

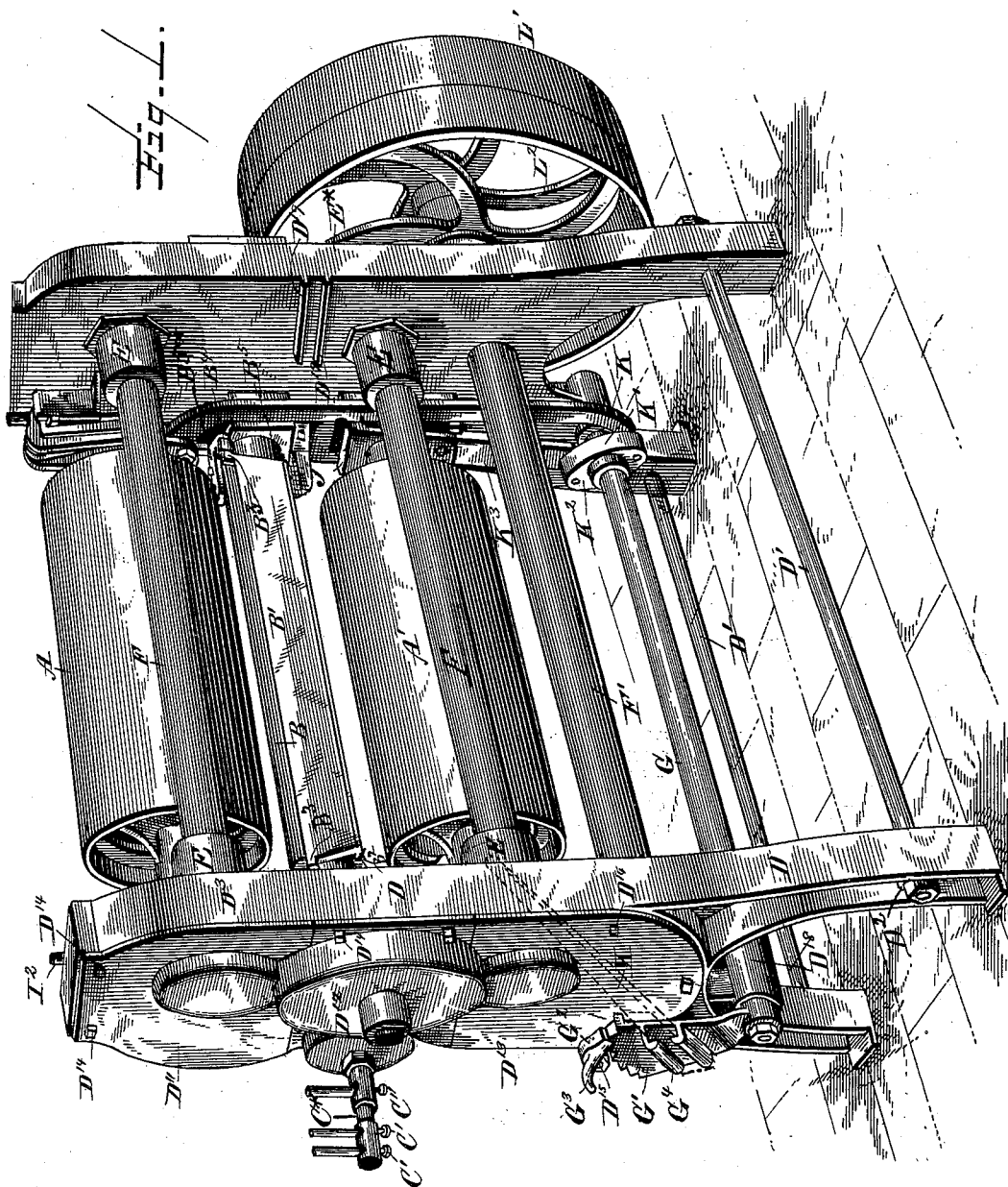
(No Model.)

5 Sheets—Sheet 1.

T. S. WILES.
IRONING MACHINE.

No. 384,487.

Patented June 12, 1888.



WITNESSES:

WITNESSES:
L. C. Hills.
J. M. Durall.

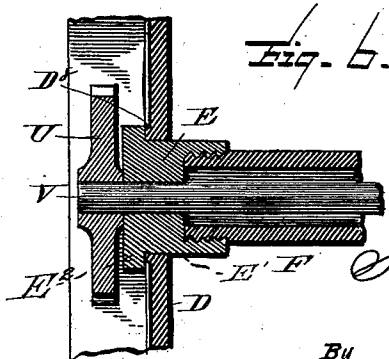
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5 Sheets—Sheet 2.

No. 384,487.

Patented June 12, 1888.



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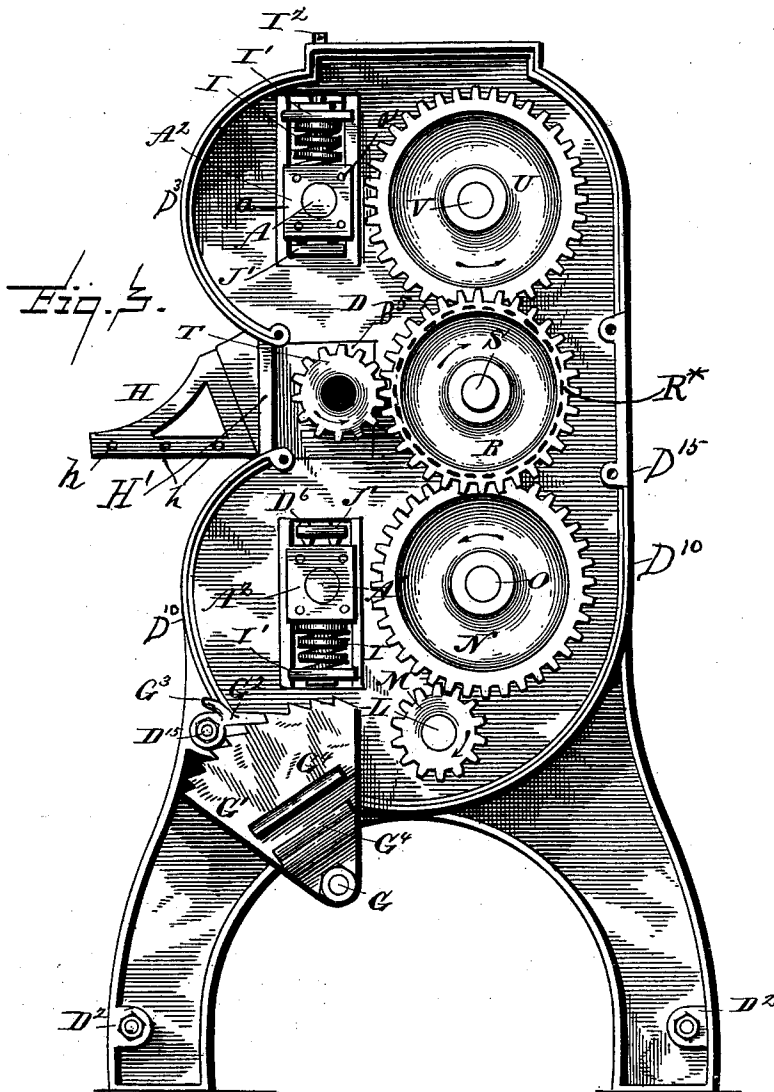
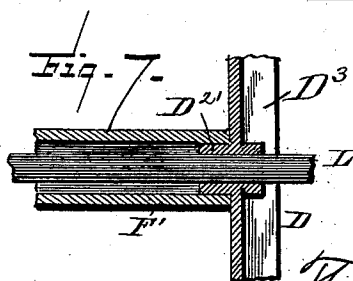
(No Model.)

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T. S. WILES.
IRONING MACHINE.

No. 384,487.

Patented June 12, 1888.



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(No Model.)

5 Sheets—Sheet 4.

T. S. WILES.
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Fig. 4.

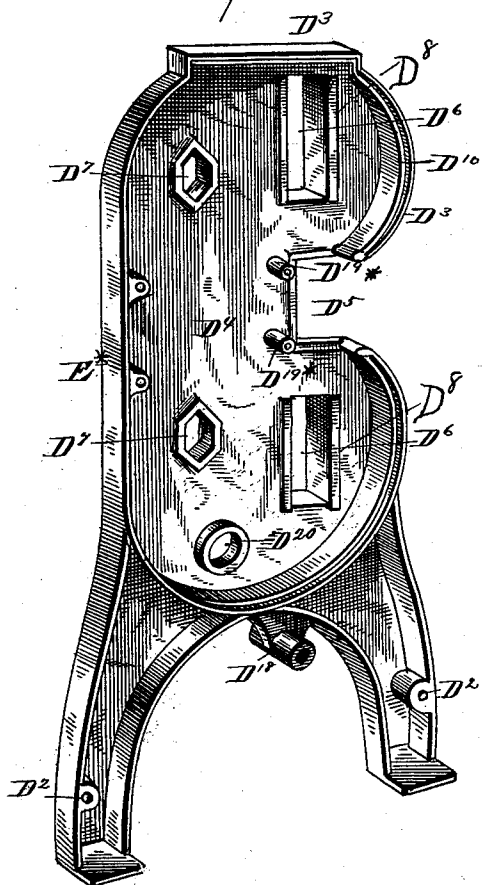
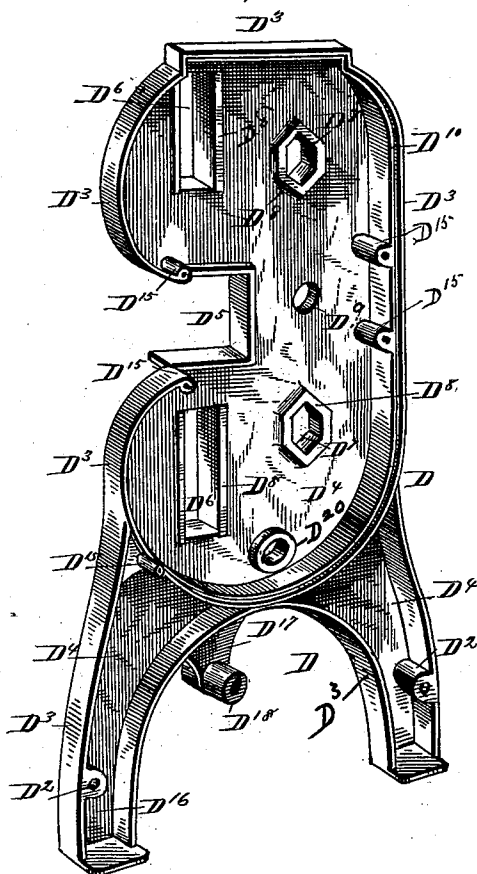
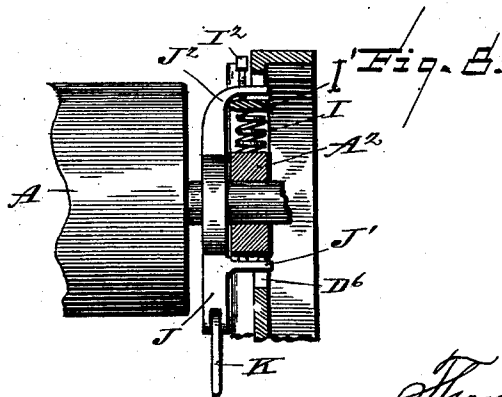


Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS S. WILES, OF ALBANY, NEW YORK.

IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 384,487, dated June 12, 1888.

Application filed November 6, 1886. Serial No. 218,138. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. WILES, a citizen of the United States, residing at Albany, in the county of Albany, State of New York, have invented certain new and useful Improvements in Ironing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to ironing-machines of that class in which the ironing of articles of clothing is accomplished by a metallic roller adapted to be internally heated and having a hard smooth surface, (which roller is hereinafter designated as an "ironing-roller,") which runs in contact with and against a roller having an elastic covering with a surface of muslin or other suitable cloth or fabric which will absorb and discharge moisture, (which roller is hereinafter designated as the "clothed" roller,) upon which the articles to be ironed will not slip so easily as upon the ironing-roller in passing between the said rollers while said articles are being ironed. The function of the elastic covering is to temporarily yield to hems, seams, and other thick parts of the article to be ironed, so as to materially prevent undue and injurious strain and compression thereof, and also to tend to equalize the ironing action of the rollers upon the thick and the thin parts of the article. A pair of rollers, one being an ironing-roller and the other a clothed roller arranged to run in surface contact with each other, are generally termed a "set of ironing and clothed rollers." It is desirable in machines of this class to provide means for temporarily and duly separating the rollers of a set from each other in order to prevent burning the covering of the one by reason of the heated condition of the other. Among the other desirable objects in view in this invention is that of protecting the operator or operators from injury by being caught in the gearing of the machine or by the contact of the dress or other garment of the operator or operators with a revolving shaft of the machine.

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

Referring to the drawings, Figure 1 is a per-

spective of an ironing-machine embodying my improvements. Fig. 2 is an end elevation, with the gear-caps removed from the standard. Fig. 3 is a similar view of the opposite end of the machine, the gear-caps also being removed. Figs. 4 and 5 are perspectives of the standards of the frame-work of the machine. Figs. 6 to 14 are details, hereinafter described.

Like letters of reference indicate like parts in all the figures of the drawings.

My improvements in this instance refer more particularly to the construction of the standards of the machine, whereby each serves to inclose the gearing and to receive and support devices for adjusting the clothed rollers with relation to the ironing-roller, and to the devices employed for maintaining the standards in parallelism with each other, and to devices for covering the cross-shafts of the system of gearing employed, and to the particular conformation of the separate parts comprised in the machine as a whole, all of which will be particularly set forth in the claims.

Referring to Fig. 1, A and A' represents the rollers intended for the reception of the elastic and yielding clothing above mentioned, and B represents the ironing-roller.

B' represents a doffer, which comprises a metal bar having a plate, B², of sheet-steel secured to its lower edge, while its upper edge is projected in the form of cylindrical bearings B³, which are supported in cup-shaped recesses B⁴, formed at the end of brackets, B⁵, (see Fig. 10,) which are secured in any suitable manner to a fixed part of the machine, and in such position that the plate B² will naturally rest in contact with the ironing-roll. At the opposite side of the ironing-roll B is another doffer, B⁶, which rests in contact with the roll, and is supported upon the upper edge of the cross-bar H².

The object of the doffers is to prevent the articles being ironed from adhering to the roll and from becoming wound thereon.

The ironing-roller, as usual, is hollow, and there is provided therein a combined air and gas burner, O*, of any desired construction, preferably that disclosed in my patent of July 20, 1875, No. 165,775, the several pipes shown being for the admission of air and gas in proportionate quantities determined by the valves

C'. At the opposite end of the ironing-roller there is, as usual, provided a chimney or uptake (not shown) for the escape of the products of combustion.

5 D represents the standard of the frame-work at the end of the machine at which the burner is inserted, and E* represents the standard at the opposite end thereof. Each of these standards differs from the other in certain features
10 of construction, and yet both have certain features which are similar. A description of each will therefore be necessary. Ordinary tie-bars, D', are employed at the feet of each standard, but more for the purpose of giving additional
15 strength than from actual necessity, as it will hereinafter appear that by reason of certain novel features of construction said tie-bars are not actually necessary to a maintenance of the standards in a desired parallel position, or for
20 rendering the frame-work of the machine sufficiently firm for the support of the operative parts of the machine.

Fig. 3 is a front elevation, and Fig. 5 a perspective of the standard D. This standard
25 consists of a single casting, which, when finished for use, not only serves its purpose in the completed machine, but may also serve as a pattern for reproducing duplicates thereof for additional machines, or for taking the place
30 of a broken standard, and this characteristic is present or exists in several of the various parts comprising this machine, and I therefore deem it proper to state that where such several parts possess novel features of construction I consider the same covered by my invention
35 whether used in a machine similar to or different in other respects from that shown herein—that is to say, I do not limit the details of my inventions to a use thereof in any
40 particular ironing-machine, but reserve my right to use each novel feature in other ironing-machines than that herein shown and described.

The standard D comprises lugs D² for receiving the tie-bars D', but such lugs are non-essential features of the standard; and it otherwise comprises a substantially continuous lateral flange, D³, forming, in connection with the main body or inner wall portion, D⁴, material portions of a case for the gearing employed in the machine. The outline of the
50 standard is such as to form a seat, D⁵, for the bearing-block B⁵ of the ironing-roller. Above and below said seat there are formed in the standards openings D⁶ for the reception of the boxes A² of the clothed rollers. Back of the box-openings D⁶ there are formed through the standard polygonal openings D⁷ for receiving the polygonal couplings E of the shaft-covering and tie-tubes F, hereinafter described.
60 These openings D⁶ and D⁷ are surrounded on the inner wall side by a raised ledge or border, D⁸, the object of these raised borders being to facilitate planing the bearing-surfaces
65 for the parts arranged adjacent thereto in the completed machine, as it is apparent that difficulty would occur in case the ordinary cast

surface of the standard were used, as in order to get true projecting or thicker and stronger bearing-surfaces the entire inner wall, D⁴, of the standard would necessarily require truing up, by planing or otherwise, to secure satisfactory bearings.

Between the polygonal openings D⁷ there is an aperture, D⁹, which receives a stud that serves as the journal of an intermediate gear,
75 hereinafter described.

As illustrated in the drawings, the flange D³ is recessed or rabbeted, as at D¹⁰, the object of this conformation being to receive the gear-caps within the rabbet; but this, it is apparent, is not an essential feature of the standard, as the caps may be secured directly against a plain edge of the flange.

The gear-caps are shown in Fig. 1, and they are made in three sections, D¹¹, D¹², and D¹³, all being secured by bolts D¹⁴, which pass into lugs D¹⁵, formed as a part of the standard, (see Fig. 5,) or into the flange D³, as may be desired.

For the mere purpose of giving additional strength to the feet D¹⁶ of the standard, the flange D³ is extended along the same, and between the feet there is formed a depending bracket, D¹⁷, having a bearing, D¹⁸, for the rock-shaft G, hereinafter described. On the opposite surface of the portion D⁴ to that shown in Fig. 5 there are formed as a part of the standard two parallel outwardly-projecting flanges, D¹⁹, (seen Fig. 1,) which serve to receive a table or feed-board. Another feed-board or table is arranged at the opposite side of the machine and supported by brackets H, (see Figs. 2 and 3,) which are secured to the machine in a manner hereinafter described. The standard E*, employed at the opposite end of the machine—that is, the end where the uptake communicates with the ironing-roller, and where the driving-pulleys are arranged, as shown in Fig. 1—is similar in many respects to that before described, and is illustrated in Figs. 1, 2, and 4. In this standard, near the seat D⁵, are two projecting posts, D^{19*}, which are apertured to receive the attaching-bolts of the chimney or uptake. (Not shown.) Below the polygonal openings D⁷ in each standard is the bearing D²⁰ for the driving-shaft of the machine.

The boxes B⁵ of the ironing-roller B are permanently secured in the seats D⁵ of the standards and remain stationary, while the boxes A² of the clothed rollers are movable vertically in the openings D⁶ of the standards. The lower clothed roller, A', and its bearing are arranged to move downwardly away from the ironing-roller, while the upper roller and bearing are movable upwardly away from roller B.

By reference to Fig. 11 it will be seen that the bearing-block A² has one or both of its projecting flanges *a* made removable from its body portion, screws *a'* serving as a means for binding a plate to the body portion, the edges of the plate forming the flanges *a*. This construction is necessary in order to introduce the

block into the openings of the standard, the walls of which opening are unbroken.

Referring now more particularly to Figs. 1, 3, and 8, it will be seen that there is a coiled spring, I, arranged below the bearing blocks of the lower clothed roller and a similar spring arranged above the blocks of the upper clothed roller and within the openings D⁶. Above the spring in the upper box and below the spring in the lower box there is arranged a plate, I', which is cut away at opposite edges to fit the opposite walls of the openings D⁶, which plate is inserted in the openings in an inclined position and afterward turned horizontally so as to embrace the said walls.

A tension-regulating bolt, I², is provided for varying the pressure of the spring upon the box A². A similar plate and regulating-screw (the latter not shown) are arranged beneath each box of the lower clothed roller. The boxes A² are supported upon the lug J' of the suspension-link J, (see Figs. 8 and 13,) which lug projects into the opening D⁶ of the standard and beneath the box. The suspension-link is apertured to pass around the shaft without touching it, and extended upwardly and curved laterally over and above the lug J', as at J². Through this portion J² the tension-bolt I² passes. The lower end of the suspension-link is apertured for the pivotal connection of a rod, K, which extends to and is pivotally connected with an arm, K', rigidly secured to the rock-shaft G. An opposite arm, K², is similarly connected by a rod, K³, with a similar suspension-link, J, including between its lugs the boxes A² and spring I and plate I' of the lower clothed roll. These elements are duplicated at each end of the machine, upon the end of the rock-shaft, outside of the standard D, there is secured a toothed sector, G', into which a pawl, G², pivoted on the lug D¹⁵ of the standard D, takes, the pawl being provided in this instance with a projecting horn, G³, to facilitate throwing it into and out of connection with the sector. Upon the face of the sector are two flanges, G⁴, which serve as a socket to receive a lever, X, (see dotted lines, Fig. 1,) which is projected for easy access by an operator at one side of the machine.

Now, it will be seen that when the outer end of the lever X is depressed the rock-shaft is oscillated in its bearings D¹⁸ and the arms K' are depressed and the opposite arms, K², are elevated. These motions of depression and elevation are communicated by the rods K K³ to the boxes A² at opposite ends of each of the clothed rollers—that is to say, the rods K draw the boxes A², the links J, and the roller A down, while the rods K³ push the boxes, links, and the roller A' up, so that both rollers may be forced against the ironing-roller in proportion to the distance that the outer end of the lever X is moved, and by means of the pawl this pressure of the clothed rollers may be maintained for a desired time.

The rock-shaft G, the arms K' and K², and the rods K and K³ have been employed in

machines of this class for moving the clothed rolls toward and away from the heated ironing-roll and for producing pressure for ironing between the rolls.

Various modifications of this system by combining springs or weights and levers therewith have been employed for making the pressure automatically yielding and adapted to various thicknesses of articles under treatment and for increasing or diminishing pressure at will. To attain these ends more conveniently and perfectly than has been heretofore accomplished by any known device, I employ the following devices: First, the ratcheted sector of rock-shaft with socket for lever and detent or pawl, by means of which I increase or diminish the positive pressure between the rolls when in use at will, besides opening or closing the machine—that is, bringing together and separating the ironing and clothed rollers of the machine; second, the suspension-link J, with its lugs, spring, and adjusting-screw, by means of which the positive pressure, be it greater or less, produced between the rolls by the action of the rock-shaft lever, arms, and rods, is modified and converted into an automatically-yielding pressure, adapting itself to varying thicknesses of goods, and the degree of such yielding-pressure is regulated, as is desired, by the action of the screws on the springs.

The standards are preserved and maintained in a parallel position by means of tie-tubes F and a spreader or space-tube, F', and these are connected with the standards in the following manner: Around the opening D²⁰ in each of the standards and upon the outer surface of each standard (opposite that shown in Figs. 4 and 5) is a projecting hub or collar, D²¹, (see Fig. 7,) upon which the pipe or tube F' fits, the end of the tube abutting against the standard. This tube serves as a spacer—that is, to determine the distance between the two opposite standards.

In each of the polygonal holes D' there is a coupling, E, (see Fig. 9,) having a desired polygonal body portion, E', and at one end a flange, E², and bored longitudinally for the passage therethrough of the shaft, and interiorly screw-threaded on its small cylindrical end for the reception of the exteriorly-screw-threaded tie-tubes F, these tubes being threaded right and left, so that when the couplings are inserted and the tubes are turned they will draw the couplings and standards toward each other until the latter abut against the ends of the spacer-tube F'. The object of the polygonal body portion of the couplings is to prevent its turning when the tie-tubes are turned. Each of the couplings E is also bored to form a bearing for the shaft passing therethrough. (See Fig. 6.) Through the tie-tubes F the cross-shafts of the system of gearing employed pass, and through the spacer-tube F' the main shaft of the system passes.

By the construction thus described it is apparent that the standards will be supported

at a proper distance from each other, and in connection with the usual shoulders formed on the shafts of the ironing and clothed rollers, and with the flanges A of the boxes A², the frame-work is adapted to support and permit rotation of the operative parts therein, so that, as heretofore stated, the tie-bars D' are not absolutely essential, although the same may be used to give further rigidity to the structure as a whole. All of the rotating shafts, however, are by the tie and spacing tubes covered, and all danger of injury by the catching and winding of the garments of the operator or operators thereon is avoided, so that said tubes provide safety as well as perform mechanical functions in the construction of the machine.

By reference to Figs. 1, 2, and 3, it will be seen that the main shaft L is provided with the usual fast and loose pulleys, L' and L², and that opposite the driving-pulleys there is secured to said shaft a pinion, M, which meshes with a gear, N, fixed to a cross-shaft, O, which passes through a lower tie-tube, F. Upon the opposite end of the shaft O (see Fig. 2) is the pinion P, which meshes with a gear, Q, secured to one end of the lower clothed roller, A'.

An intermediate double gear, R, (a dotted line indicating the gear upon the back of the gear R, Fig. 3,) is arranged under the cap D¹², Fig. 1, on a stud, S, secured in the aperture D⁹ of the standard, (see Fig. 5,) and meshes with the gear N on the shaft O in an inner series of its gear-teeth, (not shown,) while the outer series of its teeth mesh with a pinion, T, secured to the ironing-roller B. A gear, U, meshes with the double gear R, and is mounted on a shaft, V, which runs through the upper tie-tube F, and has upon the opposite end a pinion, W, which meshes with a gear, Y, mounted on the shaft of the clothed roller A. The system of gearing is fully illustrated in Figs. 2 and 3, and is such that the vertical movements of the clothed rollers are possible without unmeshing their gears from their adjacent pinions. The form of the gear-caps at each end of the machine is such as to adapt each to the gear it covers.

In Fig. 12 is illustrated the end portion of a casting, H', which is adapted to constitute, when secured to the standards, a tie-bar and the front walls of the seats D⁵ for the bearings B⁵ of the ironing-roller. (See H', Fig. 3.) A projection, H², from said casting is formed for the purpose of attaching thereto, by means of bolts passing through apertures H³, (see Fig. 12,) the bracket H, which supports the feed-table, it being understood that there is a similar bracket and casting upon each standard. The table may be secured to the brackets by screws or bolts passing through apertures h in the bracket and into the end of the table.

The operation of ironing articles with this machine is substantially that of other machines of the same class, in that the articles are passed over the table at one side of the machine through and between the upper clothed

roller and the ironing-roller, and are ironed thereby upon one surface, and are returned between the ironing-roller and the lower clothed roller by the operator at the opposite side of the machine.

Having described my invention and its operation, what I claim is—

1. In a machine of the class described, the standards having openings for journal-bearings, lateral flanges, and polygonal openings, in combination with tie-tubes screw-threaded and with flanged couplings having polygonal bodies and threaded to fit the tie-tubes, substantially as specified.

2. In a machine of the class described, standards having polygonal openings, flanged couplings adapted to fit said openings, tie-tubes, and a spacing-tube, these parts being constructed, combined, and arranged substantially as specified.

3. In a machine of the class described, the combination of right and left hand screw-threaded tie-tubes, similarly-threaded couplings, a spacing-tube, and standards constructed to receive the couplings and support the spacing-tube, shafts passing through the tubes and standards, and gears mounted on the ends of the shaft, substantially as specified.

4. In a machine of the class described, the combination of an ironing and a clothed roller, suspension-links having oppositely-arranged lugs, boxes arranged between said lugs and upon the shaft of the clothed roller, and springs arranged between said boxes and one of the opposite lugs of the suspension-links, and means, substantially as described, for raising and lowering the suspension-links and for regulating the tension of the springs, substantially as specified.

5. In a machine of the class described, the combination, with an ironing-roller, a clothed roller arranged above and a clothed roller arranged below said ironing-roller, and with the boxes of said clothed rollers, of suspension-links provided with lugs, interposed springs, connecting-rods, a rock-shaft having oppositely-disposed rock-arms, a toothed sector, a pawl, and a sector-operating lever, substantially as and for the purpose set forth.

6. In a machine of the class described, a standard provided with a lateral gear, inclosing-flange, an open-sided seat for a fixed box, openings for movable boxes, and bosses for tie-tubes, substantially as specified.

7. In a machine of the class described, the combination, with a standard having a polygonal opening, of a coupling for a tie-tube, having a polygonal body to fit the opening and a flange to bear upon the wall of the standard, and a tie-tube adapted to fit the coupling, a shaft passing through the tube and taking bearing in the coupling, and a gear mounted on the shaft, substantially as specified.

8. In a machine of the class described, standards each having a bearing for a shaft projected from the wall of the standard to form

a hub or boss, in combination with a tube encircling the shaft and supported upon the hubs or bosses of the bearings, and means for binding the standards and tubes together, substantially as specified.

5 9. The standard D, provided with the lateral flanges D³, polygonal openings D⁷, and box-openings D⁶, each having the border D⁸, seat D⁵, the bracket D¹⁷, rock-shaft bearing
10 D¹⁸, and bolt-lugs D¹⁵, the whole formed as a single casting, substantially as specified.

10. The suspension-link J, perforated to embrace a shaft, and provided with the lugs J' and J², substantially as specified.

15 11. The combination, with the rock-shaft

G, of the toothed sector G', having a socket for the lever X, the pawl G², the arms K' K², the rods K, and the movable bearings of the clothed rollers, substantially as specified.

12. The combination, with the standard D, 20 having the opening D⁶, of the flanged box A², the springs I, the tension-bolt I², and the suspension-link J, having the lugs J' J², substantially as specified.

In testimony whereof I affix my signature in 25 presence of two witnesses.

THOMAS S. WILES.

Witnesses:

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M. E. WENDELL.