S. R. WILMOT.

Apparatus for Rolling Metallic Strips, or Ribbons.

No. 162,732. Patented April 27, 1875.

Fig. 1.

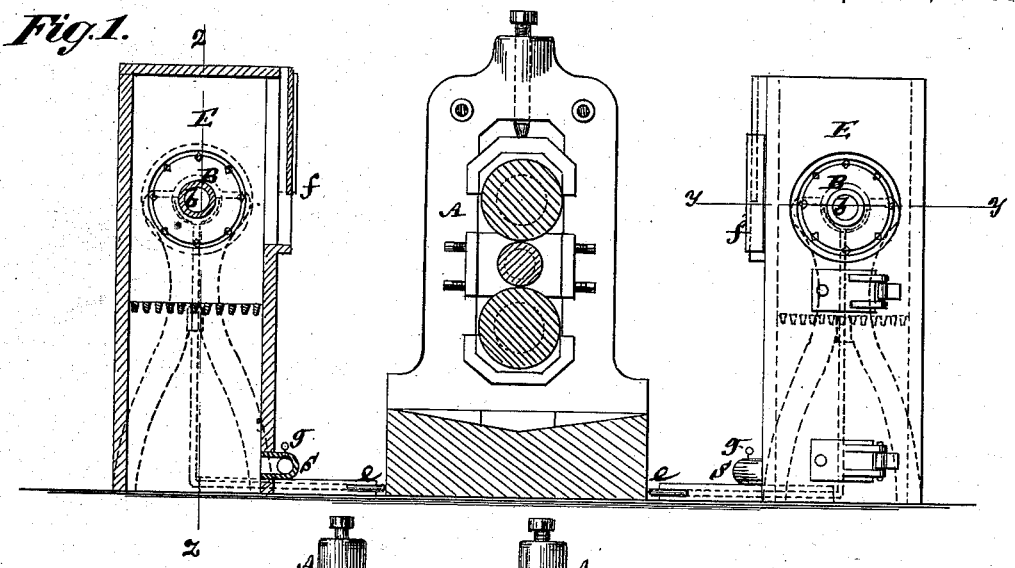


Fig. 3.

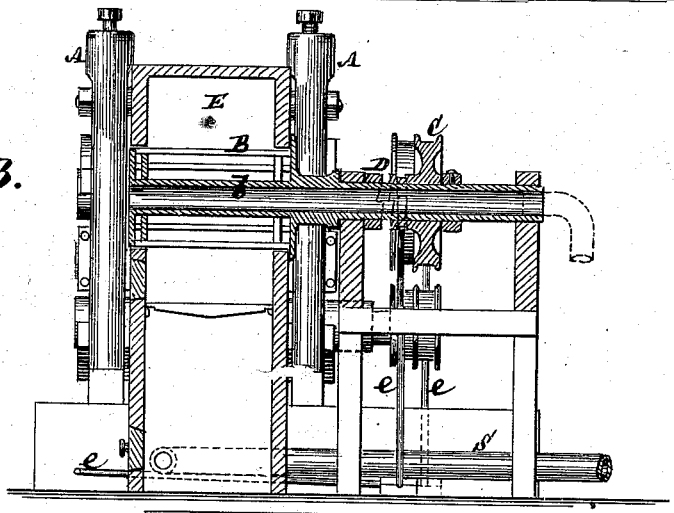
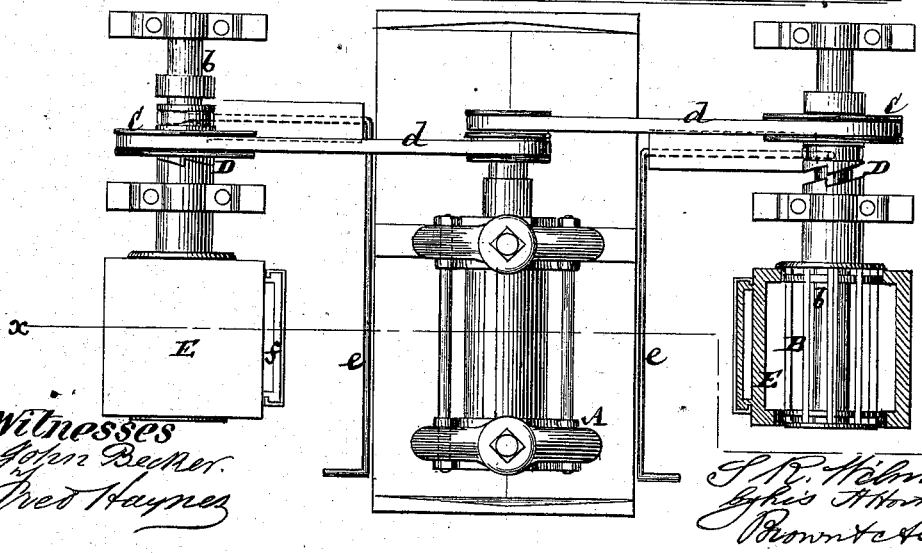


Fig. 2.



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UNITED STATES PATENT OFFICE.

SAMUEL R. WILMOT, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN APPARATUS FOR ROLLING METALLIC STRIPS OR RIBBONS.

Specification forming part of Letters Patent No. **162,732**, dated April 27, 1875; application filed March 17, 1875.

To all whom it may concern:

Be it known that I, SAMUEL R. WILMOT, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Apparatus for Rolling Metal; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 is a partial sectional elevation, taken as denoted by the line *x x*, of an apparatus embodying my invention. Fig. 2 is a plan, in partial section, as indicated by the line *y y;* and Fig. 3 a transverse vertical section on the line *z z*.

This invention relates to the rolling of long iron or other metal plates or strips which require to be rolled hot. By the means heretofore employed, while thin iron plates of a short length have been produced by bunch rolling and narrow thin iron or strips rolled longer without bunching, it has been impracticable to separately roll plates or strips of a given gage beyond a comparatively limited length, say, forty feet, or thereabout, for plates or strips of what is known as "fourteen-gage." This difficulty has been due to the non-retention of heat in the plate or strip a sufficient length of time while undergoing the necessary and continuous rolling. My invention has for its object the rolling of much longer plates or strips in a continuous manner, and by it I am enabled to do the work with a less number of hands than is customary in rolling iron or other like metal plates or sheets. To these ends I bring the hot metal plates or strips in the shape of a coil to the rolling apparatus, and take them up in the same form for further passage through the rolls, thus retaining the heat by the folds of the coils lying one upon the other and keeping each other hot. Thus I combine with a rolling-mill reels which alternately give and take on opposite sides of the rolls, and to and from which the metal plate or strip is alternately coiled and uncoiled to pass and repass it through the rolls. Furthermore, when necessary, I arrange these reels in furnaces or heat-conserving chambers to further or more perfectly retain the heat of the metal coiled on or being uncoiled from the reels. Such are the leading features of my invention, but there are details of construction, including the attachment of a blower for preventing the overheating of the shafts of the reels, and a novel construction of the reels to facilitate putting on and taking off the coils, which it is my intention to make the subject of one or more future applications for patent.

A represents a three-high set of rolls, such description of mill, though not absolutely essential, being preferable to any other. B B are two reels, arranged on opposite sides of the mill, and made to both give and take—that is to say, each reel alternately paying out while the other is taking up. To this end the shafts *b b* of the reels, which may be made hollow for the purpose of cooling them, and for preventing the overheating of their bearings, have the pulleys C C, which drive them, and which are operated by bands *d d* from the mill or otherwise, fitted loose, and so that they may be thrown in or out of gear by clutches D D with the reels or shaft extensions thereof. Any suitable clutch mechanism *e e* may be used to operate the clutches, but it is preferred to arrange said mechanism so that it may be controlled by foot of the workman employed to pass the metal from either reel to the rolls, or from the latter to either reel.

Generally three men will suffice to control the entire operation, namely, one man at the muffle in which the metal or coil is heated, and one man in proximity to each reel, thus largely diminishing the number of hands usually employed in such work. The coil to be rolled is slipped on or over the free or outer end of either one of the reels B B, through, when the reel is cased in, an opening in the casing, or otherwise, said reel being thrown out of gear. The end of the hot coil is then transferred to the rolls by the man in charge on that side of the mill, he using for the purpose a pair of tongs. As the iron running from the loose rail passes through the rolls it is caught at its end, by the hand in charge of the other side of the rolls, in a funnel-shaped receiver, and thereby transferred to the other reel B, which is thrown into gear with its driving-pulley C to make it act as a take-up; and, afterward, by throwing out of gear the

last-named reel and putting into gear the first one referred to, the plate or strip is again passed through the rolls, only the giving and taking actions or coiling or uncoiling of the respective reels being reversed. This operation may be continued or repeated indefinitely, or at least so long as the metal retains its heat and is capable of attenuation.

While the arrangement of the metal in a coiled form on the reels tends largely to preserve the heat in it, so as to admit of the prolonged rolling of it, as described, such heat may be still more fully or perfectly retained by placing the reels B B in heat-conserving chambers or casings E E, which are here represented as furnaces, that may be made of iron lined with fire-brick, and which may be provided with slides or doors *f f* to allow of the metal being rolled, passing through openings in said casings onto and from the reels, respectively. These heat-conserving casings, when constructed as furnaces, may be fitted with blast-pipes S, having dampers *g*, arranged to be conveniently controlled by the men engaged in passing the metal to and from the rolls.

In the operation as described it will be observed that the rolls are idle but for very short intervals, and that these intervals are very far apart. This, in itself, constitutes no small advantage.

I claim—

1. The combination of a rolling-mill and reels on opposite sides thereof, constructed to give and take alternately, substantially as and for the purpose herein set forth.

2. The heat conserving casings or furnaces E E and reels B B, constructed to give and take alternately, arranged therein, in combination with an interposed rolling-mill, substantially as and for the purposes specified.

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