No. 612,099. Patented Oct. 11, 1898.

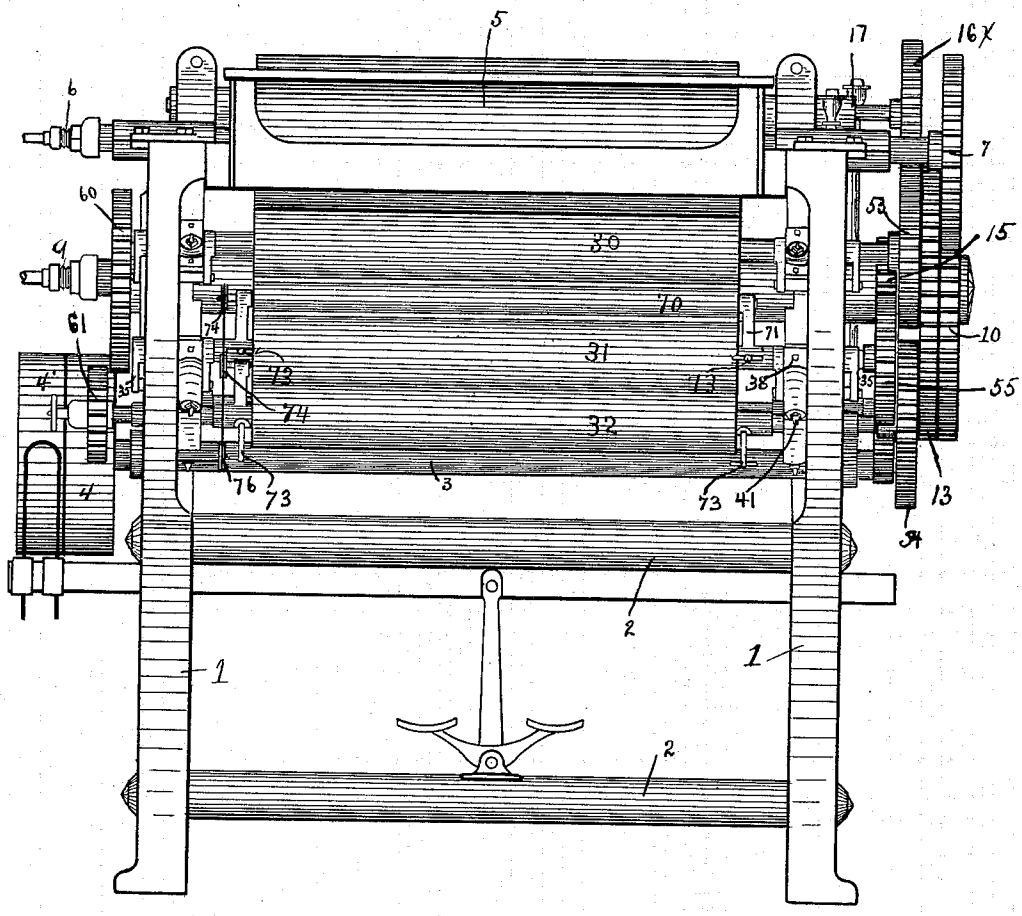
A. T. HAGEN & D. M. COOPER.

IRONING MACHINE.

(Application filed Sept. 9, 1896.)

(No Model.) 7 Sheets—Sheet 1.

Fig. 1.



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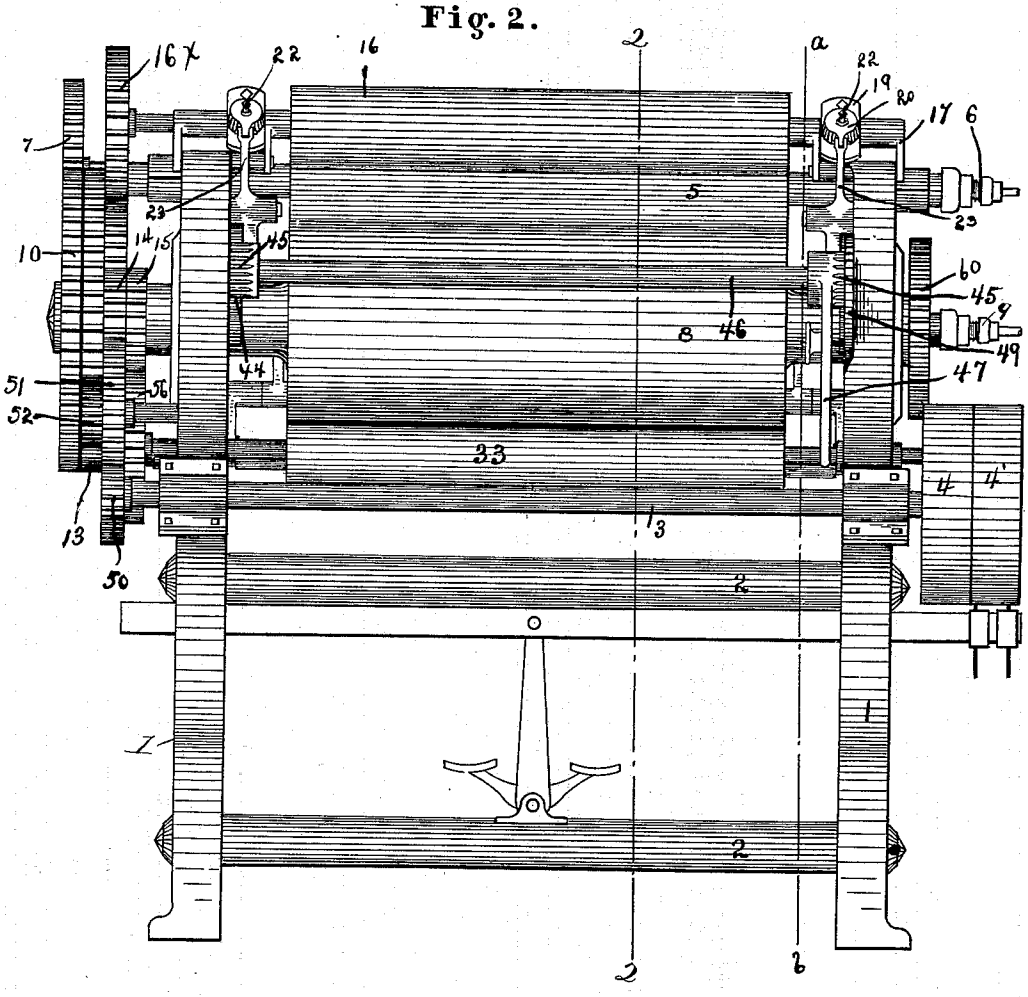
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Fig. 2.



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Fig. 3a.

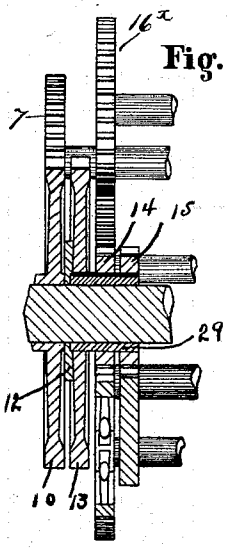
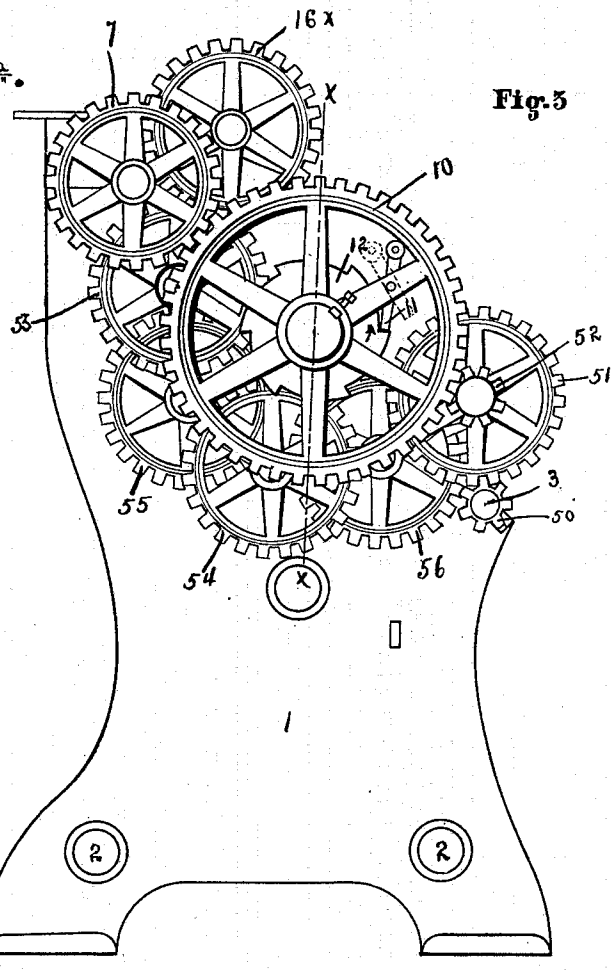


Fig. 3.



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Fig 4

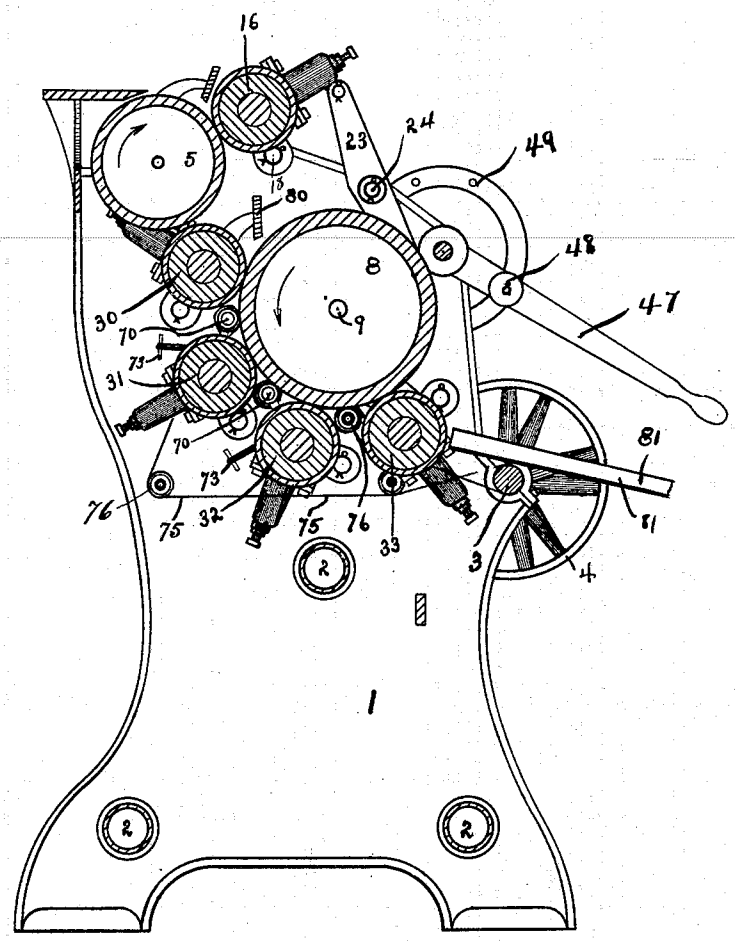
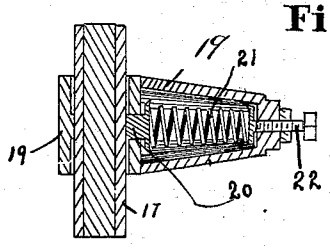


Fig.10



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Fig. 5.

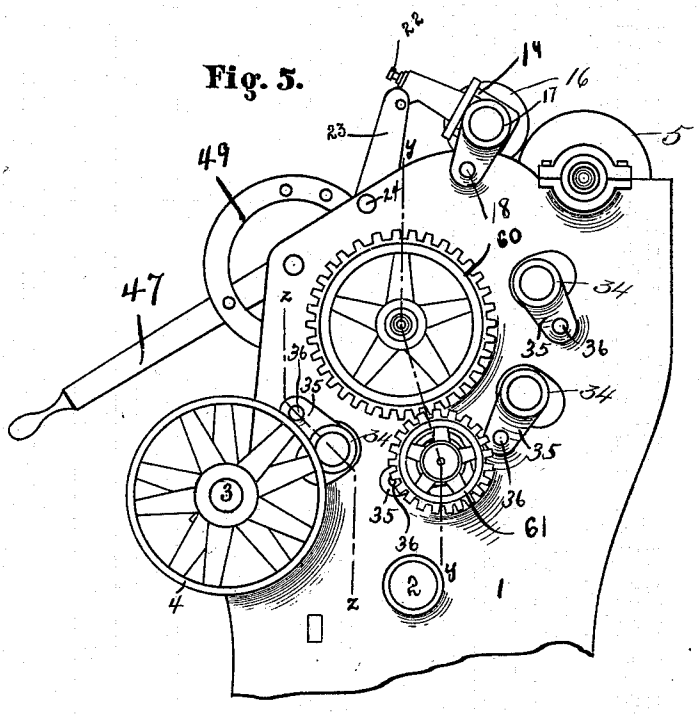


Fig. 6.

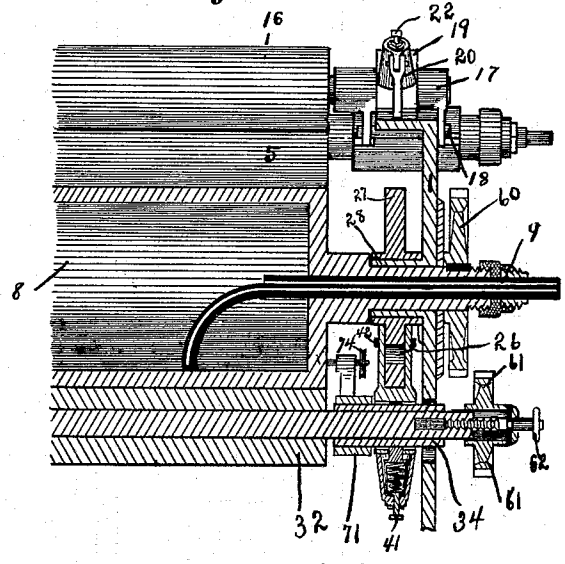
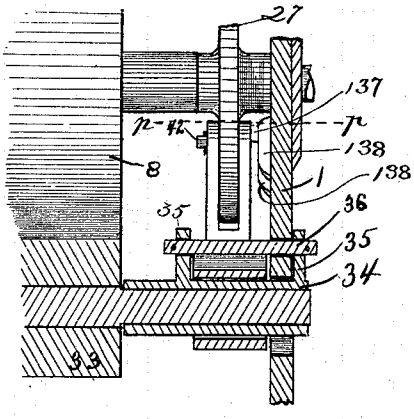


Fig. 7.



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Fig. 8.

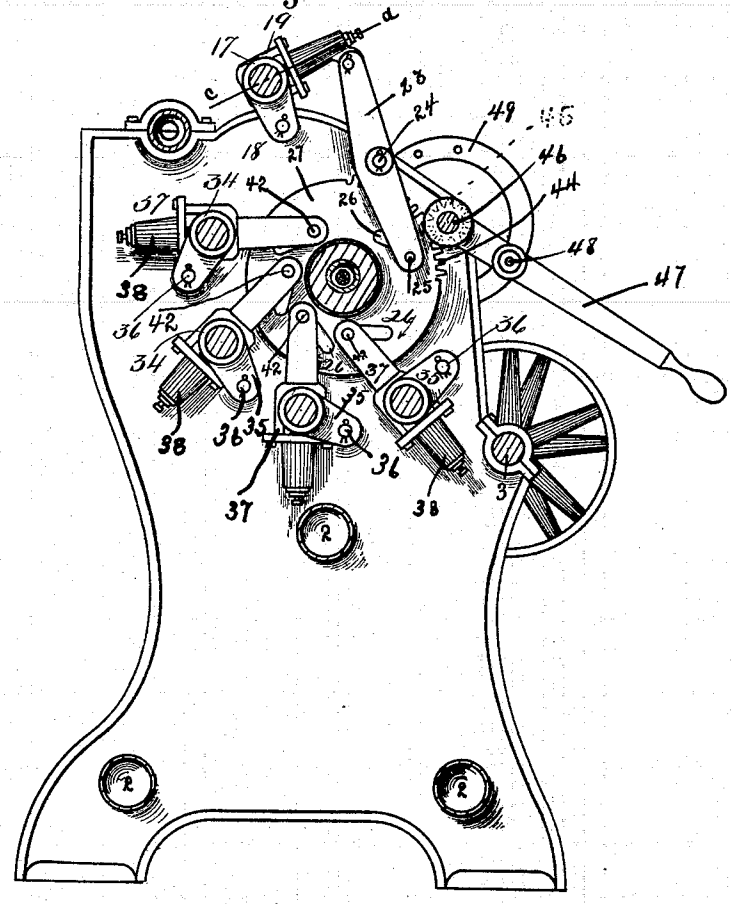
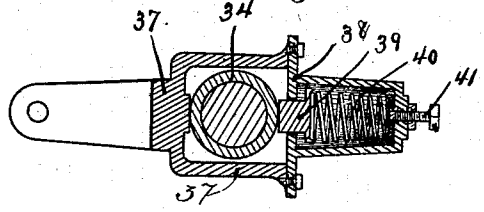


Fig. 9.



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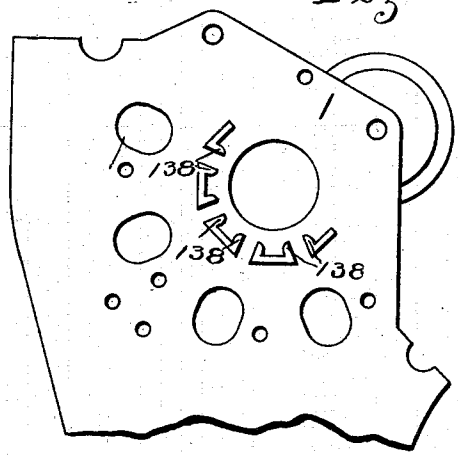
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IRONING MACHINE.

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Fig. 11.



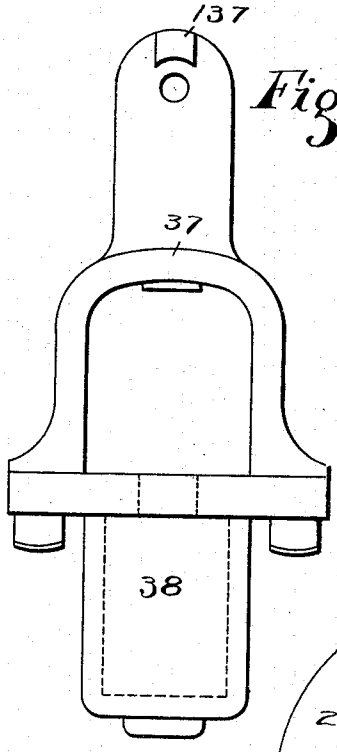


Fig. 13.

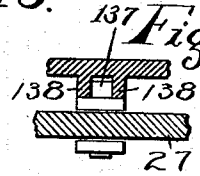


Fig. 15.

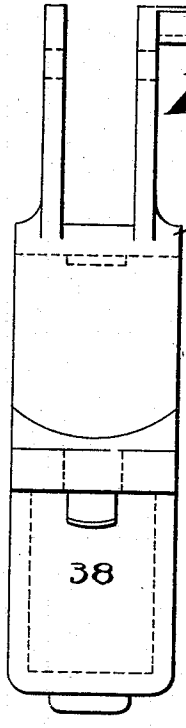
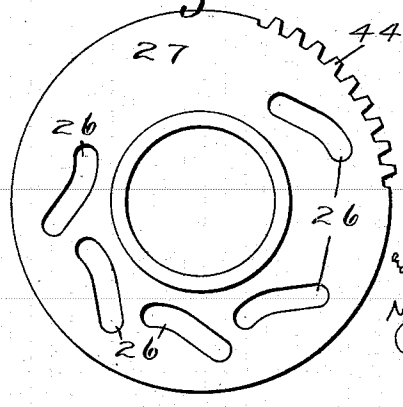


Fig 12.

Fig 14.



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UNITED STATES PATENT OFFICE.

ARTHUR T. HAGEN AND DANIEL M. COOPER, OF ROCHESTER, NEW YORK.

IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 612,099, dated October 11, 1898.

Application filed September 9, 1896. Serial No. 605,303. (No model.)

To all whom it may concern:

Be it known that we, ARTHUR T. HAGEN and DANIEL M. COOPER, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Ironing-Machines; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

Our present invention relates to ironing-machines or mangles, and particularly to the class employed for ironing collars or similar articles sometimes requiring a polish on at least one side; and it has for its object to provide a machine readily adapted for giving the articles operated upon either a polish or a "domestic" finish; and to these and other ends it consists in certain improvements and constructions of parts which will be hereinafter described, and the novel features pointed out particularly in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a front elevation of a machine constructed in accordance with our invention; Fig. 2, a rear view of the same; Fig. 3, an end view; Fig. 3ª, a sectional view on the line *x x* of Fig. 3; Fig. 4, a vertical section through the center of the machine on the line 2 2 of Fig. 2; Fig. 5, a view of the end opposite that shown in Fig. 3; Fig. 6, a sectional view on the line *y y* of Fig. 5; Fig. 7, a sectional view on the line *z z* of Fig. 5; Fig. 8, a sectional view on the line *a b* of Fig. 2; Fig. 9, a sectional view through one of the shaft-hangers of the padded rollers; Fig. 10, a section on the line *c d* of Fig. 8; Fig. 11, an elevation of a portion of the inner side of one of the side frames; Fig. 12, a side view of one of the yokes carrying the padded rolls; Fig. 13, a front view of the same; Fig. 14, a side elevation of one of the disks for adjusting the padded rolls; and Fig. 15 is a sectional view taken on the line *p p* of Fig. 7, looking downward.

Similar reference-numerals in the several figures indicate similar parts.

The main frame of the machine is preferably constructed of the side pieces 1 1, connected by suitable cross-braces 2, and in these side pieces are suitable bearings for the various rollers, as will be described.

3 indicates the main driving-shaft, provided with the usual fast and loose pulleys 4 4'.

5 indicates one of the hollow hot rollers, preferably heated by steam introduced through a journal-coupling 6 and provided on one end with a driving-gear 7.

8 indicates the main heated roll, suitably journaled in the side frames 1 and adapted to be heated, preferably, by steam introduced through a pipe 9 (shown in Fig. 6) or otherwise. Upon one end of the roller 8 is rigidly secured a large gear-wheel 10, driving the roller 5 and provided on its inner side with a pivoted dog or pawl 11, forming a detachable connection between said wheel and a ratchet-wheel 12, secured to the outer face of a gear 13, secured to a sleeve 29, loose upon the roller-shaft, as shown particularly in Fig. 3ª. Also secured to the sleeve 29 on the roller-shaft are pinions 14 and 15, serving as intermediate gears between the padded rolls, as will be explained.

16 indicates a padded roller, (the exterior thereof being formed, as usual, of several thicknesses of cloth or felt,) which coöperates with the hot roller 5, said roller 16 being journaled in hangers in the form of sleeves 17, having arms pivoted by pins 18 to the side frames, said sleeves being embraced by the swinging yokes 19, carrying the block 20, operating against the sleeves, and springs 21, bearing against the block and adjusting-screws 22, the tendency of said springs being to force the roller 16 toward the center of the heated roller 5 and the screws 22 serving to regulate the pressure. The means for holding the yokes 19 and permitting their adjustment and the adjustment of the roller 16, when desired, consists in the present instance of levers 23, pivoted at 24 to the frame and also pivoted at their upper ends to the yokes and having the pins 25 at their other ends engaging one of a series of inclined or cam slots 26, formed in disks 27, journaled loosely upon bosses 28, projecting from the side frames of the machine, as shown particularly in Fig. 6.

While the springs 21 hold the padded roller against the heated roller 5, said padded roller

can be readily adjusted by the manipulation of the levers 23 to regulate the pressure or to throw off the padded roller when desired, as will be farther on explained. The roller 16 is further provided at its end with a driving-gear $16^{\times}$.

30, 31, 32, and 33 indicate padded rollers arranged part way around the surface of the heated roller 8 and with their surfaces in contact with said roller during the operation of the machine, the shafts of these rollers being journaled in hangers in the form of sleeves 34, having arms 35, passing on the opposite sides of the frame 1 and provided with pins 36, passing through them and securing said sleeves pivotally to the frame, as shown particularly in Fig. 7. The tubular portions of the hangers pass between one pair of arms of the double yokes 37, cap-plates 38 being connected to a pair of the arms and carrying blocks 39, operated upon by springs 40, the tension of which is adjusted by a set-screw 41. The other arms of the double yokes pass on opposite sides of the disks 27 and are connected by pins 42, passing through the cam-slots 26, the arms of each of the yokes on the side next the frame 1 being provided with a lug 137, Figs. 12 and 13, operating in a way or slot formed by ribs 138 on the inner sides of the frames 1, as shown in Fig. 11. The springs are arranged to press the rollers toward and into contact with the heated roller 8, and the slots in the disks 27 are so arranged that as the disks are rotated in the direction of the arrow in Fig. 8 the padded rollers will be moved out of contact with the heated roller, and when said disks are rotated in the opposite direction the rollers will be drawn tightly against it, the tension being capable of regulation by adjusting the screws 41.

As a means for simultaneously adjusting both the disks, and thereby adjusting all of the rollers, we provide upon each of said disks gear-teeth 44, engaged by pinions 45 on opposite ends of a shaft 46, to which shaft is connected an operating-handle 47, having a detachable locking device 48, engaging the apertures or recesses in a sector 49. This means of adjusting the rollers is advantageous, as the roller-supporting devices are practically duplicates of each other and provide for simultaneously throwing all of the padded rollers away from the heated rollers when the machine is at rest, thereby preventing scorching or burning of the padded covering.

As it is usually desirable in machines of this class to give a polish to the surfaces of collars by causing the heated roller to move faster than the padded rollers, the power is transmitted from the shaft 3 by a pinion 50 to the gear 51, thence through pinion 52 to the gear 13, which is secured to the sleeve 29, mounted loosely on the shaft of the heated roller 8 and through the sleeve and wheels 14 and 15 to suitable gears arranged on the ends of the shafts of the padded rollers. The gear $16^{\times}$ on the padded roll 16 meshes with the gear 53 on the roller 30, which in turn meshes with the outer gear 14 on the sleeve 29. The roller 32 is provided with a gear 54, also meshing with the gear 14, while rollers 31 and 33 are provided with gears 55 and 56, respectively, which mesh with the interior gear 15. During the polishing operation the gears 10 and 13 are connected by the pawl 11, as in full lines, Fig. 3. The connection just described will cause the padded rollers to travel slightly slower than the heated rollers, and the goods, being held or retarded by them, will be polished by the latter; but if it is desired to give the articles what is known as a "domestic" finish all the rollers should be rotated at the same surface speed, and in order that this may be accomplished we secure upon one end of the shaft of the roller 8 a gear-wheel 60, (see Fig. 6,) and upon the shaft of the roller 32 provide a gear 61, adapted to be moved longitudinally of the shaft by means of a screw, though said gear is keyed to the shaft and rotates with it.

When the gears 60 and 61 are in mesh, it is necessary to disconnect the wheels 10 and 13 by throwing the pawl 11 (see Fig. 3) to the position in dotted lines, thereby transmitting the power to the heated rollers through the gears 61 and 60 and driving all of the rollers at the same surface speed.

Instead of providing the connection between the gears 10 and 13 by means of a pawl 11 it will be understood that other connecting means could be employed, and also that the particular form of connection between one of the padded rollers and the main heated roller, herein described as gears 60 and 61, could be varied without departing from the spirit of our invention.

In order that the collars or other articles may not leave the surface of the heated roller 8 between the padded rollers, we provide small padded rollers 70 between the latter, which are journaled in brackets 71, sleeved upon extensions on the sleeves 34 of the rollers 31 32, as shown in Fig. 6. These brackets are adjustable on the extensions and are secured by set-screws 73 to properly position them, and the rollers are provided with pulleys 74, around which and suitable rollers 76 extends a belt 75 to insure their positive operation, said belt passing also around the main driving-shaft 3.

The small padded rollers are, by reason of their connection with the sleeves carrying the main padded rollers, capable of removal from the hot roller 8, as will be understood.

The articles, as collars, operated upon pass between the rollers 5 and 16 and are ironed on one side, thence down between the heated roller and the padded rollers around it and are ironed on the other side, a suitable adjustable deflector 80, of the usual or any preferred construction, being arranged to guide the collar or other article properly to the second heated roller. The articles after being

ironed may fall upon the delivery-board 81 or elsewhere.

The machine as a whole is comparatively simple, and we find in practice that it is admirably adapted for the purpose intended, the various adjustments being easily and quickly accomplished and the means for accomplishing the instantaneous separation of the heated and padded rollers being comparatively simple and effective, at the same time permitting the elastic and automatic yielding of the rolls relatively to each other, which is desirable in a machine of this description.

We claim as our invention—

1. In an ironing-machine, the combination with the main frame and the rotary heated roller mounted in stationary bearings thereon, of a plurality of padded rollers arranged around the periphery of the heated roller and adapted to coöperate therewith, the hangers pivoted directly to the frame and in which the last-mentioned rollers are journaled, and connections between all of the hangers for simultaneously moving them on their pivots and operating the rollers carried thereby toward and from the heated roller, substantially as described.

2. In an ironing-machine, the combination with the main frame, the rotary heated roller mounted in stationary bearings thereon, of a plurality of padded rollers arranged around the periphery of the heated roller and adapted to coöperate therewith, hangers carrying the padded rollers and pivoted directly to the frame, actuating devices for simultaneously operating the hangers on their pivots to move the padded rollers simultaneously toward and from the heated roller, and springs interposed between the actuating devices and each of the padded rollers, whereby the padded rollers can be simultaneously adjusted and each permitted to yield, substantially as described.

3. In an ironing-machine, the combination with a heated roller and stationary bearings therefor, of a series of rollers around it and adapted to contact therewith, the rotatable disks substantially concentric with the hot roller and positive connections between said disks and the series of rollers for causing the positive movement of the latter toward and from the heated roller by the rotation of said disks, substantially as described.

4. In an ironing-machine, the combination with a main roller, of a series of rollers around it and adapted to contact therewith, pivoted hangers for the rollers of the series, the rotatable disks substantially concentric with the main roller, having the cam-slots for actuating the hangers of the rollers toward and from the main roller, substantially as described.

5. In an ironing-machine, the combination with the main roller, of a series of rollers around it and adapted to contact therewith, the pivoted hangers for the rollers of the series, the rotatable disks substantially concentric with the main roller having the cam-slots and the yokes coöperating with the hangers and operated by the disks, substantially as described.

6. In an ironing-machine, the combination with the main roller, of a series of rollers around it and adapted to contact therewith, the pivoted hangers for the rollers of the series, the rotatable disks substantially concentric with the main roller having the cam-slots, the yokes actuated by the disks and the springs between the yokes and hangers, substantially as described.

7. In an ironing-machine, the combination with the two heated rollers, a series of padded rollers around one of them and adapted to contact therewith, a padded roller adapted to contact with the other heated roller and movable supports for all said padded rollers, of the rotatable disks substantially concentric with one heated roller and operating the series of padded rollers toward and from it, and connections between said disks and the support of the single padded roller for actuating it toward and from the heated roller with which it coöperates, substantially as described.

8. In an ironing-machine, the combination with the two heated rollers, a series of padded rollers around one of them, a padded roller adapted to contact with the other heated roller, and movable supports for said padded roller, of the rotatable disks substantially concentric with one heated roller and having the cam-slots, connections between said disks for causing their simultaneous operation, movable supports for the series of padded rollers, actuated by the slots in the disks, and connections between the supports of the single padded roller and the disks, whereby all of the padded rollers will be operated simultaneously toward and from their coöperating heated rollers, substantially as described.

9. In an ironing-machine, the combination with the two heated rollers, a series of padded rollers around one of them, a padded roller adapted to contact with the other heated roller and movable supports for all said padded rollers, of the rotatable disks for actuating the supports for all the padded rollers toward and from their coöperating heated rollers, and adjustable springs interposed between the disks and rollers, whereby the disks will govern the approach of the padded rollers to their coöperating heated rollers and the pressure may be independently regulated by the springs, substantially as described.

10. In an ironing-machine, the combination with the frame and a roller mounted in stationary bearings thereon, of a roller movable toward and from the first-mentioned one, pivoted hangers for the movable roller embodying the sleeves 34 and arms 35, the yokes 37 encircling the sleeves and having the spring-pressed abutments engaging the sleeves,

guides between the yokes and frame, and means for operating the yokes, substantially as described.

11. In an ironing-machine, the combination with the two heated rollers mounted in stationary bearings, a series of padded rollers around one of them, movable supports for said padded rollers, the rotatable disks having cam-slots, the yokes operating on the supports and engaging the disks, of a padded roller coöperating with the other heated roller, supports for said roller, pivoted levers having yokes engaging the supports and engaged by the disks and means for operating the disks simultaneously, substantially as described.

12. In an ironing-machine, the combination with a heated roller, a series of padded rollers around it, independent supports for said rollers and means for adjusting them, of a smaller auxiliary padded roller arranged between two of the larger ones, and supports for said auxiliary roller adjustably secured on the supports of one of the larger padded rollers, substantially as described.

13. In an ironing-machine, the combination with a heated roller, a series of padded rollers around it, pivoted hangers for said rollers, and means for adjusting them, of a series of smaller rollers between the padded rollers, brackets for supporting them adjustably connected to the hangers of said padded rollers, and means for driving said small rollers, substantially as described.

14. In an ironing-machine, the combination with the heated roller, of a padded roller, the pivoted hanger 34, the double yoke 37, the block 39, spring 40, and the disk having the cam-slot actuating the yoke 37, substantially as described.

15. In an ironing-machine, the combination with the heated roller, of the loose sleeve 29 on one end thereof, the driving-gear 13 on the sleeve, the smaller gear 14 connected therewith, a padded roller coöperating with the heated roller, the gear 54 thereon meshing with the smaller gear on the sleeve, the detachable gearing, as gears 60 and 61 between the heated and padded rollers and a detachable connection between the gear 13 and the heated roller, substantially as described.

16. In an ironing-machine, the combination with the heated roller, of the sleeve 29 loose on one end thereof, the gears 13 and 14, two padded rollers around the heated roller and movable toward and from the latter, the gears thereon meshing with the gear 14, the detachable gearing, as gears 60 and 61 on the heated roller and one of the padded rollers, and a detachable connection between the gear 13 and the heated roller, substantially as described.

17. In an ironing-machine, the combination with the two heated rollers geared together, the movable padded roller coöperating with one heated roller, and a series of padded rollers around the other heated roller and movable toward and from it, of a driven gear concentric with the last-mentioned heated roller, gearing between said gear and all of the padded rollers, a detachable connection between the driven gear and the heated roller, and a detachable connection between the heated roller and one of the padded rollers, whereby the heated rollers may be driven directly from the driven gear or indirectly through the padded rollers, substantially as described.

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