

(No Model.)

3 Sheets—Sheet 1.

J. H. STONEMETZ.
PLATE BENDING MACHINE.

No. 465,637.

Patented Dec. 22, 1891.

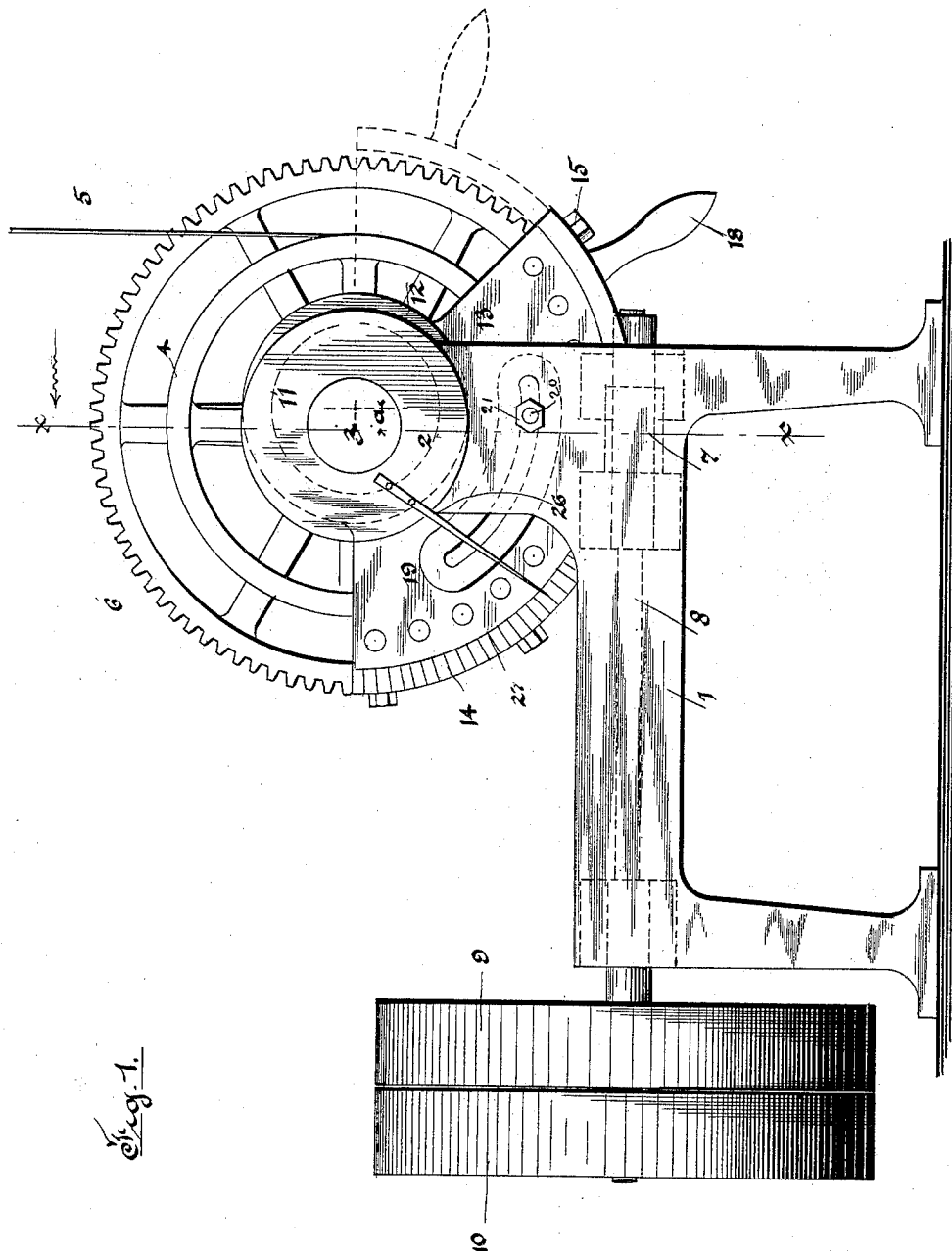


Fig. 1.

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By his Attorney

Inventor
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Louis W. Southgate

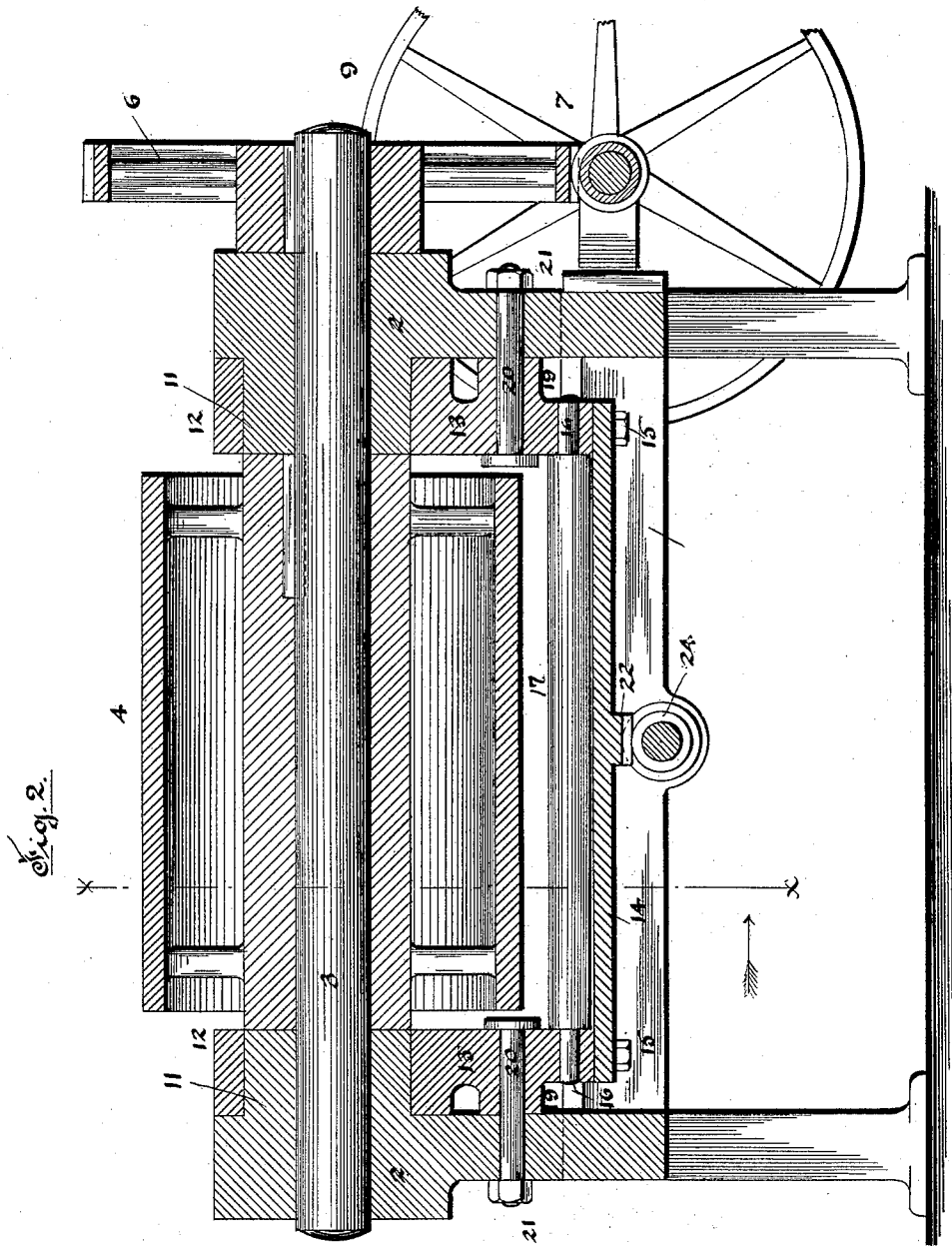
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3 Sheets—Sheet 3.

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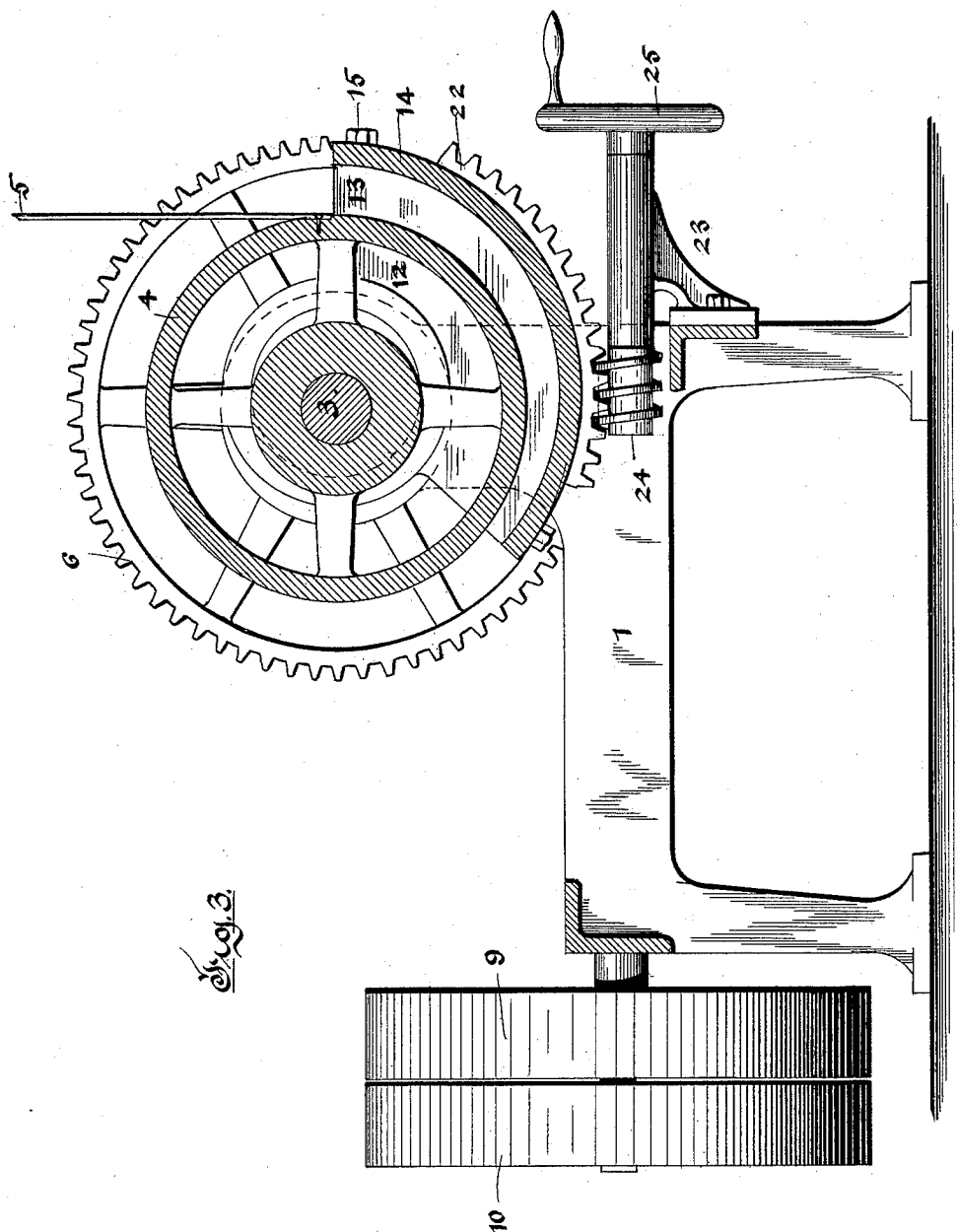


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN H. STONEMETZ, OF MILLBURY, MASSACHUSETTS, ASSIGNOR TO THE STONEMETZ PRINTERS MACHINERY COMPANY, OF SAME PLACE.

PLATE-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 465,637, dated December 22, 1891.

Application filed July 20, 1891. Serial No. 400,022. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. STONEMETZ, a citizen of the United States, residing at Millbury, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Plate-Bending Machines, of which the following is a specification.

The aim of this invention is to produce a new and improved machine for bending stereotype or electrotype plates; and to this end the invention consists of the device described and claimed in this specification and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine.

Fig. 2 is a section on line *xx* of Fig. 1; and Fig. 3 is a section on line *yy* of Fig. 2, the details in the various figures being slightly varied, as will be further described.

In detail, 1 represents a frame, which consists of the box-like structure and the supporting-legs. Integral with the frame and rising above the main part of the same are the bearings 2 2, journaled in which is the shaft 3. Keyed on this shaft 3, between said bearings 2 2, is the cylinder 4, and fastened to the cylinder is the usual protecting-plate 5 of sheet-iron or steel. Fastened on end of the shaft 3 is the worm-gear 6, and this gear is driven by means of worm 7, fast on shaft 8, which is mounted in suitable bearings bolted to the frame. On the end of this shaft may be placed any suitable means to rotate the shaft by hand or power—as, for example, the tight and loose pulleys 9 and 10, as shown.

On the inside of the bearings 2 2 are formed or fastened the hubs 11 11, which are eccentric to the shaft 3 and the cylinder 4 by the distance *a*, Fig. 1, and journaled or hung on these eccentric hubs are the bearings 12 of the frames 13. The frames 13 are fastened together by a hood 14, which is fastened by bolts 15 to the outside edges of the same. This eccentric hood 14 may of itself form the eccentric concave or bending-surface against which the plates are bent, as shown in Fig. 3; but the preferred construction is to use a series of rollers 17, which are turned down at their ends, as at 16, and are journaled in the frames 13. These rolls 17 are set on a circle whose center is the center of the eccentric hubs 11 and form the bending-surface. The

frames 13 may have the handles 18 to adjust the same, as shown in Fig. 1. The frames 13 may also have the raised portions 19 bearing against the main frame. These raised portions are slotted, as shown, and passing through the same through the slots are the bolts 20, the heads of which bear on the inside of the frames 13, and the bolts have the nuts 21.

It is evident that by tightening the nuts 21 the frames 13 will be drawn against the main frame and thus tightly clamped in place. The preferred arrangement for turning the frames 13 on the eccentric-hubs 11 is shown in Figs. 2 and 3.

Fastened or formed on the outside of the hood 14 is the toothed sector 22, forming in reality part of the worm-wheel. Bolted to the front of the frame is the bracket 23, and journaled in this bracket is a shaft, fastened on the inside end of which is the worm 24 and on the outside end the hand-wheel 25. The worm 24 is in mesh with the sector 22, and it is evident that by a manipulation of the hand-wheel the frames 13 and hood 14 may be turned on the eccentric-hubs 11. Generally when I use this worm arrangement I omit the clamping-screws 20 and depend upon the gearing to hold the concave or bending surface in its adjusted position. It is evident that as the bending-surface is journaled eccentrically to the cylinder 4 the same may be adjusted relatively to the cylinder 4 by simply turning the same, and also that the bending-surface is in all positions held parallel to the cylinder.

The concave or rolls are shown adjusted the closest possible to the cylinder in Fig. 1 and the farthest from the cylinder in Fig. 3, and it will be seen that the same may be set at any intermediate point. As the thickness of the plates varies and as it is necessary to apply more pressure to some plates than to others, this adjustment is necessary. A pointer 26 may be arranged, as shown, so as to indicate on a graduated scale formed on the edge of the hood 14 the exact point at which the surface is set.

As the concave or the series of rolls, as the case may be, is always set eccentrically to the bending-cylinder 4, being farthest from the

same at the point where the plate enters between the concave and the cylinder, the bending action will be gradual and the plate will be bent more or less at each point in the concave or on each roll. The last roll or point in the concave is of course closest to the cylinder and completes the process; thus a gradual bending action is obtained, which acts gradually along the different lines of the plate, and this action has many advantages over the machines where the bending comes all at one point, as in the latter the plate is apt to crack and the face of the type to be spoiled, as the pressure is thus all concentrated.

15 The operation of the machine is as follows: The plate is placed on the cylinder with the face of the type toward the protecting-plate 5, and a sheet of stiff card-board is preferably placed on the face of the type to protect the same, as described in patent to Wilbur, No. 20 82,463, September 22, 1868. The bending-surface, the hood, or the series of rolls, as the case may be, is adjusted relatively to the cylinder 4, as before described, so that the right degree of pressure will be brought to bear upon the plate. The cylinder is now rotated and the plate is thus carried around between the cylinder and the bending-surface, and thus is gradually bent and made to conform to the cylinder. When the cylinder has made a complete revolution, the plate may be lifted from the same or may be again sent through the machine, the bending-surface being set a little nearer to the cylinder, so that the plate will absolutely bend to the desired shape.

35 The bending-surface is not necessarily circular, but may be formed on any other suitable line, so that the bending action will be gradual. The surface might also be made to

revolve around the cylinder, the latter remaining stationary.

The details of construction herein shown may be greatly varied by a skilled mechanic without departing from the scope of my invention.

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

1. A plate-bending machine consisting of the cylinder and a bending-surface pivoted eccentrically to the cylinder and means for turning said surface about its pivot, substantially as described.

2. The combination of the frame 1, the cylinder 4, journaled in the same, the eccentric-hubs 11, formed on the frame, the frames 13, hung on said hubs 11 and connected by the hood 14, and means for adjusting said hood, substantially as described.

3. The combination of the frame 1, the cylinder 4, mounted or journaled in the said frame, the eccentric-hubs 11, formed on the frame, the frames 13, hung on said hubs 11 and connected by hood 14, the series of rolls journaled in said frames 13, the sector 22, formed on the hood 14, the worm 24, meshing therewith, and means for turning said worm, whereby the series of rolls may be adjusted relatively to the said cylinder, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN H. STONEMETZ.

Witnesses:

LOUIS W. SOUTHGATE,
JAMES J. RAFFERTY.