

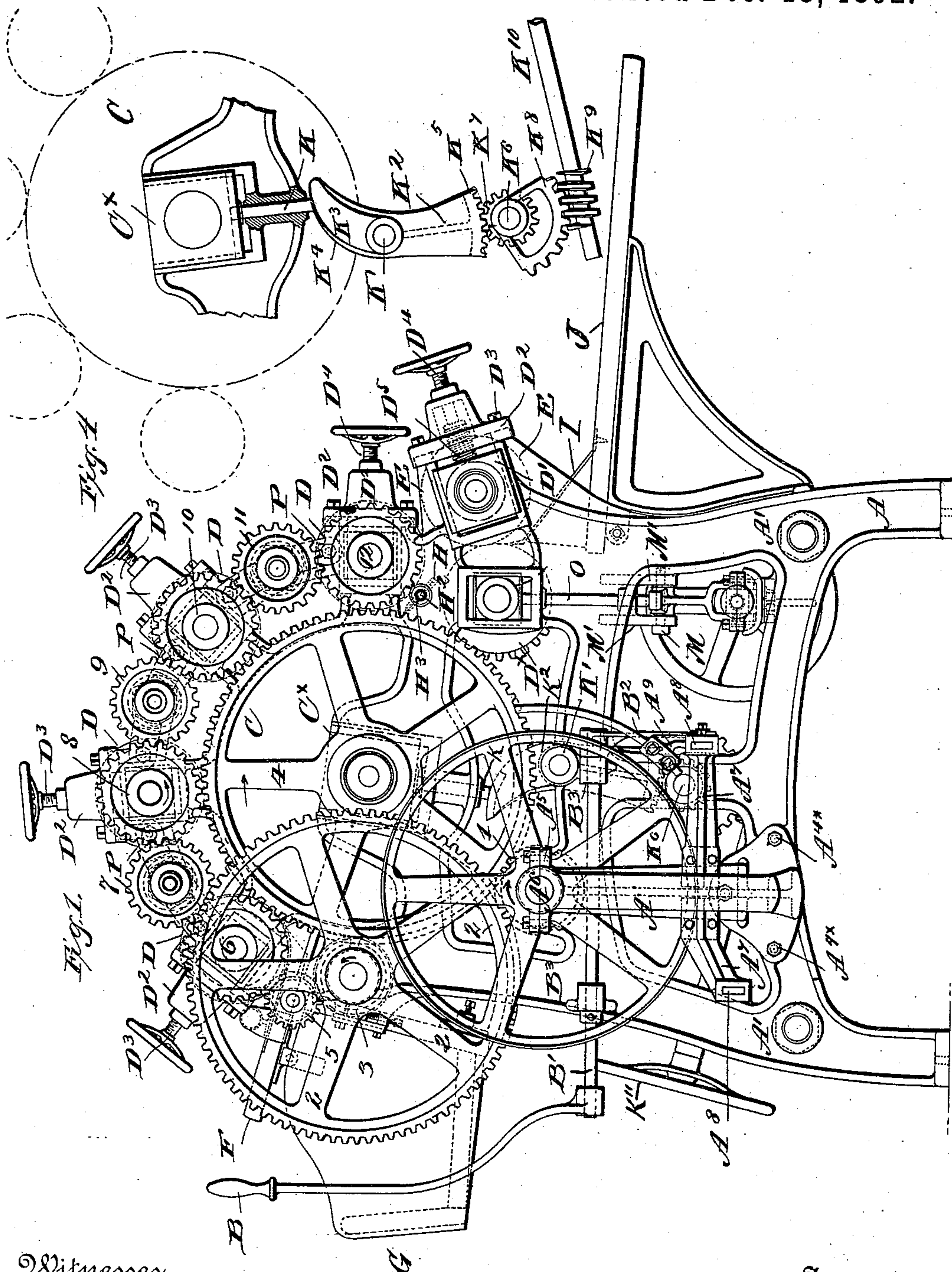
(No Model.)

3 Sheets—Sheet 1.

M. E. WENDELL.  
MANGLE.

No. 487,872.

Patented Dec. 13, 1892.



Witnesses

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L. C. Hills.

Inventor

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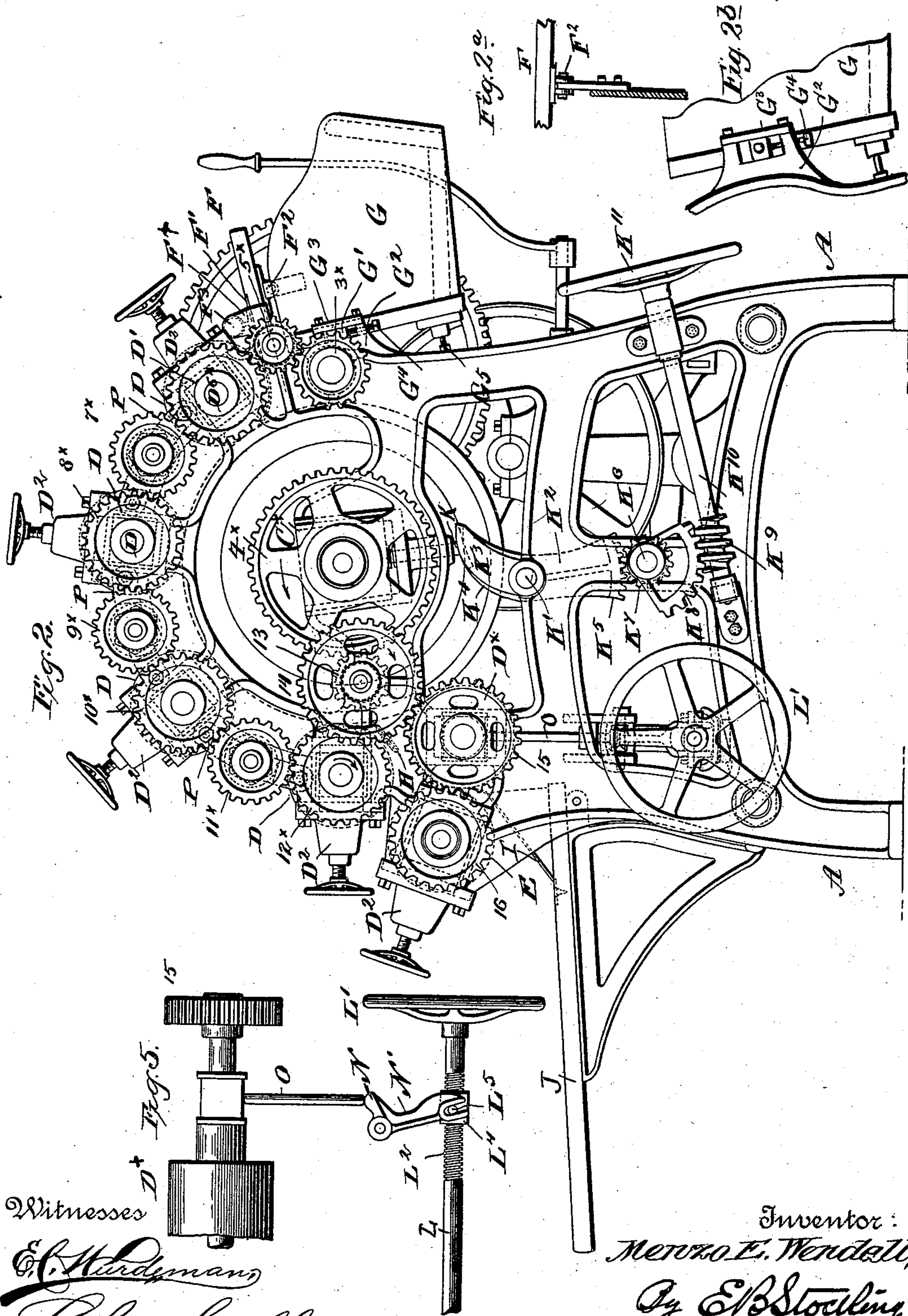
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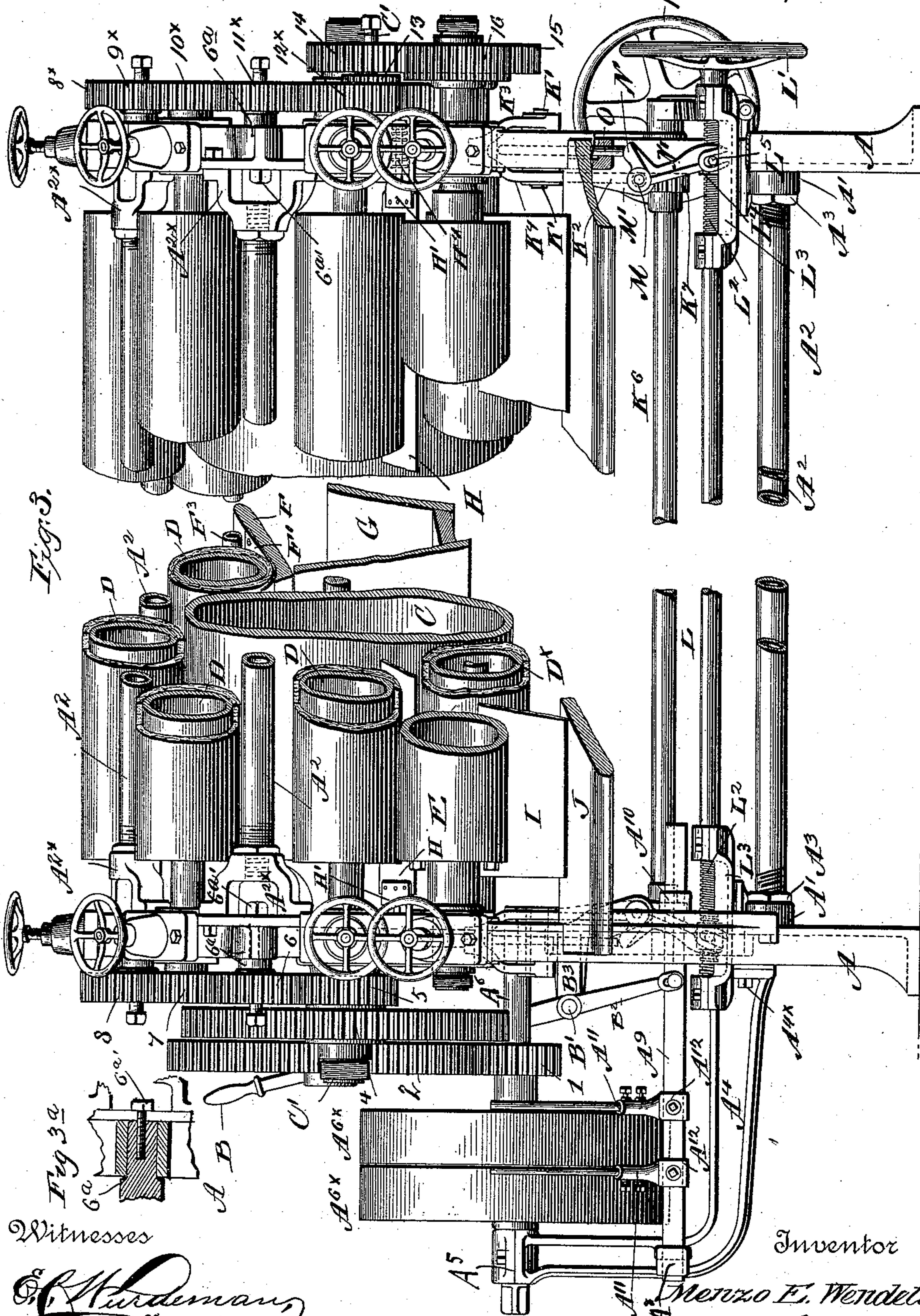
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# UNITED STATES PATENT OFFICE.

MENZO E. WENDELL, OF TROY, NEW YORK.

## MANGLE.

SPECIFICATION forming part of Letters Patent No. 487,872, dated December 13, 1892.

Application filed September 22, 1891. Serial No. 406,519. (No model.)

*To all whom it may concern:*

Be it known that I, MENZO E. WENDELL, a citizen of the United States, residing at Troy, in the county of Rensselaer, State of New York, have invented certain new and useful Improvements in Mangles, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to mangles of that class which are adapted to operate upon first one side and then the opposite side of the material.

Among the various objects in view are to give strength and rigidity to the framework, at the same time reducing its complexity and cost of manufacture, to provide a system of gearing which applies power to both ends of the ironing and clothed rolls, and to provide such a system and arrangement of such rolls as will give an extensive heated surface to the principal ironing-roller in connection with spaced clothed rolls, which permit of periods of evaporation during the process of ironing and a subsequent ironing of an opposite side of the fabric, which is a part of the continuous operation of the machine.

Further objects in view involve the provision of readily-operated mechanisms for separating the principal ironing-roll from the series of clothed rolls co-operating therewith and for the separation of the final ironing-roll from its companion clothed roll.

The invention also provides doffer-blades and guiding-surfaces to direct the material from one portion of the machine to another.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be pointed out in the claims.

Referring to the drawings, Figure 1 is a right end elevation of a mangle embodying my invention. Fig. 2 is a left end elevation of the same. Fig. 2<sup>a</sup> is a detail of the pivotal connection of the goods-box with the feed-board. Fig. 2<sup>b</sup> is a detail in side elevation showing the pivotal connection between the goods-box and frame. Fig. 3 is a rear or delivery end elevation of the machine, broken centrally and vertically, with the inner ends of the rolls and adjacent parts perspectively extended. Fig. 3<sup>a</sup> is a detail in section showing the manner of connecting the stud 6<sup>a</sup> to

the standard. Fig. 4 is a detached skeleton illustration of the mechanism employed for raising and lowering the principal and primary heated drum or roll, and Fig. 5 is a similar view of mechanism employed for raising and lowering the final or secondary heated roll.

Like letters and figures refer to like parts in all the figures.

A A represent standards which are provided with suitable bearing-box and journal receptacles for the moving parts and with apertured bosses A' for the reception of the two lower tie-rods A<sup>2</sup>, which may be either hollow or solid and which are right and left screw-threaded for connection with the bosses and have set-nuts A<sup>3</sup>, whereby the standards may be maintained a proper distance apart and parallel with each other. A bracket A<sup>4</sup> is secured to one of the standards and is provided with a bearing A<sup>5</sup> for the pulley-shaft A<sup>6</sup>, by which power is applied to the machine.

Upon the bracket A<sup>4</sup> and arranged crosswise is an arm A<sup>7</sup>, which has at each extremity a bearing-box A<sup>8</sup> for the reception and operation of one end of a belt-shifter A<sup>9</sup>, the opposite end of the belt-shifter being mounted in a bearing A<sup>10</sup>, formed on, or it may be secured to, the standard A. The belt-shifter A<sup>9</sup> is provided with a pair of belt-guides A<sup>11</sup>, adjustably secured in movable sockets A<sup>12</sup>, which are themselves adjustably mounted upon the shifter. The arrangement of the shifter, as shown in Fig. 1, is such as to receive a belt upon the right of the belt-pulleys A<sup>6</sup>, one of which, as is usual, is loosely mounted on the shaft A<sup>6</sup>. If it be desired to receive the belt from the left of the pulleys, then the shifter A<sup>9</sup> is placed in the bearing A<sup>8</sup> at the opposite end of the arm A<sup>7</sup> and in a companion bearing similar to the bearing A<sup>10</sup>, formed upon or secured to the standard A in line with said bearing A<sup>8</sup>. The adjustable connection of the guides A<sup>11</sup> is such that they can be elevated or depressed, so as to bestride the belt at any angle it may take in approaching and passing upon the pulleys.

The belt-shifter is operated by a hand-lever B, which is at the right side or end of the machine and within easy access of the operator that feeds the material to the machine. This lever B is rigidly connected with a rock-



shaft B', having a rock-arm B<sup>2</sup>, connected by a slot and pin at its free end with the shifter A<sup>9</sup>. Bearings B<sup>3</sup> are formed on the standard for the rock-shaft, and the rock-arm B<sup>2</sup> may be mounted either at the end of the shaft, as shown, or at a point between its bearings, which shall bring it in connection with the shifter when shifted to the bearing A<sup>8</sup> at the left of the pulleys. The bracket A<sup>4</sup> is secured to the standard by the bolts A<sup>4x</sup>. At this point of the description it is convenient to explain the modified manner of connecting the tie bars or tubes A<sup>2</sup> with the upper portions of the standards A. Instead of being threaded into the standards, the tie tubes or rods are threaded into brackets A<sup>2x</sup>, which are secured to the standards. These brackets, while they give a broader and stiffer connection of the parts, also leave the standards unobstructed at a point in the axial line of the tie tube or rod, and this point is utilized for the location of the studs 6<sup>a</sup> and stud-retaining bolts 6<sup>a'</sup>, passing through the standards and threaded into the stud, as shown by dotted lines in Fig. 3.

C represents the principal or primary heated roll or drum of the machine, about a portion of the periphery of which are a series of clothed rolls D, spaced so as to provide for the evaporation of the dampness of the goods being ironed as they pass from one to the other clothed roll of the series. The journals of the roll C are hollow for the purpose of the introduction of steam, and they may be exteriorly screw-threaded, as shown at C', Fig. 3, for the proper connection of suitable conductors for carrying steam into and the exhaust-steam from the roll. The journals of the rolls D are suitably mounted in boxes D'. (Shown in dotted lines, Fig. 2.)

In Fig. 1 there is a sliding box D', carrying the roll E, (shown in full lines,) and as it is mounted in the frame and controlled or adjusted in like manner to the boxes of the rolls D a description thereof will be given with particular reference to Fig. 1.

The frame A is provided with a square recess, in which the box may slide, and this recess is bridged by a cap D<sup>2</sup>, secured to the frame or standard by screws or bolts D<sup>3</sup>. There is threaded in the cap a hand-wheeled bolt D<sup>4</sup>, and between the head of this bolt and the sliding box there is interposed a coiled spring D<sup>5</sup>. There is provided at each end of each of the rolls such a cap, bolt, and spring, so that the pressure and proper alignment of the clothed rolls with the heated roll or drum C may at all times be secured. The last clothed roll D<sup>x</sup> of the series is not intended to contact with the principal heated roll or drum C, but with the final or secondary heated roll E, which, as above stated, is regulated as to its contact with the clothed roll D<sup>x</sup> by similar means to that employed on the clothed rolls D, above described.

F is the feed-board, upon which goods are placed when they are fed into the machine. It

has upon its upper surface a sheet-metal guide-plate F', that projects beneath and is curved to conform more or less with the periphery of the first clothed roll. The feed-board F is pivotally connected at F<sup>2</sup> with the goods-box G, and the latter is adjustably connected with the standards by means of projections G', one at each end of the box, which ride in a bearing G<sup>2</sup>, formed on the frame and covered by a bar G<sup>3</sup>, and having an adjusting-bolt G<sup>4</sup>, by which the box G may be raised or lowered, and by the pivotal action of the feed-board F therewith the front edge or portion of the curved feed-plate F' is brought nearer to or farther from the clothed roll D, as desired, when ironing goods of varied thickness and to insure a forward movement of the goods by the roll D. The feed-board F is suspended by brackets F<sup>x</sup>, which hang from a rod F<sup>3</sup>, extending across the machine and over the feed-board. The goods-box G is pivotally supported by the projections G' and is provided with a bolt G<sup>5</sup>, which rests against the edge of the standard. There is a bolt at each end of the goods-box. These bolts G<sup>5</sup> serve the purpose of adjusting the bent portion of the feed-plate F' with relation to the periphery of the primary heated roll, and that independently of the adjustment of the guide-plate with relation to the clothed roll.

H is a doffer-blade, which extends from side to side of the machine and along the primary heated roll from end to end. This doffer is a comparatively-thin steel or brass plate, at the ends of which are secured heads H', terminating in bolts H<sup>2</sup>, which pass through the standards and are provided with nuts H<sup>3</sup>, Fig. 1. At one end of the doffer the bolt H<sup>2</sup> is encircled by a coiled spring H<sup>4</sup>, (see dotted lines at the right of Fig. 3,) which spring impinges against the standard and on its outer surface and against the inner surface of the nut, so that the edge of the doffer bears yieldingly against the surface of the roll C, so as to strip the goods therefrom, and it is inclined so as to direct said goods between the final heated roll E and the final clothed roll D<sup>x</sup>, from which the goods are guided by a delivery plate or board I onto the delivery table or shelf J of the machine.

The means for raising and lowering the principal or primary heated roll C into and out of contact with the series of clothed rolls D consists of a pin K, one at each end of the roll and each arranged to bear against the lower side of the box C<sup>x</sup>, in which the journal of the roll C rotates. Below the pin there is pivoted in the framework at K' a sector-cam K<sup>2</sup>, the face of which makes contact with the pin K. The sector-cam is bifurcated and the shorter bifurcation K<sup>3</sup> takes bearing on the outside of the standard on the pivot K', while the longer bifurcation K<sup>4</sup> takes bearing on said pivot K' on the inside of the standard and is extended downward in the form of a toothed sector K<sup>5</sup>. It is understood that there are two sector-cams in the machine, one



mounted in each standard, and that the sliding boxes of the roll C are operated by said cams and the interposed pins.

K<sup>6</sup> is a shaft extending from one standard to the other and provided with pinions K<sup>7</sup>, which mesh with the toothed sectors K<sup>5</sup>. The shaft K<sup>6</sup> is extended through the standards and is provided with a geared sector K<sup>8</sup>, with which a worm K<sup>9</sup> upon a shaft K<sup>10</sup> meshes. A hand-wheel K<sup>11</sup> is provided for rotating the shaft K<sup>10</sup>. Now it will be seen that by means of the hand-wheel K<sup>11</sup> and the connecting devices just described the heated roll C may be readily elevated or depressed, so as to regulate the pressure to which the goods shall be subjected and to remove the heated roll from the clothed rolls when the machine is not actually in operation, and thus prevent scorching the clothing of the rolls D.

The means employed for separating and bringing together the final heated roll E and clothed roll D<sup>x</sup> consist of a shaft L, provided with a hand-wheel L' and a right and left screw-threaded portion L<sup>2</sup> at each end, respectively. Boxes L<sup>3</sup> are provided for supporting the shaft L in the standards and at points beyond and at each end of its threaded portion, thus strengthening that portion at each end of the shaft to withstand the pressure brought to bear thereon. A nut L<sup>4</sup>, having trunnions L<sup>5</sup>, is mounted on the threaded portion of the shaft, so as to travel therealong when the shaft is turned. On a pivot M, which passes through brackets M', depending from the standards, there is mounted a cam N, which is provided with an arm N', which is bifurcated to embrace the nut and again to embrace the trunnions of the nut. A pin O extends upwardly through the standard and bears against the under surface of the box of the clothed roll D<sup>x</sup>, with which the heated roll E co-operates. It is understood that there are duplicate cams and pins, one under each box of the roll, so that by turning the hand-wheel L' in one direction the boxes are raised, while they are lowered by turning the said wheel in the opposite direction.

My invention is not limited to any particular system of gearing for giving the desired movement to the several rolls; but I have illustrated a duplicate system of gearing whereby power is conveyed to the opposite ends of each of the rolls. Power is applied to the shaft A<sup>6</sup> by means of the pulley A<sup>6x</sup>, and on this shaft is a pinion 1, which meshes with a master-gear 2 on a shaft which extends through both standards and passes under the feed-board and back of the goods-box and has upon its opposite end a gear 3<sup>x</sup>, Fig. 2. Inside of the gear 2 there is a pinion 3, which meshes with the large gear 4, mounted on the shaft of the drum or roll C. An idle-gear 5, Fig. 1, meshes with the pinion 3 and with the gear 6 of the first clothed roll of the series. The remaining rolls are rotated by means of

the following gears of the series—viz., 7, 8, 9, 10, 11, and 12—those bearing odd-number intermediates mounted on bridges P, secured at each end to the bearings formed in the standards for the reception of the sliding boxes of the various rolls.

By referring to Fig. 2 the system of gears connecting the opposite ends of the rolls will be plainly seen. The gear 3<sup>x</sup> meshes with the intermediate 5<sup>x</sup> and the remaining gears and intermediates being indicated in said figure as follows: 6<sup>x</sup>, 7<sup>x</sup>, 8<sup>x</sup>, 9<sup>x</sup>, 10<sup>x</sup>, 11<sup>x</sup>, and 12<sup>x</sup>, the intermediates being mounted on bridges P. The roll C is provided with a large gear 4<sup>x</sup>, which meshes with a pinion 13, whose companion gear 14 meshes with the gear 15 on the last of the clothed rolls, and this latter gear meshes with the gear 16, mounted on the secondary or final heated roll E.

Having described my invention, what I claim as new is—

1. A mangle comprising a primary heated roll, a series of clothed rolls spaced about its periphery, a secondary heated roll, and a doffer interposed between the last two of the series of clothed rolls, substantially as specified.

2. A mangle comprising a primary heated roll, a series of clothed rolls spaced upon its periphery, a secondary heated roll, a doffer interposed between the last two of the clothed rolls, and a guide-plate interposed between the secondary heated roll and the last clothed roll, substantially as specified.

3. The primary heated roll, the first clothed roll, and a pivoted feed-board having a curved feed-plate, substantially as specified.

4. A vertically-movable goods-box and a pivoted feed-board, in combination with the rolls of a mangle, substantially as specified.

5. A pivoted goods-box and a pivoted feed-board, in combination with the rolls of a mangle, substantially as specified.

6. A feed-board pivotally connected with a goods-box and the latter pivotally connected with the framework, in combination with the rolls, substantially as specified.

7. A goods-box pivotally connected with a mangle and provided with means for vertical adjustment, substantially as specified.

8. A goods-box pivotally connected with the framework and provided with means for adjusting the same upon its pivot and connected with a feed-board to vary the position of the feed-board by the adjustment of the goods-box, substantially as specified.

9. A feed-board pivotally suspended upon the framework and provided with a curved feed-plate and means for retaining the board and feed-plate in an adjusted position, substantially as specified.

10. The combination, with the standard and a tie-rod, of a bracket secured to the tie-rod and to the standard at points at opposite sides of the standard and a device mounted in the



standard and in line with the tie-rod, substantially as specified.

11. A standard, a bracket, a tie-rod, and a gear-stud, constructed and arranged substantially as specified.

12. The combination, with the bearing-boxes of a roll, of pins, pivoted cams extended below their pivots in the form of gears, a threaded shaft, and intermediate power-conveying devices for moving the cams upon their pivots, substantially as specified.

13. The combination, with the bearing-boxes of a roll, of pins and geared cams and gearing connecting the cams at a point below

their pivots with a cam-operating shaft, substantially as specified.

14. A bifurcated cam provided with pivot-bearings and having one of the bifurcations extended beyond the other and formed for operative connection with cam-operating gearing, substantially as specified.

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

MENZO E. WENDELL.

Witnesses:

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M. VAN ALSTYNG.