

(No Model.)

3 Sheets—Sheet 1.

H. C. JONES.
PLATE STRAIGHTENING MACHINE.

No. 479,745.

Patented July 26, 1892.

FIG. 1.

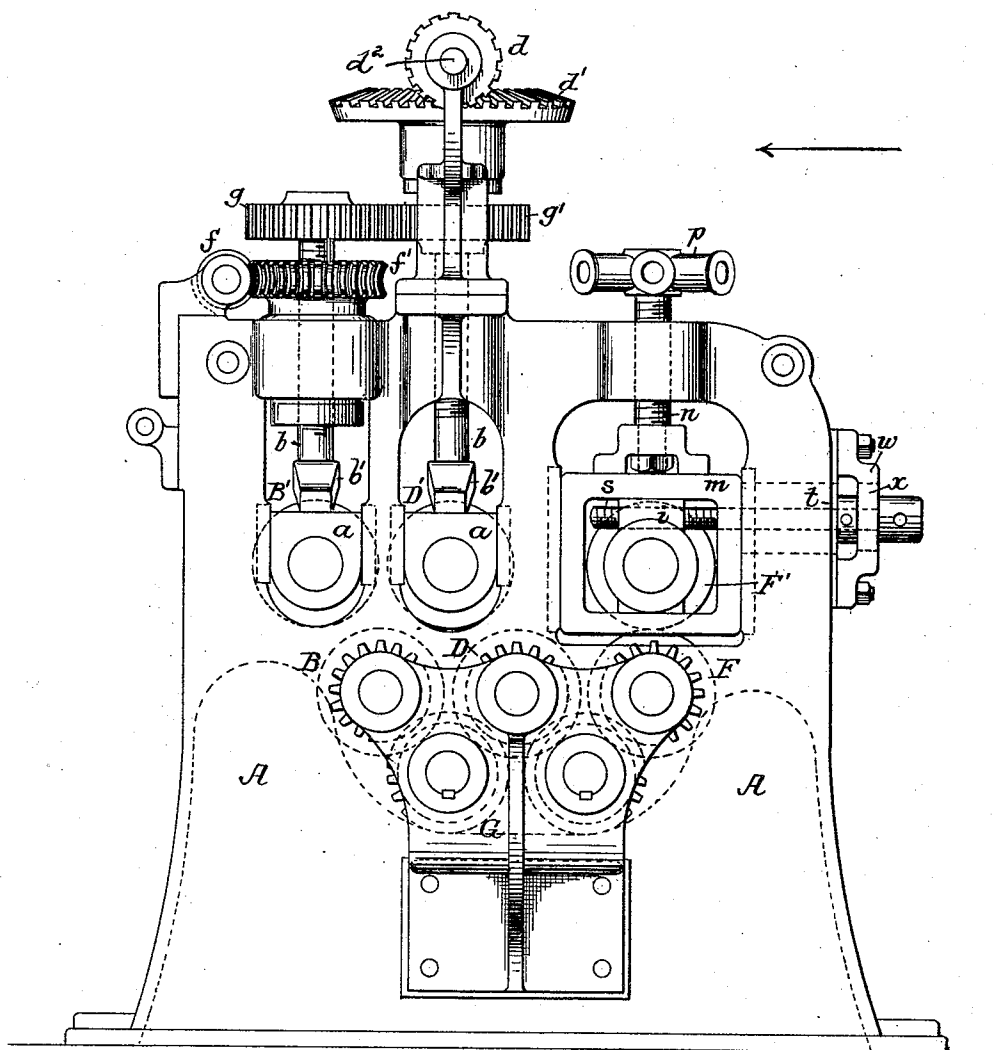
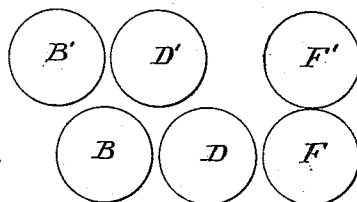


FIG. 3.



Witnesses:
R. Schleicher
Hamilton D. Turner

Inventor:
Henry C. Jones
by his Attorneys
Howson & Howson

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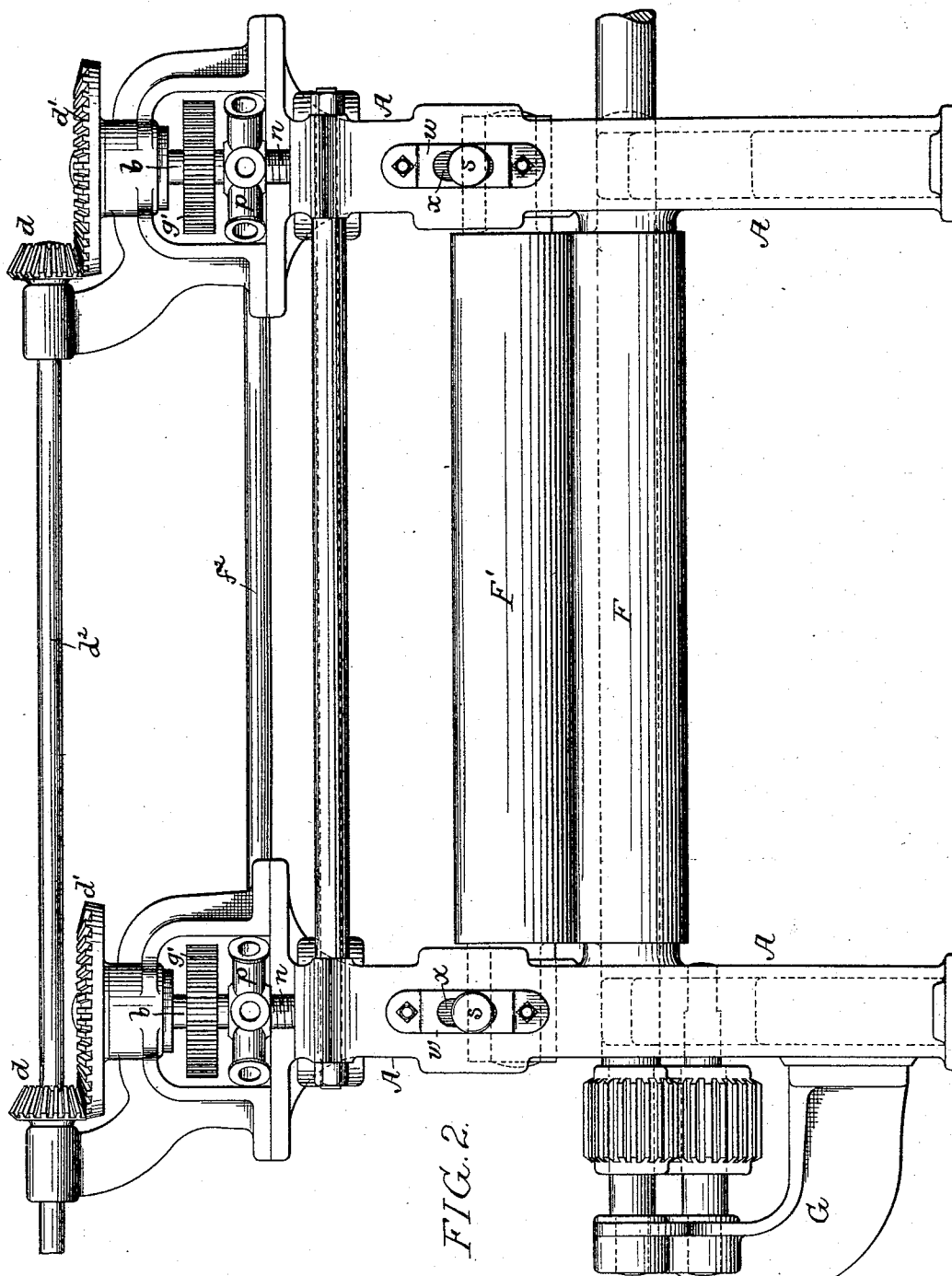


FIG. 2.

Witnesses:
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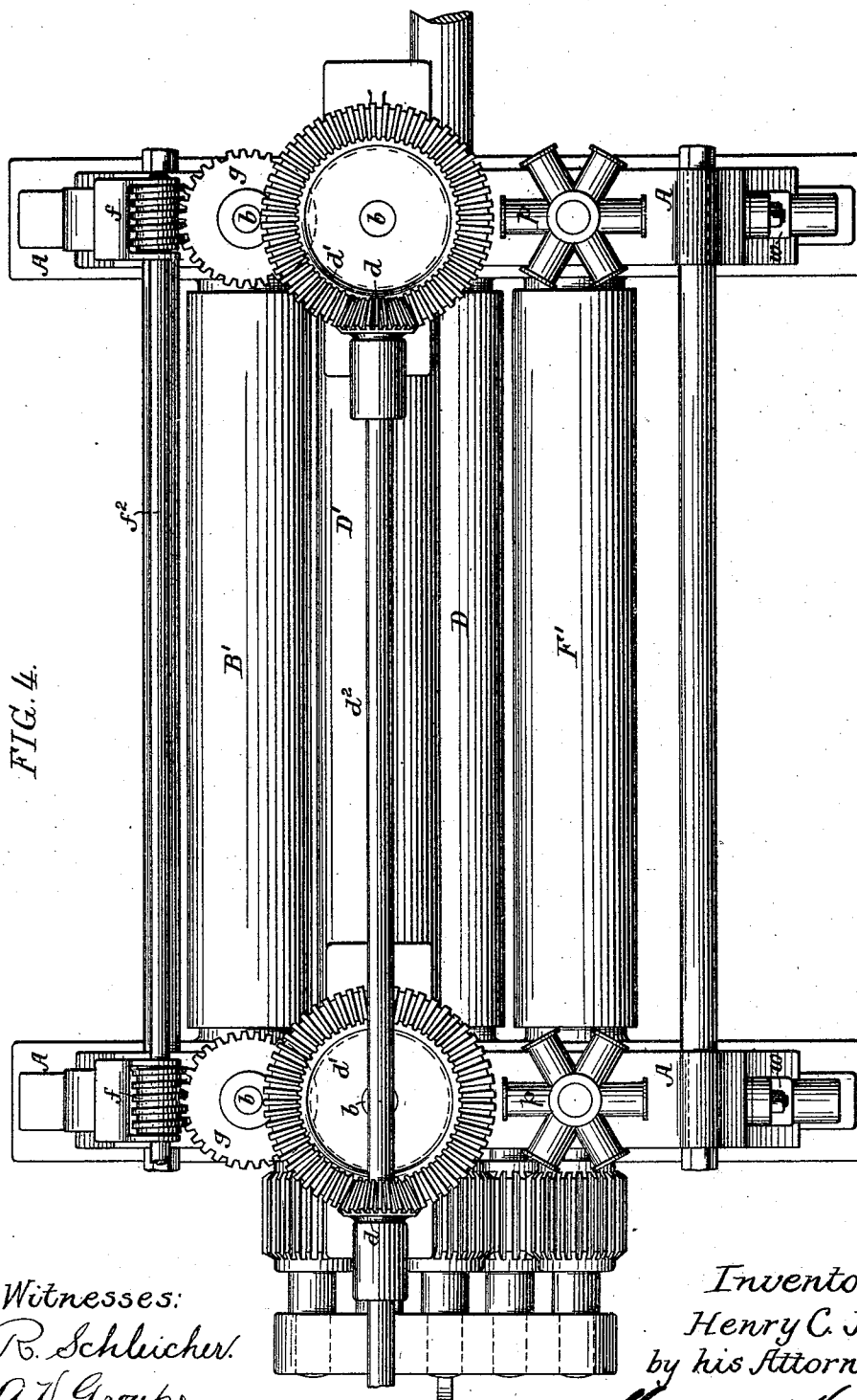
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UNITED STATES PATENT OFFICE.

HENRY C. JONES, OF WILMINGTON, DELAWARE, ASSIGNOR TO THE HILLES
& JONES COMPANY, OF SAME PLACE.

PLATE-STRAIGHTENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 479,745, dated July 26, 1892.

Application filed October 16, 1890. Serial No. 368,339. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. JONES, a citizen of the United States, and a resident of Wilmington, Newcastle county, Delaware, have invented certain Improvements in Plate-Straightening Machines, of which the following is a specification.

My invention relates to that class of machines for straightening metal plates in which is employed a series of rolls, comprising an upper set and a lower set, between which the plate is passed, the rolls of one set being so arranged in respect to those of the other set that the rolls will act alternately upon the plate or sheet passing through the machine—that is to say, it will be acted upon first on one side by a roll of one set, then on the opposite side by a roll of the other set, and so on, a slight bending or corrugation of the plate in its passage through the machine being thus effected, and this operation having the effect of straightening the plate or sheet in the sense that it corrects any buckling or like distortion of the plate.

The object of my invention is to so construct a machine of the class referred to that if, in addition to straightening the plate, it is desired to slightly stretch or lengthen said plate or part of the same such result can be readily accomplished, and this object I attain by combining one or more pairs of pressure-rolls with the non-reducing straightening-rolls of the machine.

In the accompanying drawings, Figure 1 is a side view of a plate-straightening machine constructed in accordance with my invention. Fig. 2 is an end view of the same, looking in the direction of the arrow, Fig. 1. Fig. 3 is a diagram illustrating the disposal of the rolls in the machine, and Fig. 4 is a plan view of the machine.

A A represent the opposite side frames or housings of the machine, in which are suitable bearings for the lower set of rolls B, D, and F, power being applied to one of these rolls, preferably to the central roll D, and the rolls being geared together by spur-wheels mounted in a bracket G, secured to one of the side frames or housings A. Rolls B', D', and F' comprise the upper set, and the journals of each of these rolls are carried by ver-

tically-adjustable bearings, each of the bearings *a* of the rolls B' D' being acted upon by a yoke *b'*, upon which bears a screw-shaft *b*. The screw-shaft *b* of each bearing of the roll D' is adapted to a threaded opening in the housing A, and the screw-shaft *b* of each bearing of the roll B' is adapted to a threaded opening in the hub of a worm-wheel *f'*, which is vertically confined to the housing, but can turn therein. The worm-wheels can be operated by worms *f* on a transverse shaft *f*² and the screw-shafts *b* at each side of the machine are connected by spur-gears *g g'*. The screw-shafts which act upon the bearings of the roll D' are extended above the wheels *g'* and provided with bevel-wheels *d'*, which mesh with bevel-pinions *d* on a transverse shaft *d*². Hence on turning said shaft *d*² both sets of screw-shafts will be simultaneously operated, while by turning the shaft *f*² the screw-shafts of the roll B' may be caused to rise or fall independently of the screw-shafts of the roll D', this being an ordinary method of adjustment. The rolls B' D' are also, as is usual, arranged at an angle in respect to the lower rolls. In other words, they are so located that the plate passing through the machine will be acted upon first by a roll of one set and then by a roll of the other set. The compressing and drawing rolls F F', however, are mounted one above the other, so that the plate in passing between these rolls can be subjected to a reducing pressure—that is to say, to a pressure sufficient to slightly reduce the thickness of the plate, and thus effect the longitudinal stretching or expansion of said plate, for it frequently happens that owing to inaccurate cutting of a plate in the first instance, or because of excessive buckling of the plate, or for other reasons, the plate when straightened is slightly less in length than is required for the purpose intended—as, for instance, when it is to be used as a ship-plate, where accuracy in dimensions is important. Each of the journals of the upper roll F' is carried by a box *i*, and the latter is in turn mounted in a skeleton box or frame *m*, adapted to vertical guides in the frame or housing A and acted upon by an adjusting-screw *n*, which has at the top a capstan-head *p*, so that the screw can be readily

turned to raise or lower either end of the roll and any required degree of pressure can thus be imparted to the plate passing between the rolls $F F'$, the pressure being greater at one
 5 end of the rolls than at the other, if desired, in order to stretch or expand one portion of the plate more than another. It may occasionally be desirable, also, to laterally shift either end of the upper roll so as to carry it
 10 slightly in advance or in the rear of the corresponding end of the lower roll, and thus cause the rolls to act on the plate more at one end than at the other, or more in the center than at either end, depending upon where
 15 the most stretch is desired, and for this reason the bearing i is free to slide horizontally in the box or frame m in a direction at right angles to the axis of the rolls, such movement being effected by means of a screw s , adapted
 20 to a threaded opening in the bearing i and confined longitudinally to the housing A by means of a collar t , which is embraced by a bracket w , secured to said housing, both bracket and housing being provided with vertical
 25 slots, as at x , so as to permit the screw s to rise and fall in accordance with the vertical movement of the box or frame m .

In the drawings I have shown a pair of compressing and drawing rolls combined with two
 30 pairs of straightening-rolls; but there may be more than one pair of compressing and draw-

ing rolls, and the straightening-rolls may consist of more than two pairs, and the compression and drawing rolls may act upon the plate either before or after it has passed between
 35 the straightening-rolls, or there may be compression-rolls at both ends of the machine, if desired.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination, in a plate-straightening machine, of the upper and lower sets of non-reducing straightening-rolls offset so as to act alternately upon the plate with a pair
 45 of straight-faced compression and drawing rolls set so as to act simultaneously upon the plate, whereby the length of the plate is extended, substantially as specified.

2. The combination, in a plate-straightening machine, of the upper and lower sets of
 50 straightening-rolls with a pair of compression-rolls and means for adjusting one of said rolls both vertically and laterally with respect to the other, substantially as specified. 55

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY C. JONES.

Witnesses:

EUGENE ELTERICH,
 HARRY SMITH.