L. R. HEIM.

IRONING MACHINE.

APPLICATION FILED OCT. 21, 1908.

1,036,111.

Patented Aug. 20, 1912.

4 SHEETS—SHEET 1.

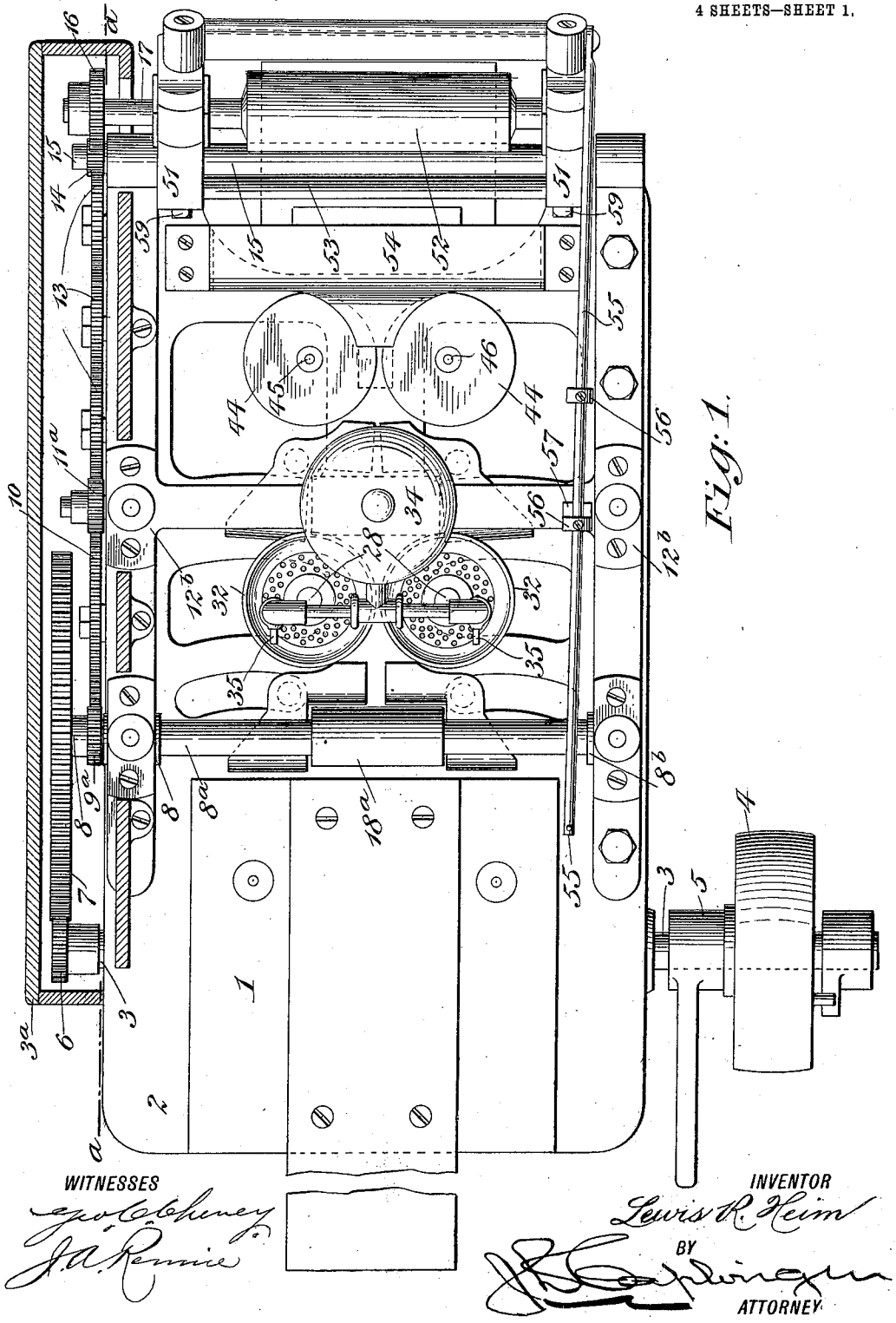

Fig. 1.

WITNESSES

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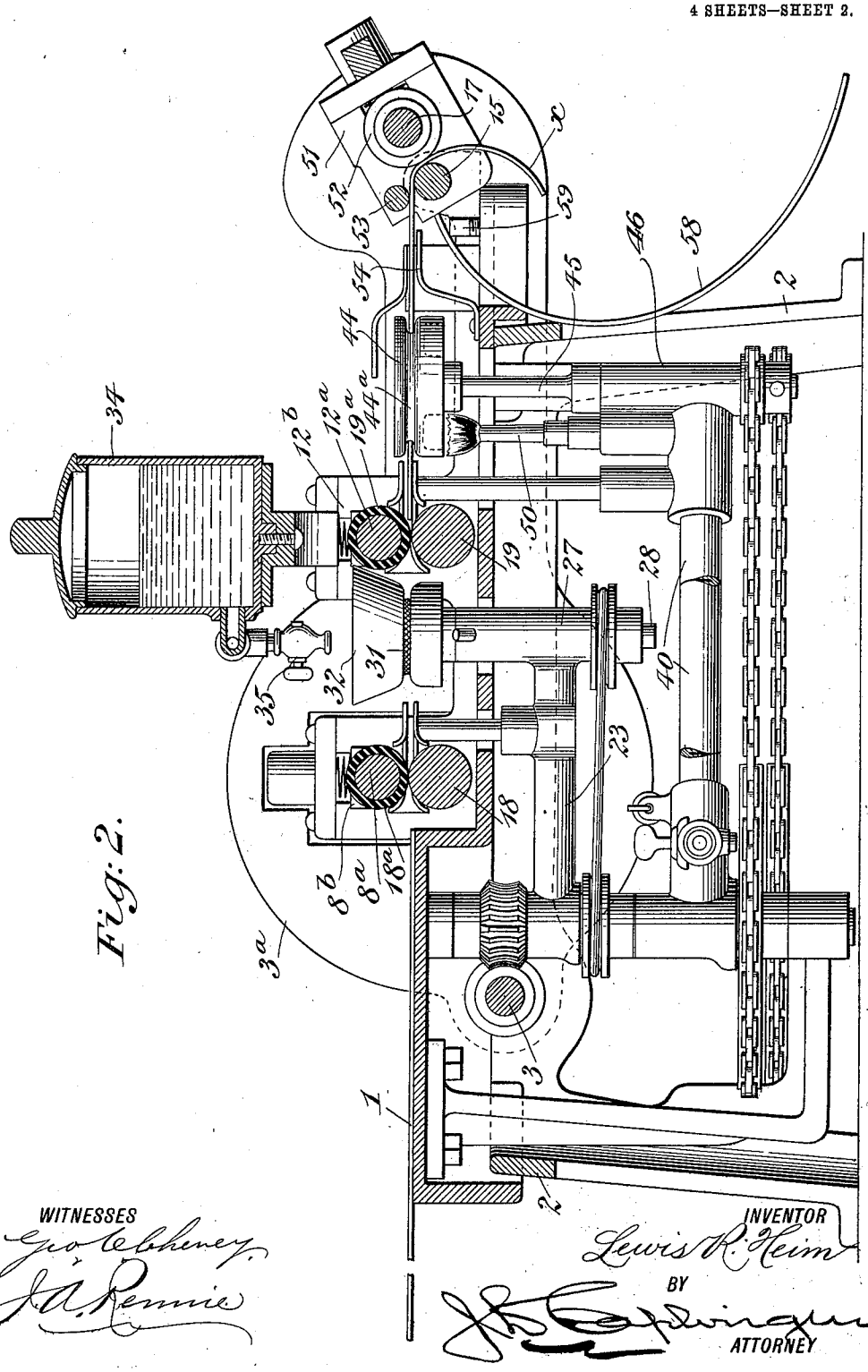

Fig. 2.

WITNESSES

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4 SHEETS—SHEET 3.

Fig. 4.

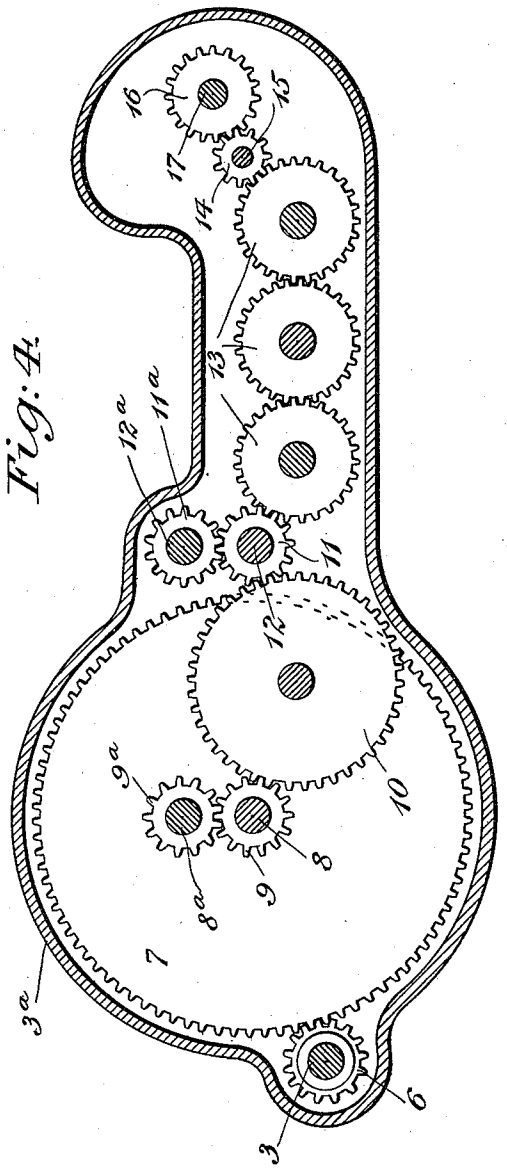
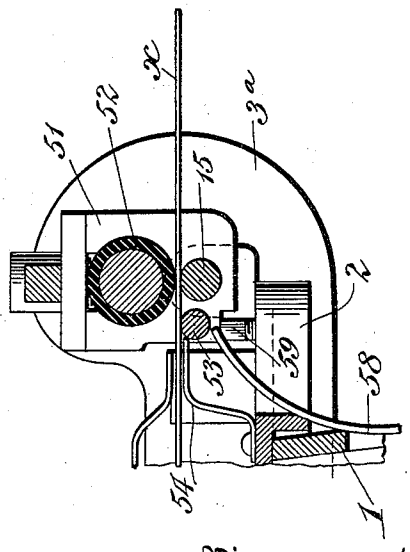


Fig. 3.



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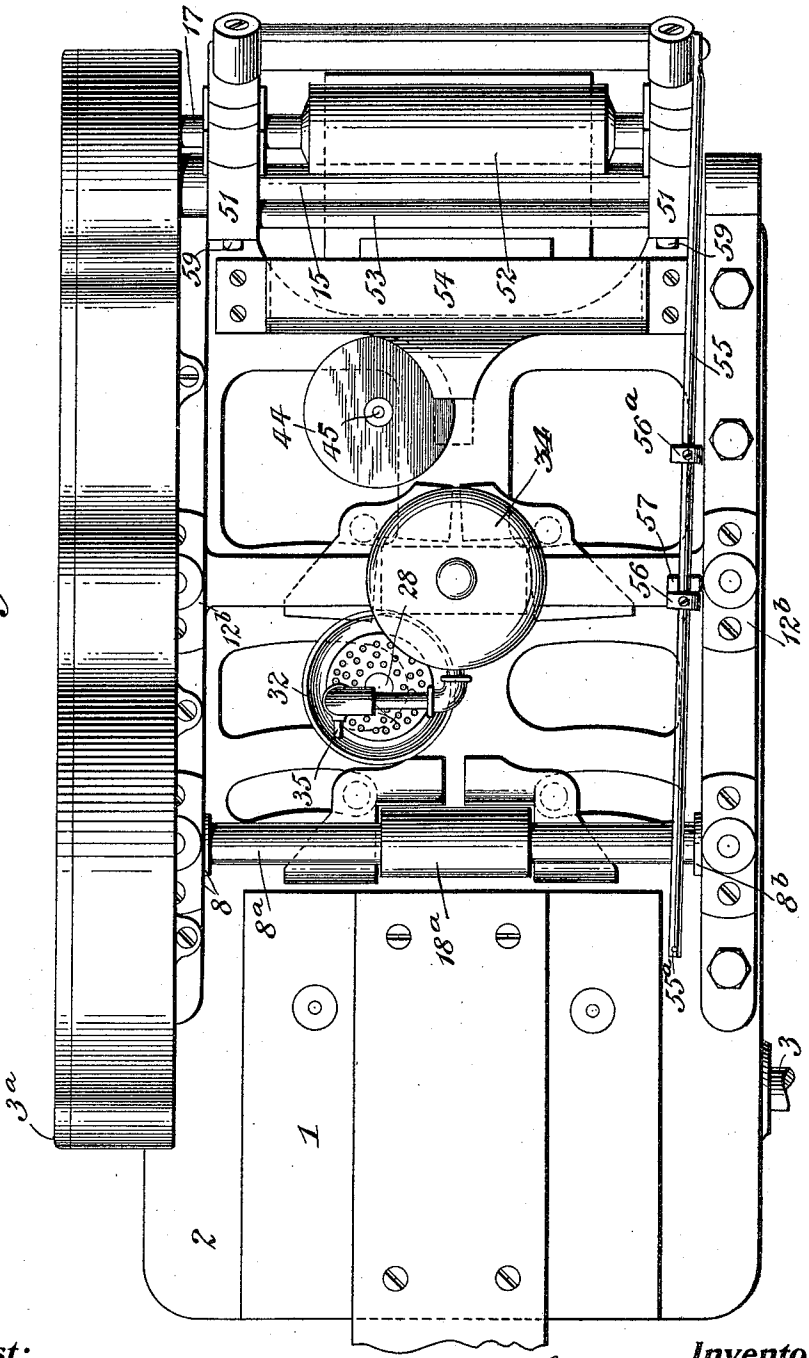
4 SHEETS—SHEET 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

LEWIS R. HEIM, OF DANBURY, CONNECTICUT.

IRONING-MACHINE.

1,036,111. Specification of Letters Patent. Patented Aug. 20, 1912.

Application filed October 21, 1908. Serial No. 458,774.

To all whom it may concern:

Be it known that I, LEWIS R. HEIM, a citizen of the United States, and a resident of Danbury, in the county of Fairfield and State of Connecticut, have invented certain Improvements in Ironing-Machines, of which the following is a specification.

This invention relates to certain improvements in ironing machines, and more particularly in that class of such machines which are provided with means for shaping collars, cuffs, and the like, and the object of the invention is to provide a machine of this general character of a simple and comparatively inexpensive nature having a novel and improved arrangement of shaping means capable of being adjusted in such a manner as to afford a material advantage and convenience in the practical employment of the mchine.

The invention consists in certain novel features of the construction, and combinations and arrangements of the several parts of the improved ironing machine and its said shaping means, whereby certain important advantages are attained, and the device is rendered simpler, less expensive and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, wherein I have illustrated two embodiments of my invention Figure 1 is a plan view showing an ironing machine provided with my improvements, the gear casing along one side of the machine being shown in section to permit of illustrating the inclosed gearing; Fig. 2 is a vertical section taken longitudinally through the machine, and showing the shaping means adjusted to one position; Fig. 3 is a fragmentary sectional view showing the shaping means adjusted to a position different from that wherein it is shown in Fig. 2. Fig. 4 is a fragmentary sectional view taken vertically through the machine in the plane indicated by the line *a*, *a* in Fig. 1, and showing certain details of the gearing, and Fig. 5 is a plan view somewhat similar to Fig. 1, but showing a modification.

In these views I have shown my improvements applied for use in connection with an edge burnishing machine, such as is shown and claimed in my pending patent application, Serial No. 364979, filed March 28, 1907, but while my present invention is particularly well adapted for use in connection with such machines, I do not desire to be understood as limiting myself to this application of my improvements, since it will be evident that the present invention is capable of employment, with good results, in connection with machines of other kinds than that herein shown.

As seen in these views 1 represents the bed or table of the machine over which the work is fed, and 2 represents a supporting frame therefor of any suitable construction.

3 is a drive shaft, extended transversely across the forward portion of the frame 2, being journaled in suitable bearings and provided at one end with a loose pulley 4 adapted to receive a belt or band by means of which the machine may be driven from any suitable source of power.

5 represents a clutch mechanism of any approved kind for locking the shaft 3 to turn with the pulley.

At one side of the machine, the shaft 3 carries a gear pinion 6 meshing with a spur gear wheel 7 upon a shaft 8 extended in bearings horizontally of the machine just below the level of the bed or table 1 and parallel with the shaft 3. The gears 6 and 7, together with certain other gearing for transmitting movement to various moving parts of the machine, are housed in a gear casing 3^a extended along one side of the machine as shown in Figs. 1, 2 and 4 of the drawings.

8^a represents another shaft journaled in elastically depressed bearings 8^b, 8^b on the frame, in such position as to stand in position immediately above and parallel with the shaft 8, and 9, 9^a represent intermeshing gear pinions mounted upon the adjacent ends of the respective shafts 8 and 8^a within the gear casing 3^a, the arrangement of the parts being such that the movement of shaft 8 is communicated to shaft 8^a so that the two shafts are driven in unison.

10 represents an idler pinion journaled upon a stud in the gear casing 3^a and meshing at one side with the pinion 9 on shaft 8, and at its opposite side with a pinion 11 upon a shaft 12, journaled in bearings in the frame beneath the bed or table 1 at the rear of and parallel with the shaft 8 from which it is driven through the interposed gearing above described.

12ª represents another shaft journaled in elastically depressed bearings 12ᵇ, 12ᵇ at the sides of the frame and extended above and parallel with the shaft 12 and carrying a pinion 11ª within the gear casing 3ª and meshing with a pinion 11 upon the shaft 12 in such a manner that said shafts 12 and 12ª are driven in unison with each other and at the same speed.

Upon the shaft 8 at or near the central part of the machine is a metal bed roller 18, whereon bears a rubber surfaced roller 18ª carried by the shaft 8ª, the bite of these rollers being substantially in alinement with the top surface of the feed table or bed 1, so that the work passed over said table will be securely gripped between said rollers 18 and 18ª and by them carried through the machine. In a similar way the shaft 12 carries a metal bed roller 19, while the corresponding upper shaft 12ª carries a rubber surfaced roller 19ª bearing upon the top surface of said bed roller 19, the bite of these rollers 19 and 19ª being also alined with the top surface of the bed or feed table 1 of the machine, so that the work drawn between the feed rollers 18, 18ª will be fed between said rollers 19, 19ª and by them will be further fed or drawn through the machine.

The forward and rear feed rollers 18, 18ª and 19, 19ª above described are suitably spaced apart to receive between them certain moistening or dampening devices which, as herein shown, are in the nature of disk-like moistener pads 31, 31 of felt or similar absorbent material, held beneath cups 32, 32 at the upper ends of studs 28 mounted to turn in bearings 27 at the rear ends of pivotally mounted arms 23, and driven by suitable gearing from the shaft 3.

The cups 32, 32 receive water from an elevated tank or holder 34 mounted upon the frame and provided with discharge cocks 35, 35 located above the respective cups in such a way that the supply of water thereto may be effectively regulated, the bottoms of said cups being apertured so as to permit the water supplied thereto to be delivered to the moistener pads 31, 31 which are thereby kept properly moistened by the water supplied from the tank 34 to said cups.

By the structure so far described it will be evident that the work fed into the machine over the work table 1 will be gripped in the bite of the forward feed rollers 18, 18ª and will be by them passed across the space intervening between said rollers and the rear feed rollers 19, 19ª and presented at the bite of the latter so as to be in turn gripped by said last-named feed rollers and further fed or drawn through the machine, and in the movement of such work across the space intervening between the two sets of feed rollers 18, 18ª and 19, 19ª, the opposite edges of such work will be moved in contact with the respective moistener pads 31, 31, so as to be dampened or moistened thereby, the arms 23 whereon the moistening devices are carried swinging pivotally so as to permit said moistening devices to move toward and from each other to accommodate themselves to the opposite edges of the work whereon the pads 31, 31 contact.

Beyond the second or rear pair of feed rollers 19, 19ª are arranged means for ironing or burnishing the moistened lateral edges of the work prior to the delivery of the same from the rear end of the machine and, as herein shown, said ironing or burnishing means comprises burnishers or ironers 44, 44, herein shown as made in the form of metal disks or rollers with perimetral grooves 44ª adapted to receive the lateral edge portions of the work in order that the same may be smoothed and ironed by the circumferential surfaces at the bases of said grooves as will be readily understood.

The ironers or burnishers 44, 44 are rotatable in the direction of feed imparted to the work by the feed rollers 18, 18ª and 19, 19ª, so as to lessen the wear imposed upon the work and to facilitate the movement of such work to the shaping means to be hereinafter described, and are carried at the upper ends of studs 45, 45, mounted to turn in bearings 46, 46 at the rear ends of pivotally mounted arms 40, 40, and driven by means of suitable gearing from the shaft 3, the arrangement of the parts being such that said arms 40, 40 are adapted to swing pivotally to permit the ironers or burnishers 44, 44 to move toward or from each other to accommodate themselves to the edges of the work wherewith they are in contact as such work is fed through the machine through the action of the rearmost feed rollers 19, 19ª.

50, represents a gas burner arranged for heating each of the ironers or burnishers in a well known way.

So far as described, the construction is similar to that shown and claimed in my above-mentioned pending patent application, and is not claimed herein, being merely illustrated herein for showing one desirable application of my improvements. I will now proceed to describe the construction of the improved shaping means as herein shown.

13, 13 represents a train of gears within the gear casing 3ª and meshing at one side with the pinion 11 upon the shaft 12, the opposite side of said train of gears being in mesh with a pinion 14 upon one end of a shaft 15, journaled in bearings at the opposite sides of the machine frame, said shaft 15 being extended across said frame at the rear of and parallel with the shaft 12, from

which said shaft 15 is driven in the operation of the machine through the medium of the gear train 13.

16 represents another gear pinion within the gear casing 3ª, being mounted upon the end of a shaft 17 journaled in an auxiliary frame member or yoke 51 adjacent to the rear or delivery end of the machine, and meshing with the pinion 14 upon the shaft 15. The said auxiliary frame member or yoke 51 has arms which are pivotally supported upon the shaft 15 at opposite sides of the main frame of the machine in such a way as to permit said auxiliary frame member or yoke to be swung pivotally upon said shaft to afford certain adjustments of the shaping means without in any way interfering with the transmission of movement from shaft 15 to shaft 16 through the intermeshing gear pinions 14 and 16.

Between the arms of the auxiliary frame member or yoke 51, the shaft 15, which is at the lower side of the horizontal path traversed by the work after leaving the rear feed rollers 19, 19ª, is formed into a roll, the upper surface of which is adapted to receive and support such work, a guide or feed plate 54, extended across the machine at the rear of the burnishing or ironing means being adapted to guide and direct the work accurately to said upper surface of said roll.

The corresponding central portion of the upper shaft 17 which is driven in unison with shaft 15 is also provided with a rubber surfaced roll 52, adapted to bear upon the upper surface of said roll-like part of shaft 15 so that the work delivered as above described, upon the top surface of said shaft 15 is adapted to be securely gripped in the bite between said roll-like portion of shaft 15 and the rubber surfaced roller 52, and thereby carried on through the machine past the burnishers or ironers 44, 44 after being released from the rearmost feed rollers 19, 19ª, and eventually discharged from the machine. The shaft 17 carrying the rubber surfaced roll 52 is preferably mounted in elastically depressed bearings in the arms of the auxiliary frame member or yoke 51 so as to be adapted to accommodate inequalities in thickness of the work passed through the machine.

53 represents a rod or roller extended transversely across the space between the arms of the auxiliary frame member or yoke 51, parallel with the shaft 15 and adapted, when said frame member or yoke 51 is in one adjusted position, as seen in Fig. 2, to extend above the plane in which the work is fed through the machine, and when said yoke or frame member 51 is in another adjusted position, as shown in Fig. 3, to stand below the plane in which the work is fed through the machine, the eccentric mounting of said rod or roller 53 with reference to the shaft 15 serving to insure the described positioning of the same when the yoke or frame member is adjusted. When said yoke or frame member 51 is adjusted to the position shown in Fig. 2, the work fed through the machine will be passed with the aid of the forwardly driven ironers or burnishers 44, 44 between the rod or roller 53 and the roll-like part of shaft 15, and upon being gripped in the bite of the roll like part of shaft 15 and roller 52 will be bent across the top of said shaft 15 so that upon being discharged from the machine, the proper curved or bent form or shape will be imparted to the work as indicated at *x* in Fig. 2. 58 represents a curved guide plate or member located at the delivery end of the machine and whereon the discharged work is adapted to contact in such a fashion as to be prevented from becoming soiled by contact with operative parts of the machine or its frame.

When the frame or yoke 51 is adjusted to the upright position shown in Fig. 3, with the eccentrically mounted rod or roller 53 below the path of the work, it is evident that the work after passing beyond rollers 19, 19ª will be presented in flat form at the bite between the roll-like part of shaft 15 and roll 52, so that these parts will operate merely as feed rolls to draw the work past the burnishers or ironers 44, 44 and discharge it from the machine, and will not bend or shape such work.

During the use of my improvements constructed as above described, it will also be apparent that the burnishers or ironers 44, 44 and also, to a certain extent, the moisteners 32, 32, will bear with resilient or spring tension upon the opposite edges of the work fed through the machine, and will thereby operate to assist very materially in maintaining such work centrally positioned during its presentation to the shaping means and during its travel through such means, whereby injury to the finished edges of the work such as would result from contact thereof with the arms of the yoke or other parts of the machine is effectively avoided. Such centering of the work presented to the shaping means also permits of insuring the desired curvature of the finished collars or cuffs, and of avoiding the liability of imparting a spiral form thereto, without requiring any peculiar skill on the part of the attendant.

In order that an attendant may conveniently operate the yoke or frame member 51 to move it pivotally to the desired adjustment, I provide an operating rod 55, the rear end of which is connected with the said frame or yoke 51 at one side of the machine, said operating rod being extended thence forward to the feed end of the ma-

chine where it is provided with a handle 55ª. This operating rod 55 is adapted to be seated in a notched lug 57 upon the main frame, and has spaced stop collars 56, 56ª adjustably held upon it and adapted for engagement in front of said notched lug 57 in such a manner as to hold said rod 55 and the yoke or frame member 51 connected therewith in their respective adjusted positions.

When it is desired to change the adjustment of the shaping or delivery rolls from the position shown in Fig. 2 to that shown in Fig. 3, or vice versa, it is therefore, only necessary to lift the rod 55 out of the notch of lug 57 and to move said rod endwise to suitably adjust said yoke or frame 51, after which, the rod 55 being again dropped into the notch of lug 57, the corresponding stop collar 56 or 56ª will, by engagement against the front surface of said lug, serve to hold the parts in adjusted position.

The collars 56, 56ª being held adjustably upon the rod 55 permit of being loosened and adjusted along said rod so that the degree of tilting movement imparted to the yoke or frame 51 may be nicely regulated to insure the desired curvature or shaping of the articles passed through the device. Screws 59, 59 set in the table 2 in suitable positions have their heads adapted for engagement upon the underside of the yoke or frame 51, when the same is adjusted to its vertical position, so as to effectively prevent forward tilting movement of the said yoke or frame when in its upright position. These screws, of course, permit of being adjusted vertically upon the frame to bring their heads into proper position for engagement with said yoke or frame.

In Fig. 5 I have shown my improvements applied for use in connection with another formation of edge ironing or burnishing machine, wherein a single moistener and a single ironer or burnisher are employed for ironing or burnishing but one edge of a collar, cuff or the like at each passage of such article through the machine. In order to avoid shaping the collar, cuff or other article when first passed through a machine of this character, it is desirable to adjust the yoke or frame 51 to the upright position shown in Fig. 3. Upon the second passage of the article through the machine, the yoke or frame 51 is adjusted to the inclined position shown in Fig. 2, so that the desired curvature shall be imparted to said article.

From the above description of my invention it will be obvious that the device embodying my improvements is of an extremely simple and comparatively inexpensive nature, and is especially well adapted for use in shaping collars, cuffs, and similar articles, and for permitting such articles to be passed through the machine in which my improvements are embodied in flat form when desired, and it will also be obvious from the above description that the device is susceptible of some modification without material departure from the principles and spirit of the invention, and is capable of employment in connection with a wide variety of laundry machines, and for this reason I do not desire to be understood as limiting myself to the precise form and arrangement of the several parts of the device herein set forth in carrying out my invention in practice.

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

1. A machine of the character described having ironing means engageable with the work to iron the same, and driven shaping means adjustable into and out of position to shape the work, and capable of operation to move the work past the ironing means when adjusted out of position to shape the work.

2. A machine of the character described having ironing means engageable with the work to iron the same, a part positioned for engagement with work emerging from the ironing means and adapted to guide such work, and capable of adjustment in a direction transverse to the path of the emerging work, and rotatory driven devices to which the work is directed by said adjustable part, capable of operation, when said part is adjusted to one position, to move the work past the ironing means and to discharge the same in flattened form, and when said part is adjusted to another position, to shape said work.

3. A machine of the character described having ironing means engageable with an edge of the work to burnish the same, and rotatory driven mechanism adjustable into and out of position to shape the work, and capable of operation to move the work past the ironing means in flattened form when adjusted out of position to shape the work, said ironing means being movable in a direction parallel with the rotative axis of said adjustable mechanism to accommodate irregularities in the edge of the work wherewith it is engaged.

4. A machine of the character described having ironing devices engageable, respectively, with opposite edges of the work to burnish the same, and driven shaping devices between which the work is received adjustable into and out of position to shape the work, and capable of operation to move the work past the ironing devices when adjusted out of position to shape the work.

5. A machine of the character described having ironing devices, engageable, respectively, with opposite edges of the work to burnish the same, a part positioned for engagement with work emerging from said ironing devices and adapted to guide such

work, and capable of adjustment in a direction transverse to the path of the emerging work, and rotatory driven devices to which the work is directed by said adjustable part, capable of operation, when said part is adjusted to one position, to move the work past the ironing means and to discharge the same in flattened form, and when said part is adjusted to another position, to shape said work.

6. A machine of the character described having ironing means engageable with the work to iron the same, and shaping means including rolls between which the work is adapted to be passed, said rolls being adapted for continuous feeding engagement with the work to move the same past said ironing means, and one of said rolls being movable concentrically with respect to the other into and out of position for shaping engagement with the work.

7. A machine of the character described having spaced ironing devices engageable with opposite edges of the work to burnish the same, and shaping means including rolls between which the work is adapted to be passed, said rolls being adapted for continuous feeding engagement with the work to move the same past said spaced ironing devices, one of said rolls being movable concentrically with respect to the other into and out of position for shaping engagement with the work, and said spaced ironing devices being movable toward and from each other in directions parallel with the rotative axes of said rolls to compensate for irregularities in the edges of the work wherewith they are engaged.

8. A machine of the character described having ironing means engageable with the work to iron the same, shaping means adjustable into and out of position to shape the work and capable of operation to move the work past the ironing means when adjusted out of position to shape the work and work feeding means capable of operation to feed the work in contact with the ironing means.

9. A machine of the character described having ironing means engageable with the work to iron the same, work feeding means positioned at one side of the ironing means and capable of operation to feed the work past the same and shaping means positioned at the opposite side of said ironing means adjustable into and out of position to shape the work and capable of operation to move the work past the ironing means when adjusted out of position to shape the work.

10. A machine of the character described having ironing means engageable with the work to iron the same, adjustable shaping means adapted to receive the work fed from the ironing means and capable of operation to shape the work when in one adjusted position and to move the work past the ironing means when adjusted out of position to shape the work and a part interposed between the ironing means and said shaping means adapted to direct the work to said shaping means, and capable of adjustment to permit the ironed work to be moved past the shaping means in flattened form.

11. A machine of the character described having a plurality of ironing devices engageable respectively with opposite surfaces of the work to iron the same and shaping means including rolls between which the work is adapted to be passed one of said rolls being movable concentrically relatively to the other in a direction transverse to the path of the work into and out of position for shaping engagement with the work.

12. A machine of the character described having ironing means engageable with the work to iron the same, shaping means including rolls between which the work is adapted to be passed, one of said rolls being movable concentrically relatively to the other in a direction transverse to the path of the work into and out of position for shaping engagement with the work and means for retaining said adjustable roll in adjusted position.

In witness whereof I have hereunto signed my name this 17th day of October 1908, in the presence of two subscribing witnesses.

LEWIS R. HEIM.

Witnesses:
SARAH A. DENIKE,
NORMAN C. BEERS.