S. W. BALDWIN.

Journals and Bearings for Rolling-Mills.

No. 208,949. Patented Oct. 15, 1878.

Fig. III.

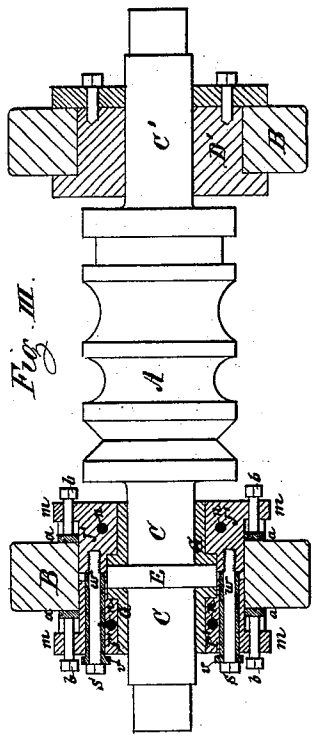


Fig. V.

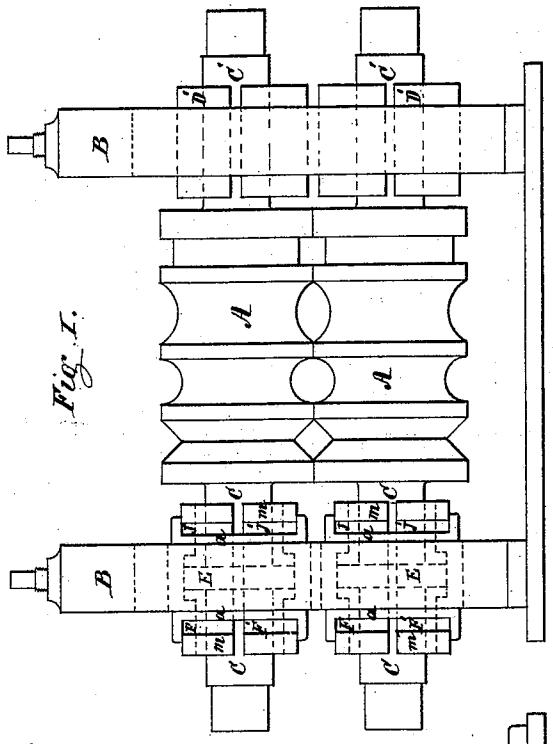


Fig. IV.

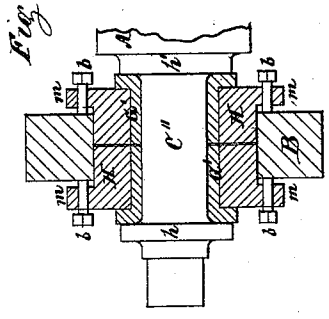
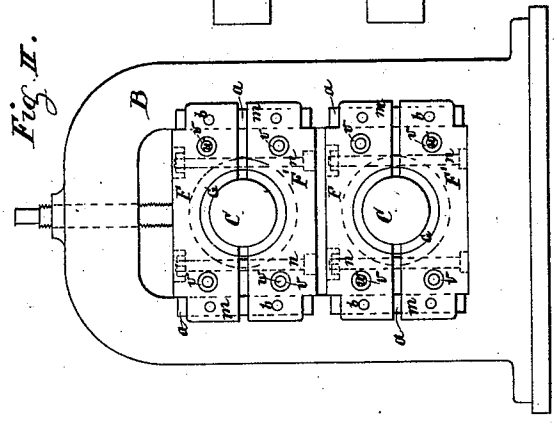


Fig. II.



Witnesses.

Alexander Lyons

Abram Van Blarcom

Inventor.

Stephen W. Baldwin

per Henry C. Roder

attorney.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

STEPHEN W. BALDWIN, OF NEW YORK, N. Y.

IMPROVEMENT IN JOURNALS AND BEARINGS FOR ROLLING-MILLS.

Specification forming part of Letters Patent No. **208,949**, dated October 15, 1878; application filed July 24, 1878.

To all whom it may concern:

Be it known that I, STEPHEN W. BALDWIN, of New York, in the State of New York, have invented a new and useful Improvement in Journals and Bearings for Rolling-Mills, of which the following is a specification:

When rolling shapes, such as rounds, squares, &c., of iron, steel, and other metals, two or more grooved rolls are used. To roll perfect shapes it is quite necessary that the edges of the grooves of one roll of a pair should exactly coincide with the edges of the grooves of its mate. It is, therefore, necessary that provision be made to adjust the rolls endwise, and firmly secure the same against endwise movements while in use. The usual mode of doing this is by set-screws passing through the housings or frames against the flanges of the journal-boxes at both ends of the rolls, holding them firmly against the ends of the body of the roll. When the rolls are put at work, the heat from the material rolled and the heat caused by friction of the journals will cause the rolls to expand lengthwise. This expansion causes excessive friction against the ends of the journal-boxes at each end of the rolls, and it becomes necessary to loosen the adjusting-screws, thereby loosening the proper adjustment of one roll with its mate. To avoid this excessive friction, and to provide means of conveniently adjusting the rolls endwise, and firmly holding them in position after they are so adjusted, at the same time providing for the free expansion of the body of the rolls lengthwise, is the object of my invention.

The nature of my invention consists in the construction of the journal-bearing for holding and adjusting the rolls at one end only, to allow the expansion of the rolls during operation all one way in the journals at the other end of the rolls, in which the same are only supported, perfectly free to move endwise.

In the accompanying drawing, Figure I represents a front view of a pair of rolls supported and adjusted in bearings embodying my invention. Fig. II is an end view of the bearings of adjustment. Fig. III is a horizontal section of one of the rolls and its bearing. Fig. IV is a horizontal section of the adjustment-bearing and part of a roll, showing a modification.

A A are the rolls, and B represents the frame or housing. C C′ are the journals of the rolls, supported in bearings in the frame B. The journals C′ and their bearings D′ are made in the usual manner, except that said journals have no collars coming in contact with the sides of the bearings, but are made with sufficient clearance, being only supported in said bearings and left free to move longitudinally or sidewise in the same. The journals C, at the other end of the rolls, are provided with a large collar, E, near the middle of the journal. These journals C run in suitable brasses, G G, abutting against the central collar, E, and fitted into a bearing parted in the center longitudinally and vertically, and consisting of the parts F F′ J J′. The upper parts, F J, of these bearings are fastened to their lower parts, F′ J′, by means of suitable bolts, *n n n n*, by which arrangement any wear of the brasses G G can be regulated. The outside parts, F F′, of the bearings are fastened to their inside parts, J J′, by means of tube set-screws *v* and screw-bolts *w*. The tube set-screws *v* are screwed into the outer parts, F F′, until their ends bear against the inner surfaces of the inside parts, J J′, whereby the pressure of the brasses G G against the sides of the collar E can be regulated and adjusted when the screw-bolts *w*, which pass through the tube set-screws *v*, securely fasten the outside parts, F F′, of the bearing to their inside parts, J J′, by being screwed into the same, with their heads S S bearing against the outer ends of the tube set-screws *v*. These parts F F′ J J′, forming the bearing for the brasses of the journals C, are fitted into the frame B, and are provided with projecting side flanges or lugs, *m*, between which and the frame B gibs *a* are arranged, against which latter set-screws *b*, passing through the flanges or lugs *m*, are made to work. By means of these set-screws *b* the position of the bearings C, and consequently the position of the rolls A, can be regulated horizontally with the greatest accuracy, as the rolls A are firmly held through their collars E in said bearings. By this arrangement of securely holding and regulating the rolls at one end only, the natural longitudinal expansion of the rolls, resulting from the heating of the same during operation, will not throw any

undue and extra pressure upon the housing or frames B, as full liberty is given for any expansion or lengthening of the rolls in the bearing D′, in which the journals C′ are allowed to slide freely longitudinally, and in consequence of which the power necessary to work rolls arranged as above described will be greatly reduced.

Instead of arranging a collar, E, at or near the middle of the journal against which the brasses abut, and which, being firmly locked in the bearing, will enable the holding and adjusting of the roll, the journal may be arranged in the usual manner, with collars *h h′* at each end of the journal C″, (see Fig. IV,) between which the brasses are fitted, arranged in suitable bearings H, provided with side flanges or lugs, *m*, and set-screws *b*, acting against the frame B, or against gibs fitted against the frame, to adjust and firmly secure the bearing, and consequently the roll, in the desired position, and firmly hold this end of the roll, while the other end of said roll can move sidewise in its bearing.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A journal-bearing for rolling-mills divided vertically, and provided with side flanges or lugs, with set-screws acting against the main frame or against gibs fitted to the sides of the main frame, for the purpose of adjusting and holding the journal, substantially in the manner described.

2. In combination with the main frame B and the roller-journal C, provided with a central collar, E, a bearing consisting of the four parts F F′ J J′, secured together vertically by bolts *n* and longitudinally by tube set-screws *v*, and set-screws *w* passing through said tube set-screws *v*, as described, and provided with side flanges or lugs, *m*, and set-screws *b*, acting against the sides or against gibs fitted against the sides of the main frame B, the whole being arranged to operate in the manner and for the purpose substantially as herein specified.

STEPHEN W. BALDWIN.

Witnesses:
HENRY E. ROEDER,
J. B. NONES.