(No Model.)

R. BROWN.

PROCESS OF DRESSING ROLLS.

No. 326,263. Patented Sept. 15, 1885.

Fig. 1.

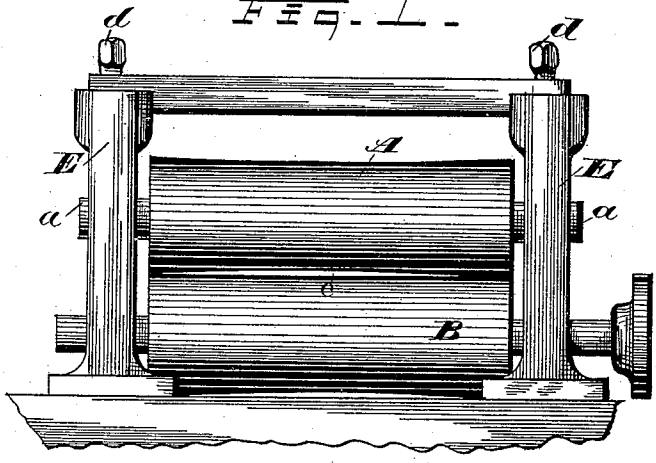


Fig. 2.

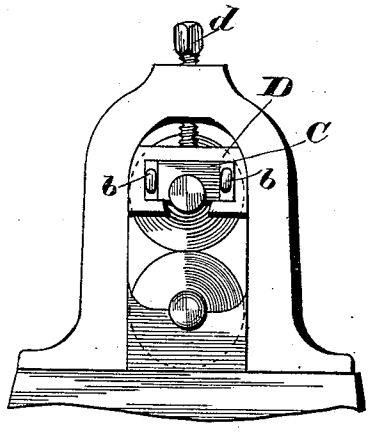


Fig. 3.

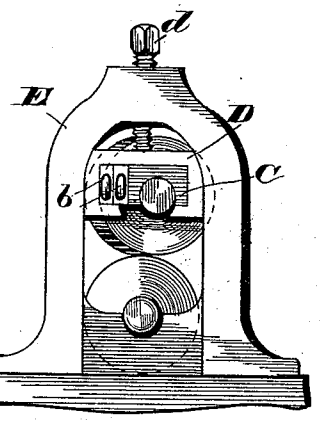
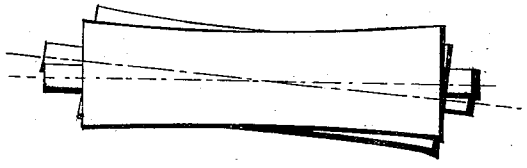


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

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PROCESS OF DRESSING ROLLS.

SPECIFICATION forming part of Letters Patent No. 326,263, dated September 15, 1885.

Application filed January 3, 1885. (No model.)

To all whom it may concern:

Be it known that I, RICHARD BROWN, of Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in the Process of Dressing Plate-Rolls; and I do hereby 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 pertains to make and use the same.

My invention relates to a process of dressing plate-rolls—such, for instance, as are used in rolling-mills in the manufacture of metal plates and sheets and other similar work—having for its object the dress of such rolls, without removing them from their housings, by means of revolving the rolls together, with the axes of the rolls oblique relative to each other.

In the manufacture of metal plates and sheets the so-called plate-rolls used for this purpose during their engagement with such sheets or plates should be longitudinally straight on their respective faces, so as to roll the plates or sheets of equal thickness in all parts. The billets, ingots, &c., from which the plates and sheets are rolled during their first passages only engage a small portion of the rolls endwise, and the sheets and plates, when finished, are seldom or never of such width as to engage the full length of the rolls. The central portions of the rolls, therefore, by reason of the more frequent contact with the heated metal, become heated and expanded more than the end portions, so that if the rolls were dressed straight the faces would, when used, soon become crowning, to avoid which the rolls are dressed slightly concaved, and when expanded by the heat, as aforesaid, they become approximately straight on their faces. The central portions of the rolls, because they do more work, are worn away faster than the end portions, and consequently the rolls require dressing from time to time. Heretofore the custom usually has been to dress these rolls in a lathe; but this involves much delay and a heavy expense, by reason of the great weight of the rolls (the larger sizes weighing many tons each) and of the necessary connections and disconnections of the machinery incident to moving the rolls from the housings. I have therefore devised a process for dressing these rolls without removing them from their housings, by revolving the rolls together under pressure while the axes of the rolls are oblique to each other, said pressure not necessarily being other than that caused by the weight of the top roll. Suitable mechanism for carrying out my process is illustrated in the accompanying drawings, in which—

Figure 1 is a side view in elevation of the rolls in position and before they are expanded by heating. Figs. 2 and 3 are end views in elevation of the rolls and housings, boxes, &c., the former with the parts in position securing the rolls parallel, and the latter showing the position of parts with the rolls oblique with each other. Fig. 4 is a diagram showing a plan of the rolls in the oblique position.

When rolls that have been properly dressed are in position, with their axes parallel and their respective ends in contact, an opening is seen between the rolls, bounded by lines slightly curved that meet at or near the ends of the rolls, as shown somewhat exaggerated at *c*, Fig. 1. If the position of the top roll be changed so that its axis is oblique to the axis of the lower roll, (see diagram Fig. 4,) such obliquity being more or less, according to the concavity of the rolls, the faces of the rolls, if they have been properly arranged, will fit each other nicely and be in contact, or approximately so, from end to end. If such position be noted and mechanism be provided by means of which the rolls, after they are worn and out of shape, can be returned to said oblique position and revolved together under pressure (the top roller usually revolving by friction with the lower roller) by reason of the oblique contact, the rolls will be worn away by mutual abrasion, which, if sufficiently continued, will dress the rolls to the required concaved shape. During such process of dressing the rolls, if sand, emery, or other hard material be applied to the rolls so as to pass between them, it will aid the abrasion, and consequently expedite the work. With the larger class of rolls the weight of the top roll will usually furnish all the pressure required; but if this

is not found sufficient the pressure may be increased by any suitable means, usually by the screws *d*.

In the drawings, A and B represent, respectively, the rolls that in Fig. 1 are shown in working position and before they are heated. The space *c* in the drawings is necessarily exaggerated to make it perceptible on so small a scale. The trunnions *a* of the upper roll are journaled in boxes C, that are keyed or wedged, *b*, or otherwise secured in the block D, that slides on the frame or housing E. In Fig. 2 the box is shown secured in a central position in the block D, with which arrangement the rollers are supposed to be parallel. If the box C be moved to one side, as shown in Fig. 3, the box at the opposite end of the roller being of course moved the same distance in the opposite direction, the roll will be in the position shown in the diagram Fig. 4, supposed to be the position in which the rolls fit each other when new or in perfect order, and to which position they must be adjusted to dress the roll properly. This particular mechanism for shifting the roll is not essential. Any other device by which the top roll can be conveniently shifted and held accurately in position will answer the purpose.

With the old custom of removing the rolls from the housing to dress them the expense and delay were so great that, usually, the rolls were used some time after they were in a bad condition—in fact, were used about as long as they could be made to do any work, and in these latter stages would of course do imperfect work. With my improved process the rolls, when not at work, may be dressed a little from to time—for instance, at noon, at morning, or evening—and always kept in good order without losing any time during working-hours and at a nominal cost.

What I claim is—

1. The process or method herein described of dressing so-called plate-rolls, or rolls for the manufacture of metal plates, sheets, and similar work, and consisting, essentially, in running the rolls together, with their axes arranged more or less oblique to each other, according to the concavity desired on the face of the rolls, substantially as set forth.

2. The process or method herein described of dressing so-called plate-rolls, or rolls for the manufacture of metal plates, sheets, and similar work without removing the rolls from housings, and consisting, essentially, in running the rolls together, with their axes arranged more or less oblique to each other, according to the concavity desired on the face of the rolls, substantially as set forth.

3. The process or method herein described of dressing plate-rolls, or rolls for manufacturing metal plates, sheets, and other similar work, and consisting, essentially, in running the rolls together, with the axes oblique to each other, and applying sand, emery, or other hard material to the surface of the rolls while they are being so revolved together, substantially as set forth.

4. The method of dressing concave rolls, consisting in first adjusting the axes of said rolls to a predetermined relative obliquity originally known and fixed and dependent upon the degree of concavity desired, and then running or revolving the faces of said rolls against each other, substantially as and for the purpose specified.

In testimony whereof I sign this specification, in the presence of two witnesses, this 26th day of December, 1884.

RICHARD BROWN.

Witnesses:
JNO. CROWELL,
CHAS. H. DORER.