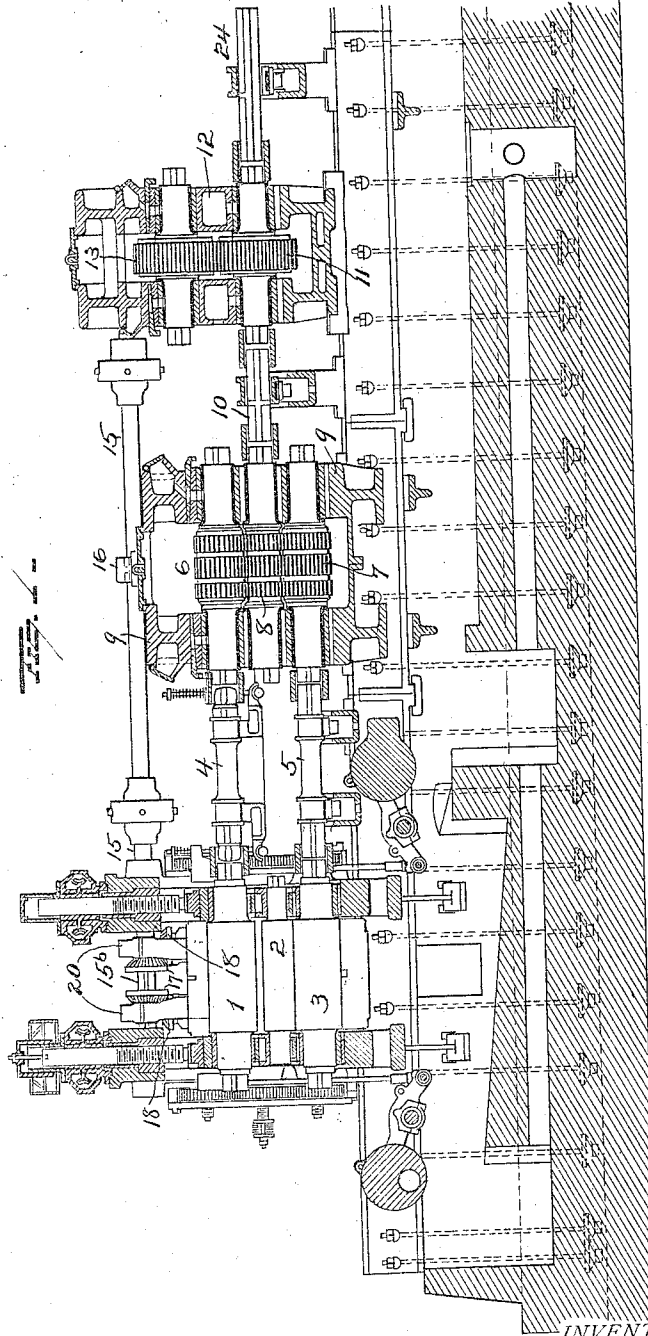


1,045,636.

C. L. TAYLOR.
ROLLING MILL.
APPLICATION FILED OCT. 25, 1910.

Patented Nov. 26, 1912.

3 SHEETS-SHEET 1.



WITNESSES
E. Nottingham
G. J. Downing

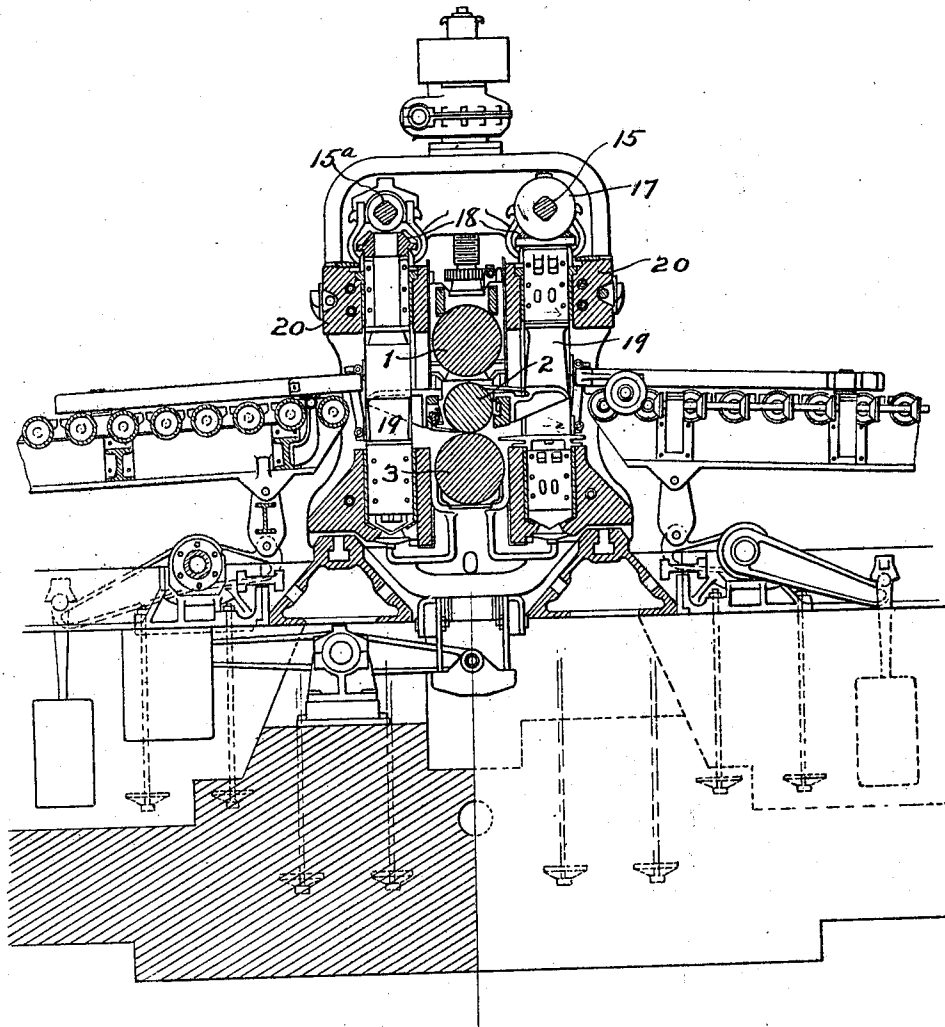
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Fig. 2 -



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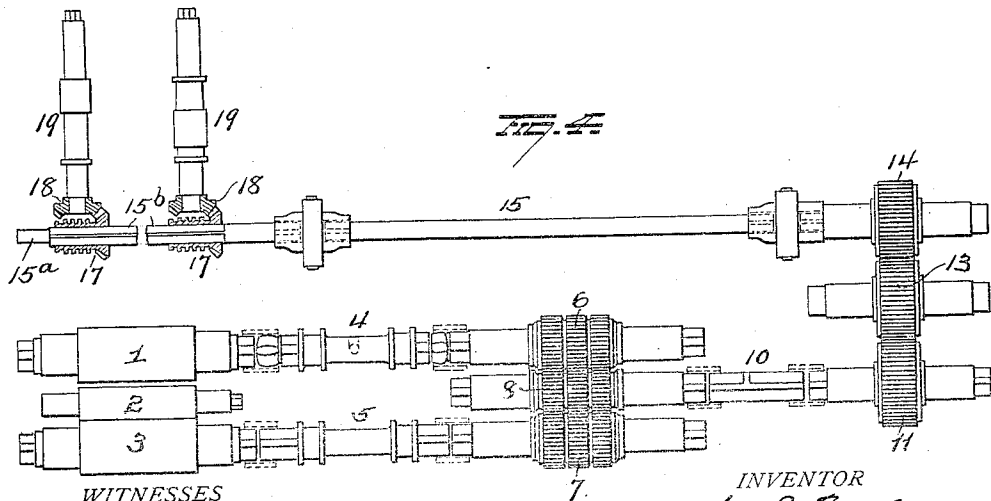
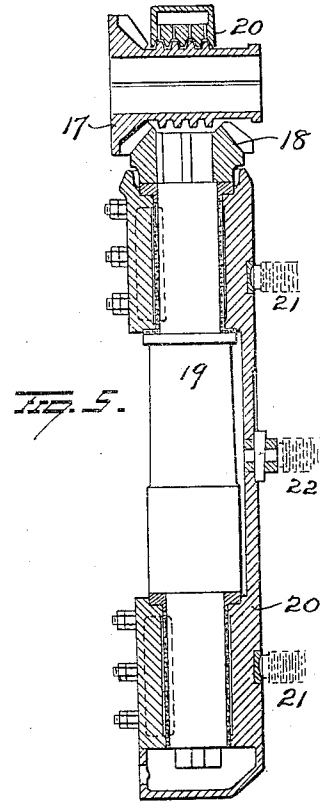
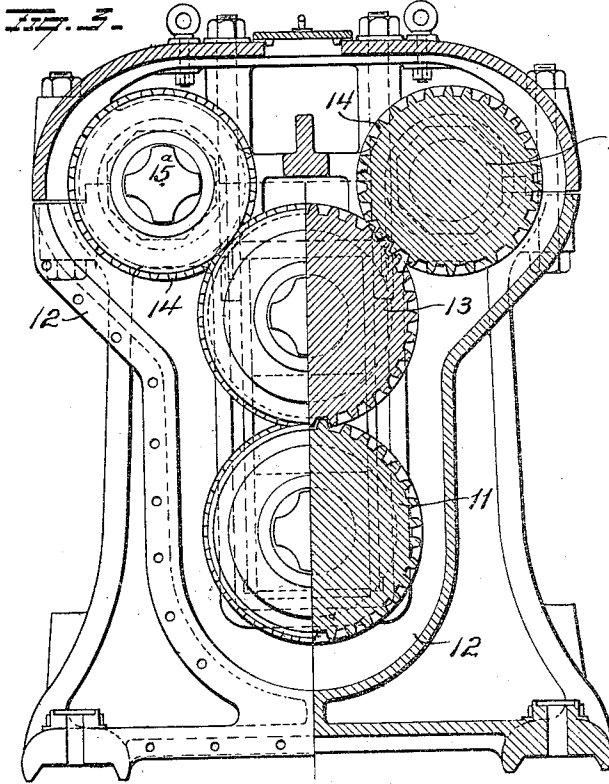
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UNITED STATES PATENT OFFICE.

CLARENCE L. TAYLOR, OF ALLIANCE, OHIO, ASSIGNOR TO THE MORGAN ENGINEERING COMPANY, OF ALLIANCE, OHIO.

ROLLING-MILL.

1,045,636.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed October 25, 1910. Serial No. 586,970.

To all whom it may concern:

Be it known that I, CLARENCE L. TAYLOR, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Rolling-Mills; 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 appertains to make and use the same.

My invention relates to an improvement in rolling mills having three high horizontal rolls, and vertical rolls located on opposite sides of the horizontal rolls, and the object is to lessen the load on the horizontal roll drive pinion, by providing a pinion drive for the horizontal rolls and a separate drive for the vertical rolls, the drive pinion for the horizontal rolls being located intermediate the rolls and drive for the vertical rolls.

With this object in view my invention consists in the parts and combination of parts and in the details of construction which will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in front elevation partly in section of a rolling mill embodying my invention; Fig. 2 is a view in vertical transverse section through the mill showing the vertical rolls in elevation; Fig. 3 is a view in elevation partly in section of the vertical rolls drive pinions and the housing for same; Fig. 4 is a diagrammatic representation of the rolls, rolls spindles and pinions, and Fig. 5 is a view of one of the vertical rolls and its housing, the latter being shown in section.

1, 2 and 3 represent respectively the upper, middle and lower horizontal rolls, the upper and lower rolls 1 and 3 being respectively driven by the spindles 4 and 5 which latter are coupled up to the driven pinions 6 and 7. These two pinions 6 and 7 mesh with the rolls driving pinion 8, the three pinions 6, 7 and 8 being journaled in the housing 9, which together with the spindles and horizontal rolls and roll supporting frame, may be of any of the well known constructions now in general use.

The drive pinion 8 is coupled up by spindle 10 with the main drive pinion 11, journaled in the housing 12. This pinion 11,

as clearly shown in Fig. 3 meshes with pinion 13 which latter in turn, drives the two pinions 14, all of which are journaled in the housing 12.

Coupled up to one pinion 14, is the shaft 15, and coupled to the other pinion 14 is the shaft 15^a, the two shafts 15 and 15^a being in the same horizontal plane and in a plane above the top roll 1, and on opposite sides of the horizontal rolls as shown in Fig. 2.

The two shafts 15 and 15^a are centrally supported in bearings 16 on the pinion housing 9, and each is provided adjacent its free end, with an angular section 15^b on which the miter gears 17 are mounted to slide so as to provide for the various adjustments of the vertical rolls toward and away from each other.

There are two gears 17 on each shaft, and each meshes with a miter gear 18 secured to a vertical roll 19. In Fig. 4, I have shown the major portion of shaft 15 with one of the vertical rolls actuated thereby, and the outer end of section 15^b of shaft 15^a with one of the vertical rolls actuated thereby. The miter gears 17 on both shafts 15 and 15^a, are provided with ribbed hubs or sleeves, which as shown in Fig. 5, engage or rest in grooves in the cap of the housings 20, in which the vertical rolls 19 are mounted and journaled, so that as the housings carrying the vertical rolls are adjusted to change the pass between the rolls, the gears 17 will be correspondingly moved on their shafts. Each housing is moved toward its companion housing, by the push screws 21, and they are separated by the pull screws 22, which however, form no part of the invention herein claimed. The two rolls 19 at one side of the horizontal rolls, have cylindrical surfaces in line with the lower pass and turn in the direction of such pass, and the two rolls on the opposite side have cylindrical surfaces in line with the upper pass, and turn in the direction of such pass, and they are so constructed that neither pair interferes with the passage of the metal being acted upon by the other pair.

Power is applied to the rolls of the mill, through spindle 24 coupled up to the pinion 11 in housing 12.

With the construction above-described it will be seen that power is applied to the vertical rolls through gearing located between

the motor and the horizontal roll drive pinion, thus relieving the latter of the load of the vertical rolls.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described, but consider myself at liberty to make such changes as fairly come within the spirit and scope of my claims.

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

1. In a rolling mill, the combination of horizontal rolls, a pair of vertical rolls on each side of the horizontal rolls, pinions, spindles connecting the pinions and driven rolls of the horizontal series, shafts and pinions for driving the vertical rolls, a drive spindle coupled up with the drive pinions of the vertical rolls, and means connecting the pinions of the two sets of rolls, whereby the horizontal rolls are driven by the spindle which drives the vertical rolls.

2. In a rolling mill, the combination of horizontal and vertical rolls, spindles and pinions for driving the horizontal rolls, a second set of pinions and shafts for driving the vertical rolls, the pinions and spindles for driving the horizontal rolls being intermediate the horizontal rolls and the drive pinions of the vertical rolls, the drive pinion

of the series which drives the horizontal rolls being coupled to the drive pinion of the series which drives the vertical rolls, and a drive spindle coupled up to the drive pinion of the vertical rolls.

3. In a rolling mill, the combination of horizontal rolls, a pair of vertical rolls on each side of the horizontal rolls, pinions, spindles connecting said pinions with the driven rolls of the horizontal series, shafts and pinions for driving the vertical rolls, a housing for each set of pinions, a drive spindle coupled up with the drive pinion of the vertical roll driving series and means connecting the pinions of the two sets of rolls, whereby the horizontal rolls are driven by the spindle which drives the vertical rolls.

4. In a rolling mill, the combination of horizontal rolls, a pair of vertical rolls on each side of the horizontal rolls, a series of pinions, shafts and gearing connecting said pinions with the vertical rolls, a second set of pinions located intermediate the horizontal rolls and said first set of pinions, spindles connecting said second set of pinions and the horizontal rolls, a spindle connecting said two sets of pinions and means for driving the same.

In testimony whereof, I have signed this specification on the presence of two subscribing witnesses.

CLARENCE L. TAYLOR.

Witnesses:

N. C. FETTERS,
CARL REESE.