escape of any excess of metal due to any irregularity in the rate of pouring the fluid metal from the vessel D.

The removable collars C are each preferably made in two or more segmental parts. They may be secured removably to the rolls B by any suitable means, preferably by screws or bolts *c* entering the end faces of the rolls B. The boxes or bearings B' of the rolls slide in ways A' on the frame of the machine and are adjusted by screws B^3 B^4. The screws B^4 between the box have right and left threads.

The rolls B are made hollow to permit the water to circulate through them to keep the rolls cool or at the proper temperature for setting the fluid metal. The hollow space in the interior of the rolls is divided into two or more parts b^4 b^4 by one or more central supporting-webs b^5, having openings or passages b^6 for the water to pass through. The web b^5 serves not only to deflect the water to the periphery of the roll as it enters through the passage b^7 in the hollow shaft, but also serves to support the peripheral wall b^9 of the roll. The water passes out centrally through the passage b^8 in the hollow shaft, thus circulating from the center of the roll to the periphery and from the periphery back to the center.

In describing my present improvement I have not considered it necessary to describe the entire apparatus to which my improvement is applied, as the construction of that is now well known to those skilled in the art, and is fully shown and described in the patent before mentioned, to which reference is hereby made, as well as to the patent to be granted upon the application before mentioned, Serial No. 306,206.

I claim—

1. In an apparatus for rolling fluid metal, the combination, with the revolving chilling-rolls B B, of removable and interchangeable stop-collars to govern the space between the rolls, whereby the same rolls are adapted to produce metal of different thicknesses, substantially as specified.

2. The revolving chilling-rolls B B, furnished with removable segmental stop-collars C C, substantially as specified.

3. The revolving chilling-rolls B B, in combination with a pouring-vessel D, said rolls being mounted in adjustable bearings and furnished with removable stop-collars C C, substantially as specified.

4. In an apparatus for rolling fluid metal, the hollow chilling-rolls B B, having a central web with water-passages through the same for deflecting water and supporting the peripheral wall of the rolls, substantially as specified.

5. In an apparatus for rolling fluid metal, revolving chilling-rolls B B, having a hollow space in the interior thereof, divided into two or more compartments by a central web, said web having openings through the same for the passage of the water, and said rolls having hollow shafts for the entry and exit of the water, substantially as specified.

EDWIN NORTON.

Witnesses:
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