

(No Model.)

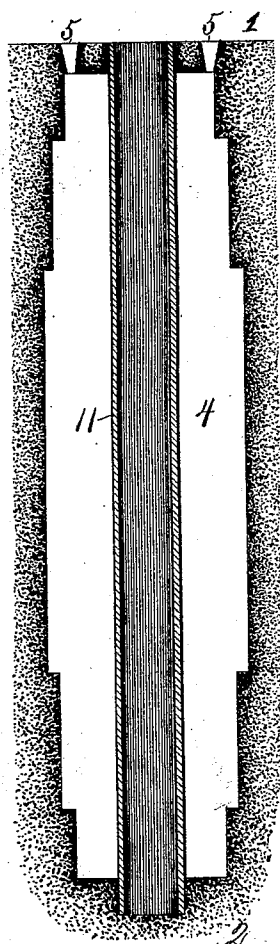
2 Sheets—Sheet 1.

W. E. HARRIS.
ROLL FOR METAL ROLLING.

No. 517,747.

Patented Apr. 3, 1894.

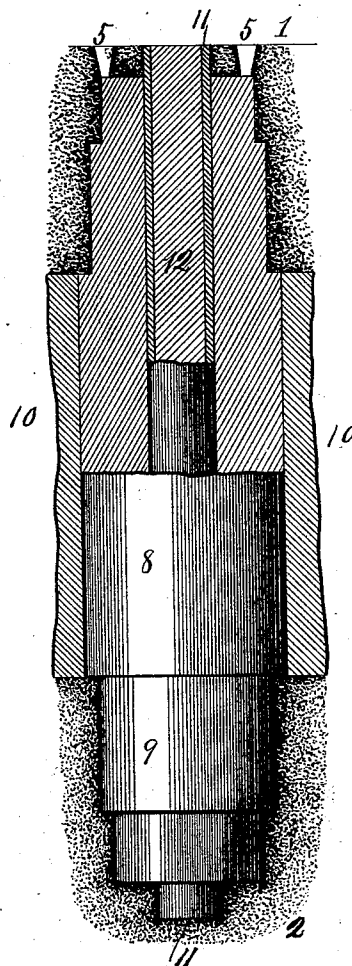
Fig. I.



Attest;

Albert M. Ebersole
E. Knight

Fig. II.



Inventor;

Wm E. Harris
By Knight Bros.
Attys.

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Fig. III.

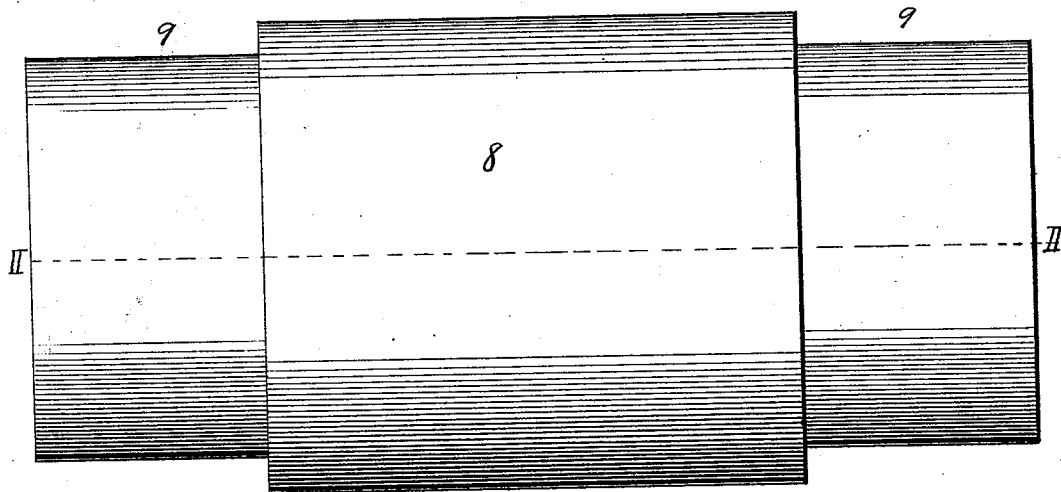
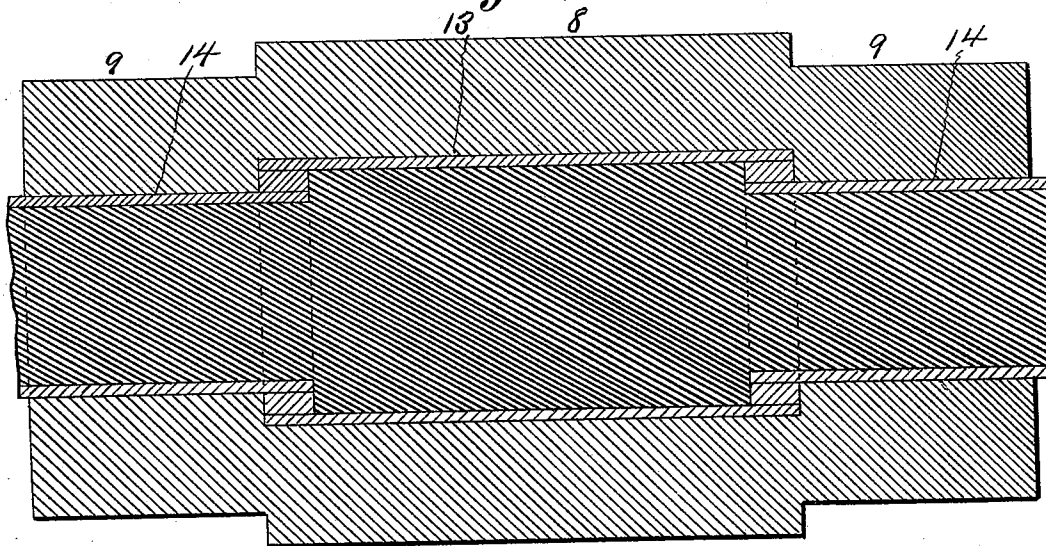


Fig. IV.



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UNITED STATES PATENT OFFICE.

WILLIAM E. HARRIS, OF NILES, OHIO.

ROLL FOR METAL-ROLLING.

SPECIFICATION forming part of Letters Patent No. 517,747, dated April 3, 1894.

Application filed February 8, 1893. Serial No. 461,416. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HARRIS, of Niles, in the county of Trumbull and State of Ohio, have invented a certain new and useful
5 Improvement in Rolls for Metal-Rolling, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 My invention relates to an improved roll for metal rolling.

My invention consists in features of novelty hereinafter fully described and pointed out in the claim.

15 Figure I is a vertical, longitudinal section, taken through the center of the mold and tube. Fig. II is a central, longitudinal section through the mold and chill, the roll being shown part in section and part in elevation.

20 Fig. III is a plan view of a finished roll and illustrates a modification. Fig. IV is a longitudinal section, taken on line II—II, Fig. III.

Referring to the drawings, 1 represents the top, and 2 the bottom of the sand mold, and 4
25 the space within the mold. 5 represents a gate through which the metal is poured.

11 represents a tube within which a steel center 12 is formed.

The mold is set on end, and the steel or iron
30 tube 11, after being heated, is placed within the center of the mold, one end of which is allowed to rest in the bottom 2 of the mold, and the other end to project up and through the top 1 of the mold, which affords easy access to pour molten metal in the tube, at the
35 same time that the molten cast iron is poured through the gate 5 into the mold to form the outer shell of the roll. The metal is poured until the tube and mold are full, which will
40 give a full sized roll.

If I wish to produce a roll twenty-four inches in diameter, I take a tube say eight inches in diameter, and fill it with steel, and

cast all around it eight inches of cast iron, which will give, as will readily be seen, a solid
45 roll much stronger, less liable to crack, than if all made of cast iron twenty-four inches in diameter, or the size desired. A roll thus formed possesses great strength, while having all the advantages of an ordinary roll. 50

In Fig. II I have shown one means by which the face of roll may be chilled. In this figure 8 represents the body of the roll, 9 offsets or steps which form the journals of the roll. The journals I prefer to have cast in
55 sand, for the reason that if their diameter need be reduced, it can be readily accomplished by turning them down to the desired diameter, whereas if they were cast within a
60 chill, the diameter would necessarily have to remain as cast. 10 represents an outer ring or chill, made the length of the face part 8 of the roll, whatever length said face may be.

In Fig. IV I have shown a modification of the internal tube, in which 13 represents a
65 tube equal in length to the body of the roll and of greater diameter than the tube 14 within the journal.

It is quite obvious that the difference in the diameters of the tubes is to equalize the difference in the shrinkage of the metals. 70

I am aware that it is not broadly new to construct a composite roll of cast-iron and cast-steel, but I am not aware that such a composite roll of the construction set forth in my
75 claim has ever before been known or used.

I claim as my invention—

A roll comprising a steel core, a cast iron body and journals, and a tube extending the length of the roll between the body and the
80 journals, and the core; substantially as described.

WILLIAM E. HARRIS.

In presence of—

A. W. HARRIS,
J. H. HUNTER.