

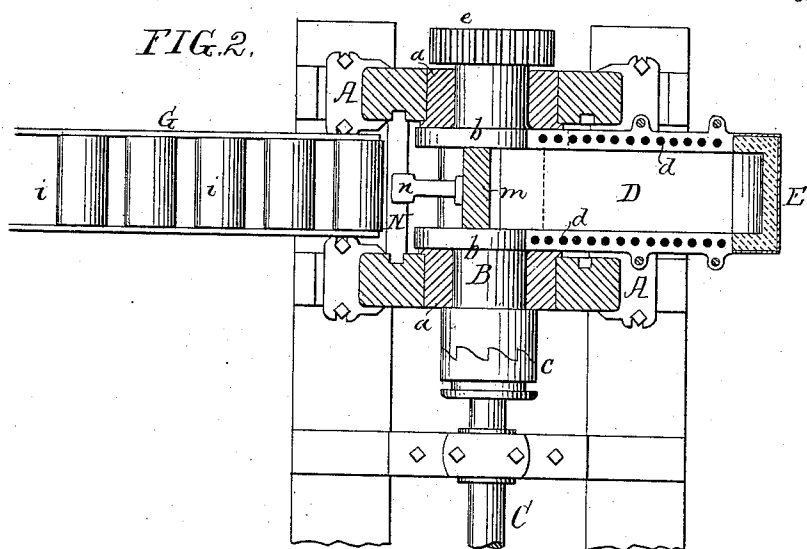
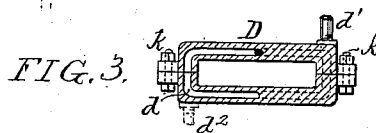
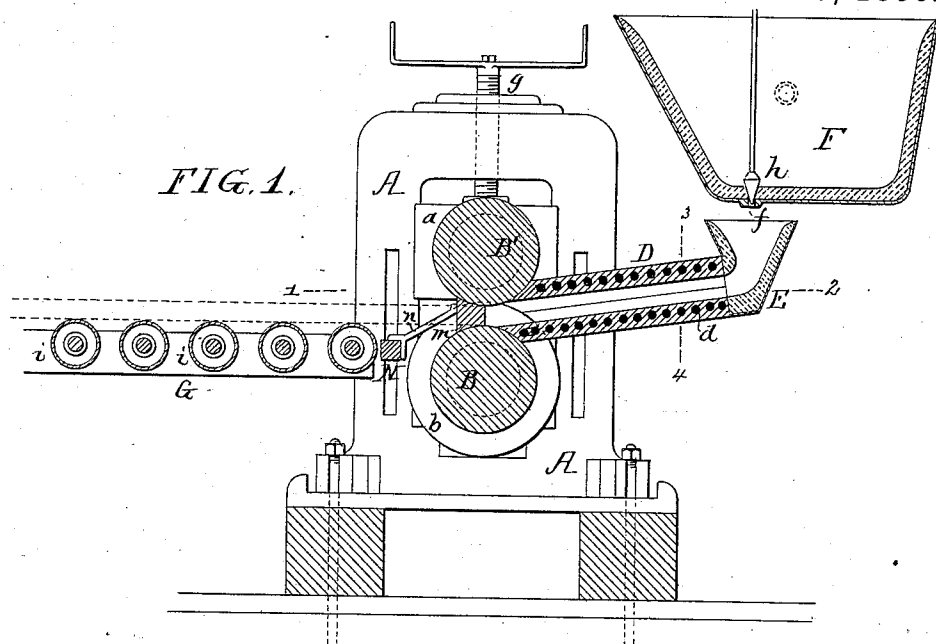
(No Model.)

G. BROOKE.

MACHINE FOR ROLLING MELTED METAL.

No. 379,096.

Patented Mar. 6, 1888.



Witnesses
David L. Williams
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UNITED STATES PATENT OFFICE.

GEORGE BROOKE, OF BIRDSBOROUGH, PENNSYLVANIA.

MACHINE FOR ROLLING MELTED METAL.

SPECIFICATION forming part of Letters Patent No. 379,096, dated March 6, 1888.

Application filed August 26, 1887. Serial No. 248,085. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BROOKE, a citizen of the United States, residing in Birdsborough, Berks county, Pennsylvania, have invented certain Improved Apparatus for Rolling Molten Metal, of which the following is a specification.

The object of my invention is to roll ingots, slabs, bars, or rods continuously from fluid metal, as more fully described hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a transverse section of the rolls and mechanism connected therewith in carrying out my invention. Fig. 2 is a section plan on the line 1 2, Fig. 1; and Fig. 3 is a transverse section on the line 3 4, Fig. 1, of the chilling-mold.

A A are the housings of the rolls, to which are adapted the bearing-blocks *a*, carrying the lower and the upper rolls, B B'. The upper roll is adjusted to and from the lower roll by means of the set-screws *g*, Fig. 1, as usual.

In the present instance I drive the roll through the medium of the shaft C from any suitable driving-engine and couple the shaft to the roll through the medium of the clutch *c*, and the upper roll, B', is geared to the lower roll, B, by suitable gear-wheel, *e e*; but it will be understood that the upper roll may be driven directly and the lower roll indirectly, as circumstances permit.

Extending from one side of the rolls, and supported preferably on the housings, is a molding-chamber, D, having a water-jacket, composed in the present instance of pipes *d*, formed in the casing of the chamber; but this molding-chamber may be cooled by having water or other cooling material placed in or around it, or sprinkled upon it, as circumstances may require. This molding-chamber is made by preference of soft cast steel or iron, and is reduced, as shown in Fig. 1, at its inner end, to fit snugly against the upper and lower rolls, B B'. A receiving-hopper, E, made of sheet-iron and lined with refractory loam, is attached to the outer end of the molding-chamber D and receives the molten metal from the ladle F, which is swung on a crane, as usual, so that its outlet *f* will be directly over the hopper E. This opening has a suit-

able regulating-valve, *h*, of the ordinary construction used in this class of ladles.

The lower roller, B, has two flanges or collars, *b b*, which extend slightly above the lower periphery of the upper roll, so that the chamber is formed between the rolls of the configuration of the ingot, slab, or bar to be rolled. In the present instance the chamber is rectangular in shape and corresponds with the shape of the molding-chamber D.

I do not confine myself to this form of roll, but may use them without flanges and of proper form to roll other shapes of slabs and bars.

G is the ordinary carrying-table, having the usual anti-friction rollers, *i*, on which the rolled bar or slab is carried from the mill. Fitting accurately in the recess formed by the flanges *b* is a plug, *m*, conforming to the shape of the rolls B B'. This plug is held in the present instance by a prop, *n*, bearing against a cross-bar, N, secured to the housings, as shown in Fig. 1.

I prefer to make the molding-chamber in two parts, as shown in Fig. 3, and bolt them together by bolts *k k*. The water-pipe *d* is coiled and has a suitable inlet-pipe, *d'*, and outlet-pipe *d''*; but I do not confine myself to this form of molding-chamber, as it may be made with one or more parts and cooled in other ways, as above named.

The operation is as follows: The rolls are set so that the space between the upper and lower rolls is a trifle less than the height of the molding chamber, and the molding-chamber placed at the proper angle for pouring, as it will be found that more or less degree of inclination is required, according to the class of metal used. The plug *m* is placed in position, as shown in Fig. 1. The ladle F is then filled with metal and placed so that the outlet will be directly over the hopper E. The valve *h* is then raised, allowing the molten metal to flow into the hopper E and into the molding-chamber D, and, owing to the plug, the molten metal will in time fill the molding-chamber D, and then when the metal is sufficiently set the plug is removed and the rolls set in motion, drawing the metal from the molding-chamber at such a speed that as fresh metal is introduced into the chamber it will have time to become the right consistency for rolling, so that a

continuous bar of metal will be rolled without the necessity of first casting the metal in ingots, then heating and rolling, as is the common plan now.

5 It must be understood that the molding-chamber D may be lengthened or shortened, as circumstances require, so that the metal will have the right consistency for rolling. If the rolls do not grip the metal at once, the
10 upper roll may be adjusted so as to place more pressure upon the metal; and it will be understood, also, that the ingots or bars may be rolled any shape required, this depending upon the shape of the rolls and molding-
15 chamber.

By having the rolls vertically one above the other and having the molding-chamber D at one side I am enabled to provide for the proper feeding of the metal to the rolls, thus
20 obtaining the consistency required for rolling.

I claim as my invention—

1. The combination of the pair of rolls with an inclined molding-chamber situated at one side of the rolls, and mechanism for
25 driving the rolls, substantially as described.

2. The combination of the rolls and a mold-

ing-chamber and the plug M, substantially as and for the purpose set forth.

3. The combination of the pair of rolls, the molding-chamber, a water-jacket therefor, and
30 a hopper connected therewith, substantially as described.

4. The combination of the pair of rolls, one of the rolls provided with flanges overlapping the other roll, with a molding-chamber of a
35 diameter corresponding to the chamber formed by the upper and lower rolls, substantially as described.

5. The combination of the molding-chamber with the hopper detachably secured to
40 the said chamber, substantially as described.

6. The molding-chamber made in two or more parts and clamped together and provided with a water-jacket, substantially as described.
45

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

GEORGE BROOKE.

Witnesses:

JOHN T. LEWIS,
HENRY HOWSON.