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J. LEDWINKA

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ROLLING MILL DRIVING SYSTEM

Filed Nov. 20, 1926

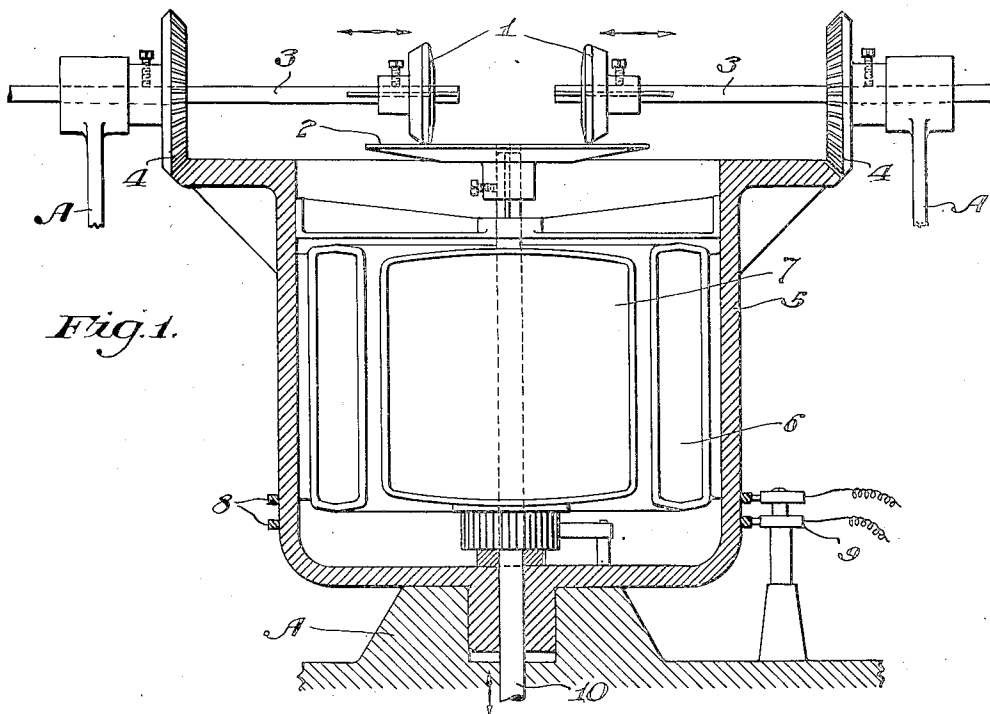


Fig. 1.

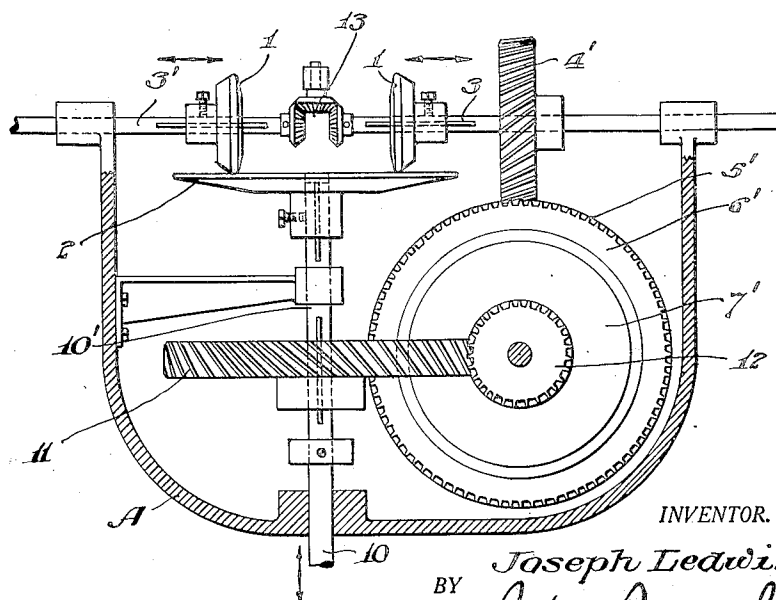


Fig. 2.

INVENTOR.

BY

Joseph Ledwinka,
John P. Farley
ATTORNEY.

UNITED STATES PATENT OFFICE

JOSEPH LEDWINKA, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO BUDD WHEEL COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

ROLLING-MILL-DRIVING SYSTEM

Application filed November 20, 1926. Serial No. 149,703.

This invention has for its object the provision of an improved driving mechanism for certain types of rolling mill machinery.

Another object is the provision of a driving system whereby the peripheral speeds of the opposed rolling surface are equalized, thus eliminating the difficulties due to unequal speeds, such as slippage, wrinkling, buckling, etc.

Other objects and advantages will appear upon understanding of this specification with its appended drawings, in which:—

Figs. 1 and 2 show diagrammatic sectional views of two forms in which the invention is constructed (Fig. 2 being the preferred form).

The invention is disclosed in relation to a mill of the type disclosed in Patent Number 1,606,903, John W. Smith, dated November 16, 1926, wherein a pair of rolls operate simultaneously on a blank held on a revolving platen. Only enough of the structure of the above mentioned patent is disclosed to make the structure and operation of the present invention clear.

In Fig. 1, reference numerals 1 and 2 designate the blank working rolls and the revolving platen respectively. In accordance with the above mentioned patent the rolls 1 are adapted to be radially traversed and retraversed over the platen 2, as shown by the arrows. Likewise, the platen 2 is adapted to be approached to the rolls 1 and retracted therefrom, as shown by the arrows. The mechanisms for effecting these various movements are not shown, since they form no part of the present invention and are fully disclosed in the above mentioned case.

The rolls 1 are splined to shafts 3, thus permitting their proper traverse movements, but causing them to be driven by the rotation of said shafts. Gears 4, coacting with another gear on the field housing 5 of the prime mover serve to drive shafts 3.

The prime mover is of the differential type in which either the armature 7, or the field 6, is free to move, current being supplied by slip rings 8 and brushes 9.

The platen 2 is fixed to a splined shaft 10

which rotates with the armature 7, but is free to move longitudinally relative thereto.

From the construction it is apparent that the drive is inherently equalized between the rolls and the platen, and that slippage and other difficulties arising from unequal surface velocities of the two elements are avoided.

The form of the invention shown in Fig. 2 is based on the principles of the first figure, but altered to permit the use of a less specialized form of prime mover. Similar reference characters refer to similar parts in the first figure.

Rolls 1 and platen 2 are mounted as above, to be moved longitudinally of their axes of rotation by means of suitable mechanism. In this form of the invention, however, the shafts 3' are interconnected by reversing gears 13, to rotate in opposite directions, both being driven from the field 6', of the prime mover, through gears 4', 5'. In a similar manner, the armature 7' drives the platen 2 through gears 11, 12 and 10'.

Thus, there has been disclosed a system of driving for rolling mills, in which the peripheral velocities of the coacting rolling elements must at all times be identical, doing away with the previous difficulties and faults caused by inequalities of speed. While the invention has been described with reference to a preferred form, and to one kind of rolling mill, it is obviously capable of wider use and of a broader interpretation, and is to be limited only by the scope of the appended claims.

What I claim is:

1. A rolling mill comprising a pair of opposed rolling elements operating respectively under changing load conditions and means for differentially driving said elements, said driving means so cooperating that the opposed rolling elements have, at their points of rolling contact, the same circumferential surface speed under any of the said load conditions.

2. A rolling mill comprising a pair of opposed rolling elements operating respectively under changing load conditions and a prime mover of the differential type operatively

connected to said elements, said prime mover so cooperating that the opposed rolling elements have, at their points of rolling contact, the same circumferential surface speed under any of the said load conditions.

5 3. In a disc rolling mill, a disc-supporting revoluble platen, opposed rolls for acting on said disc, an electric motor and connective means whereby one element of said motor
10 drives the platen and the other element drives the rolls so that the circumferential surface speeds of the rolls and platen are always equal at the various points of rolling contact.

15 4. In a rolling mill comprising oppositely disposed rolling elements between which the work of rolling is carried out, a driving system comprising a prime mover having a pair of elements, both free to move and between which a propulsive effort is exerted, and connecting means between each one of said rolling
20 elements and a corresponding driving element.

5. In a disk rolling mill comprising a platen, a radially traversible roll coacting there-
25 with operating respectively under changing load conditions, and means for differentially driving said roll and said platen, said driving means so cooperating that the said platen and roll have, at their points of contact, the
30 same circumferential surface speed under any of the said load conditions.

In testimony whereof he hereunto affixes his signature.

JOSEPH LEDWINKA.

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