(No Model.) 3 Sheets—Sheet 1.

A. P. HINE.

BRIDLE ATTACHMENT FOR SHEET METAL ROLLS.

No. 438,846. Patented Oct. 21, 1890.

Fig. 4.

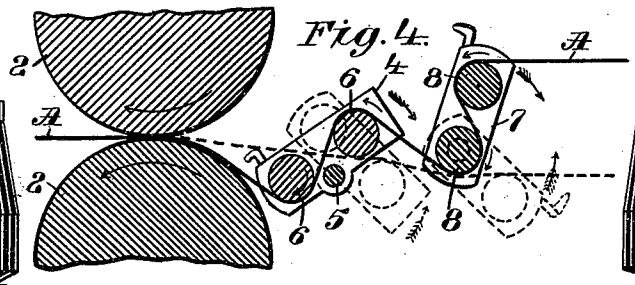
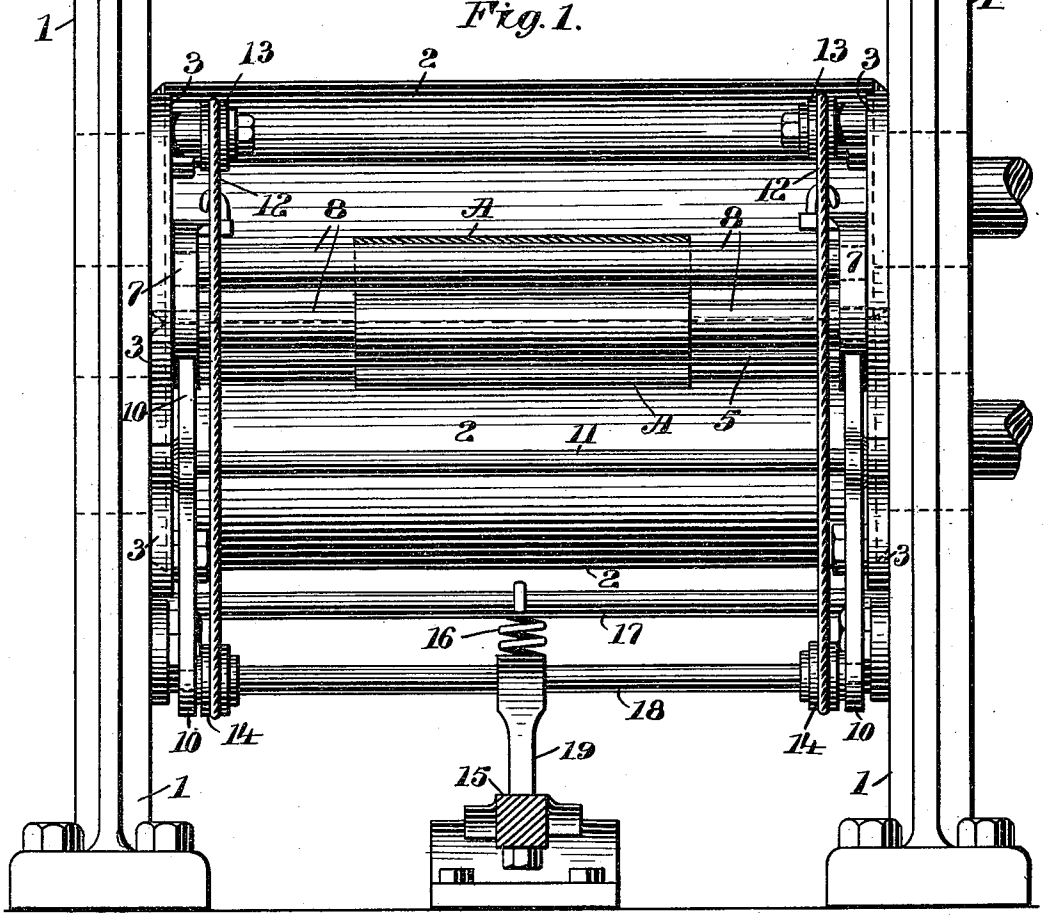


Fig. 1.



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Inventor
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by his attorney
J. N. Hubbard.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

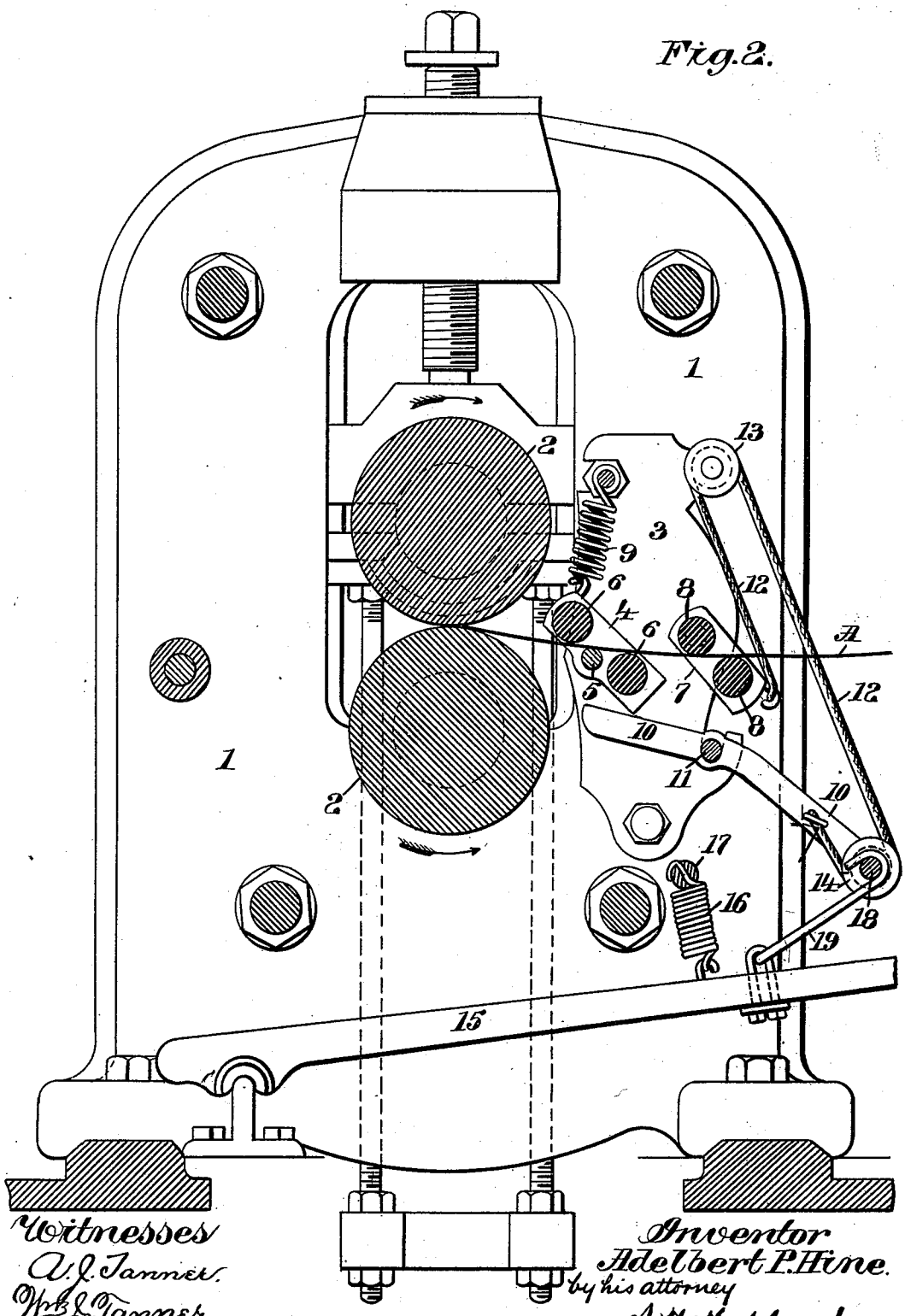
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Fig. 2.



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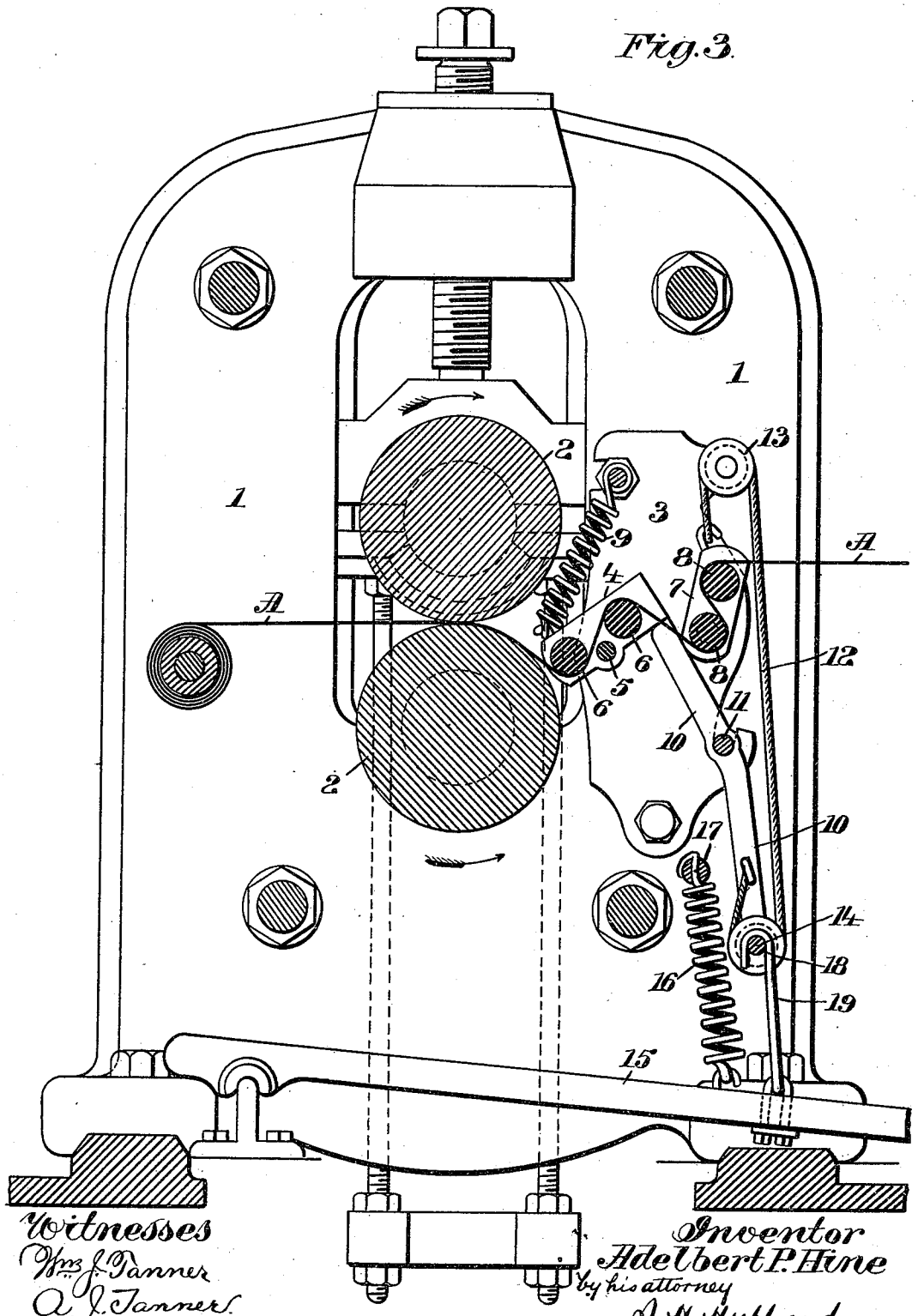
(No Model.) 3 Sheets—Sheet 3.

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Fig. 3.



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UNITED STATES PATENT OFFICE.

ADELBERT P. HINE, OF TORRINGTON, CONNECTICUT, ASSIGNOR TO THE COE BRASS MANUFACTURING COMPANY, OF SAME PLACE.

BRIDLE ATTACHMENT FOR SHEET-METAL ROLLS.

SPECIFICATION forming part of Letters Patent No. 438,846, dated October 21, 1890.

Application filed July 5, 1890. Serial No. 357,869. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT P. HINE, a citizen of the United States, residing at Torrington, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Bridle Attachments for Sheet-Metal 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 appertains to make and use the same.

This invention relates to certain new and useful improvements in bridles for sheet-metal rolls, and has for its objects to furnish a guiding and tensioning mechanism through which the strip shall pass prior to its presentation to the rolls, whereby the metal may be smoothed and flattened before the rolling, and whereby the strip may be tensioned alike both as to its whole width of surface and throughout its entire length.

Another object is to provide means for opening and closing the rolls or bars whereby the strip-passage is altered; and, finally, it is an object of my invention to so arrange the bars and rollers or guide over or through which the strip is drawn prior to its entry between the rolls in such position relative to said rolls that the strip is first introduced upon the surface of the lower roll and then inward between said rolls.

In addition to the foregoing my invention greatly increases the capacity of the machine by reason of the rapidity with which the strip to be treated may be inserted and presented to the rolls.

Having in view the objects and ends heretofore set forth, my invention consists in the general construction and combination of elements hereinafter fully and in detail explained, and then recited in the claims which are hereunto annexed.

In order that those skilled in the art to which my invention appertains may fully understand how to make and use the device which forms the subject-matter of my improvement, I will describe the same in detail, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a front elevation of a pair of rolls provided with my improvement; Fig. 2, a vertical section showing the manner of introducing the strip; Fig. 3, a like view showing the position of the parts during the operation of the machine, and Fig. 4 a detail sectional diagram showing the two positions of the parts of the bridle as compared.

Like numerals and letters denote the same parts in all the figures.

Represented by the numeral 1 is a pair of roll housings or standards having journaled therein a pair of suitable reducing-rolls 2. These parts are of any ordinary or desired construction and form no part of my present invention.

3 are base-plates, which I attach to the inner face of each of the standards when applying my invention as an attachment to a machine already in use, but which may be dispensed with when said invention is to be incorporated in a newly-built machine.

4 designates a pair of blocks which are journaled to the plates 3 by means of pins or short shafts 5, and 6 are bars which extend between the blocks, as seen at Fig. 1. These may be journaled in said blocks so as to rotate, or they may be fixed as against rotation, according to circumstances and the work desired to be done, or they may be so arranged as to be either free or fixed at the will of the operator.

7 are blocks carrying rolls or bars 8. They are the same as those previously described; but their pivotal points are axial with one of the bars, (see dotted lines, Figs. 2 and 3,) instead of at one side of the center. A spring or springs 9 serve to return the blocks 4 to the position shown at Fig. 2 when they have been carried out of said position against the action of said spring or springs.

10 denotes a pair of levers connected by a transverse rod 11, whereby said levers are fulcrumed to the base-plates. The upper ends of these levers engage the lower ends of blocks 4, (see Fig. 2,) and are capable of turning said blocks and the bars or rolls carried thereby to the position shown at Fig. 3 and there locking them. Said levers are connected with the blocks 7 by means of chains or cables 12, which are secured to the lever

at one end, and then, passing over pulleys 13 and 14, have their other ends secured to said blocks.

A treadle 15 is connected to the transverse rod 11 for the purpose of actuating the levers downwardly, and a spring 16, connected to the transverse bar 17 and the treadle, serves to lift the latter.

A designates the strip.

In the operation of my machine the workman first draws the end of the strip of metal to be rolled between the two rolls or bars 6 and 8, as shown at Fig. 2 and in dotted lines on the diagram. He then feeds the strip inward by hand until its extremity is caught between the rolls 2, and at that instant he depresses the treadle from the position shown at Fig. 2 to the position shown at Fig. 3. This causes the said rolls or bars to grasp the strip and impart thereto a certain tension, which is less if the parts 6 and 8 be journaled and revoluble or more if they be not journaled and the strip therefore drawn over their surfaces. The partial rotation of the blocks 4 is effected by the levers acting directly upon said blocks. The like movement of the blocks 7 is derived from the heel ends of the levers through the cables or chains. When in the position shown at Fig. 3, the abutment of the ends of the levers against the blocks 4 is substantially at right angles to the length of the latter, and they thereby lock said blocks. At this time the chains retain the blocks 7 in place, as at Figs. 3 and 4. When it is desired to return the tension-rollers to their open position for the insertion of the next strip of metal to be treated, the workman grasps the transverse rod 11, and by drawing it upward and outward carries the ends of the levers 10 out of their locking-abutment with the blocks 4, after which the springs will return the parts to their normal position. By passing over the tension bars or rollers the strip is smoothed out and any small buckles or wrinkles removed. This is also true of any small bent portions of the edges of the strip, which, if permitted to go to the rolls, would make imperfections in the finished metal or injure the surface of said rolls. Likewise the tension which the bars or rollers impart to the strip is the same throughout the whole breadth of said strip and is retained constant throughout the entire length thereof.

By reference to Fig. 4 and by comparing the positions shown in full and in dotted lines it will be seen that when open (see dotted lines) the line of insertion of the strip is in about the same horizontal plane with the meeting surfaces of the rolls; but the partial rotation of the blocks 4 so alters the position of the rollers carried thereby that the one nearest the reducing-rolls descends, and the course of the strip after leaving this roller is not directly between the reducing-rolls, whose contour it follows until operated upon. This insures its smooth passage through said rolls and obviates the possibility of buckling therein. The reducing-rolls impart the motion to the strip, which draws it through and over the tension device, and after its reduction it is wound or coiled in any suitable manner.

In this invention I do not wish to be confined to the exact construction herein shown and described, since the same may be widely varied without departing from the spirit and aim of my invention, as is now to be set forth in the claims.

I claim—

1. In a machine as described, the combination, with the reducing-rolls, of a series of tension bars or rollers arranged in front of said reducing-rolls and means for varying the positions of said rollers or bars relative to the reducing-rolls.

2. In a machine as described, the combination, with the reducing-rolls, of a series of tension bars or rollers arranged before the rolls and affording a passage for the strip and means, as described, for altering the relative positions of said bars or rollers, whereby the strip is tensioned or released, substantially as set forth.

3. The combination, with the reducing-rolls, of two or more pairs of connected tension rollers or bars, each pair independent of the other, and means for imparting to said bars a rotary movement, whereby tension is imparted to the strip, substantially as set forth.

4. The combination, with the reducing-rolls, of the two pairs of tension bars or rollers, pivoted blocks wherein each pair of said bars or rollers is held, and means for turning said blocks upon their pivots, as specified.

5. In a machine of the character described, the combination, with the reducing-rolls, of the pivoted blocks arranged in front of said rolls and each carrying a pair of tension bars or rollers, levers adapted to engage directly with one pair of said blocks, and a connection between said levers and the other pair of blocks, substantially as described.

6. In a machine of the character described, the combination, with the reducing-rolls, of the two pairs of tension rollers or bars arranged in front of said reducing-rolls, levers adapted to operate one pair of bars by direct contact with the support of said bars, and chains operated by said levers and adapted to actuate the other pair of bars.

7. The combination, with the reducing-rolls, of a tension device through which the strip is adapted to pass prior to its introduction between the rolls, said tension device being below the horizontal plane in which the rolls meet, whereby said strip first engages the surface of the lower roll below the plane of the upper roll.

8. In a machine of the character described, the combination, with the reducing-rolls, of two or more pairs of tension bars or rollers arranged in front of said rolls and adapted when in their open position to afford a passage for the introduction of the strip in substantially

the same horizontal plane with the meeting surfaces of the reducing-rolls, and means for altering the relative positions of said rollers or bars, whereby the strip is tensioned and is led onto the surface of the lower roll at a point below the plane in which the rolls act upon the strip, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ADELBERT P. HINE.

Witnesses:
CHAS. F. BROOKER,
E. T. COE.