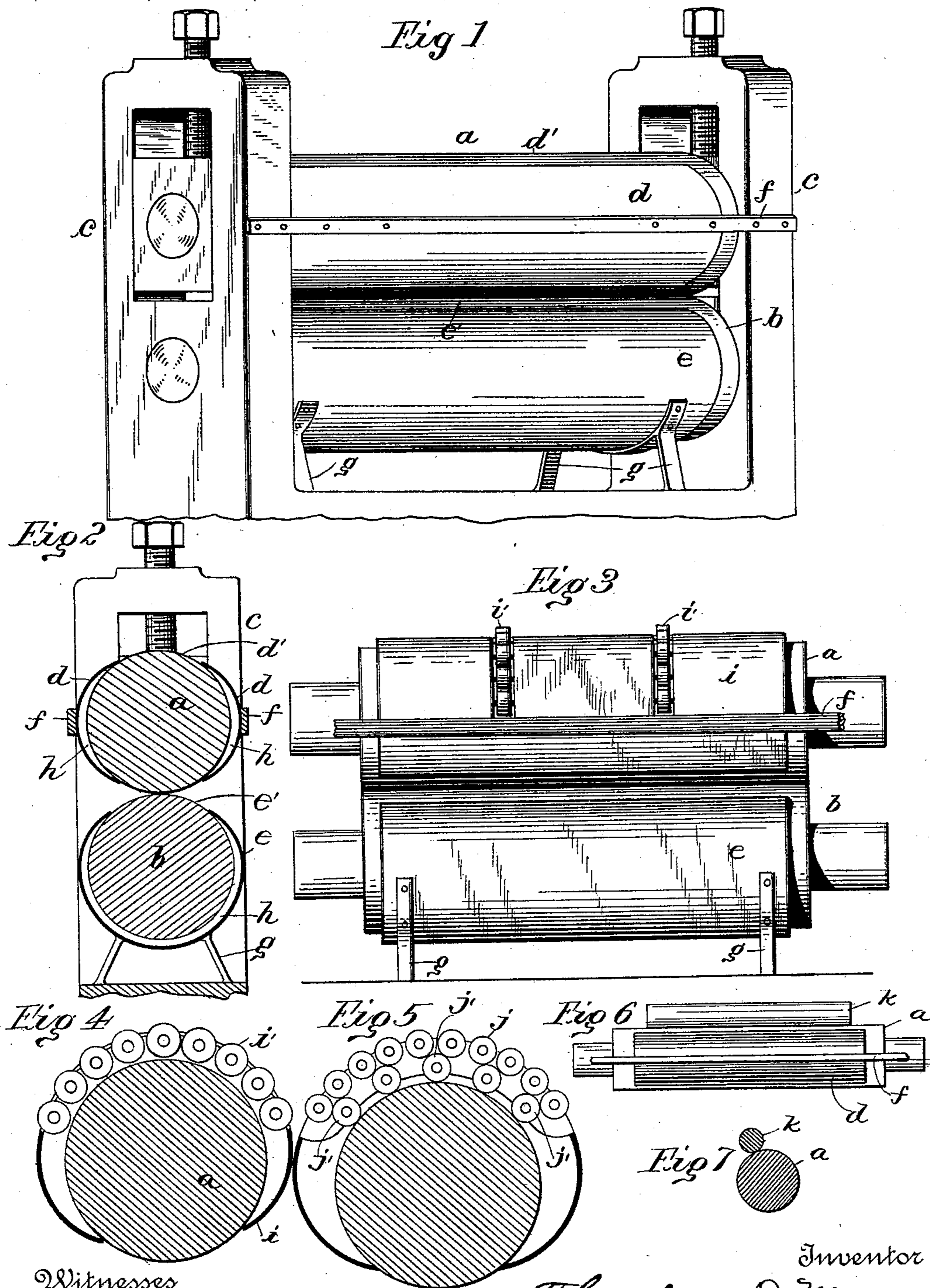


(No Model.)

T. D. MORGAN.
SHIELD FOR METAL ROLLS.

No. 500,345.

Patented June 27, 1893.



Witnesses

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UNITED STATES PATENT OFFICE.

THEOPHILUS D. MORGAN, OF NEW PHILADELPHIA, ASSIGNOR OF ONE-HALF
TO JOHN ASHTON, OF CANAL DOVER, OHIO.

SHIELD FOR METAL-ROLLS.

SPECIFICATION forming part of Letters Patent No. 500,345, dated June 27, 1893.

Application filed January 10, 1893. Serial No. 457,912. (No model.)

To all whom it may concern:

Be it known that I, THEOPHILUS D. MORGAN, a citizen of the United States, residing at New Philadelphia, in the county of Tuscarawas and State of Ohio, have invented certain new and useful Improvements in Shields for Metal-Rolls; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to an improvement in metal rolling machines, and it consists of an improved shield for application to the rolls of such machines by which a nearly uniform temperature of the rolls is maintained, and sudden cooling and consequent injurious cracking and breaking prevented.

It is well known that in rolling out sheets of metal it is necessary to keep the rolls heated to a high temperature and that when the rolling operation is temporarily suspended the rolls are allowed to cool off. This alternate heating and cooling is continued during the entire life of the rolling machine and results in, first: the cracking of the chilled surface of the roll, and finally in its complete disintegration along the line of such cracks which form a net work over the entire surface of the roll. To avoid these destructive results is therefore the object of my invention. This object I attain by means of a shield, of any suitable material, embracing those parts of the roll that are exposed to the cooling action of the atmosphere. These means I will now describe in detail, reference being had to the accompanying drawings, in which—

Figure 1, represents a perspective view of the rolls of an ordinary metal rolling machine having my improvements applied. Fig. 2, a cross section thereof, and Figs. 3, 4, 5, 6 and 7 views of various modifications.

The reference letters *a* and *b* indicate the co-operating rolls of the machine to which my improvements are applied, journaled in the housings *c*, as usual. These rolls have applied thereto the shields *d* and *e* which may

be formed of any preferred material, no particular kind being essential. Sheet metal, asbestos cloth, metal plates covered with earth, or fire brick, are however preferred. These shields may be secured to the roll housings by any practical means, those shown in Figs. 1 and 2 being preferred. In these views the shield *d* is formed in two sections, one on each side of the rolls, leaving a space *d'* on the top exposed, and held in place by the rod *f*, extending parallel with the rolls and secured to the housing *c*, at each end. The shield *e* is in but one section, and extends entirely around the roll *b*, leaving a small opening *e'* to allow the roll to engage with its companion. This shield is held in place by the legs *g*, which are secured at their lower ends to the base of the machine.

By reference to Fig. 2 it will be seen that a slight air space *h* is left between the shield and the periphery of the roll at the middle of the shield, but that the ends curve inwardly and engage at their points the surface of the rolls. As the air is a non-conductor of heat, it follows that the heat of the rolls will be retained and cold drafts of air prevented from coming in contact with them, which is invariably followed by the destructive results above referred to.

The space *d'* is left in the shields *d* to facilitate the return of the metal undergoing the rolling operation. It is the custom in manipulating machines of this class to effect the return of the work for re-rolling by allowing it to be fed back upon the top of the upper roll. To do this the space referred to before, will have to be left.

The object of the modifications shown in Figs. 3, 4, 5, 6, and 7 is to cover the roll entirely and provide means for the return of the metal. To this end the device shown in Figs. 3 and 4 consists of the shield *e*, as in Figs. 1 and 2, but shield *d* is substituted by shield *i* which extends over the entire surface of roll *a*, and is provided with two lines of rollers *i'*, journaled in the shield. Upon these rollers or wheels the work to be returned is placed, whereupon it can be easily pushed or pulled back to the attendant.

Fig. 5, illustrates a detail view of the top

shield formed in a continuous piece, and provided with rollers *j* for automatically returning the work. These rollers are journaled in the shield and engage with the adjunctive rollers *j'*, which in turn engage the main roller. By this means the rollers *j* are operated and the work returned automatically.

Figs. 6 and 7, show a contrivance for returning the work automatically, and it consists of an auxiliary roll *k* in such juxtaposition to the main top roll, that when the work is pushed between the said top roll and the roll *k*, it will be fed back to the attendant.

It is evident that the form of the shield herein disclosed could be varied indefinitely. Therefore, I wish it understood that it is not my purpose to claim any particular form to the

exclusion of all others, but that I consider myself entitled to all variations of my invention as may be within its true spirit and scope. 20

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination with the rolls of a metal-rolling machine, of a shield adapted to cover or partially cover each of the said rolls, the top roll shield having an opening whereby the upper portion of the roll is exposed. 25

In testimony whereof I affix my signature in presence of two witnesses.

THEOPHILUS D. MORGAN.

Witnesses:

JOHN S. GRAHAM,

LAWRENCE KELLY.