(No Model.) 4 Sheets—Sheet 1.

D. GROTTA.

CORSET IRONING MACHINE.

No. 344,779. Patented June 29, 1886.

Fig. 1.

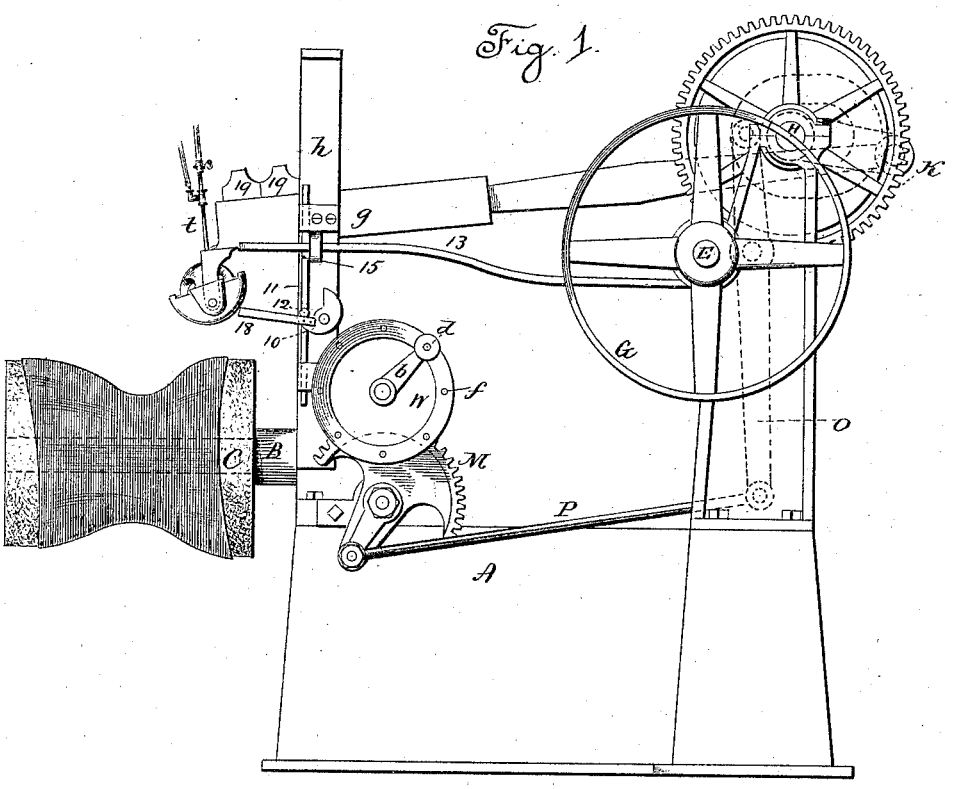

Fig. 2.

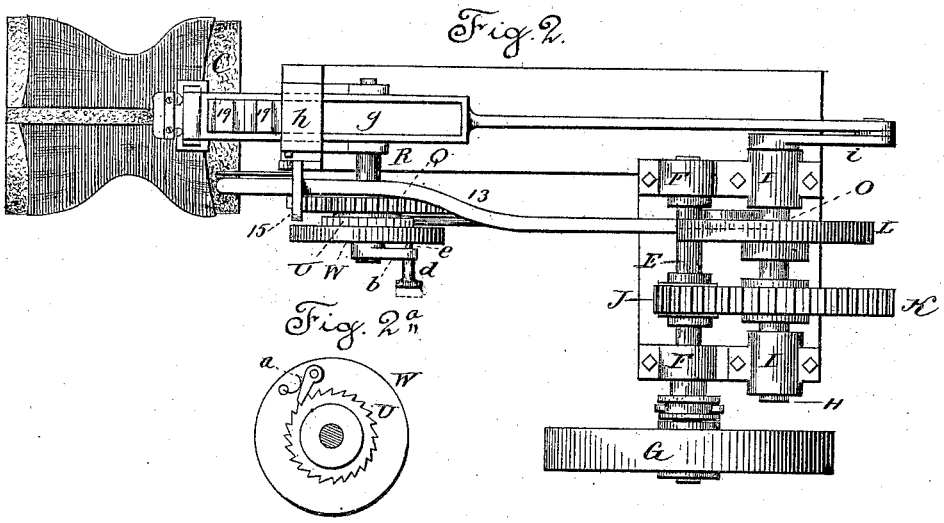

Fig. 2a.

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(No Model.)

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CORSET IRONING MACHINE.

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Fig. 3.

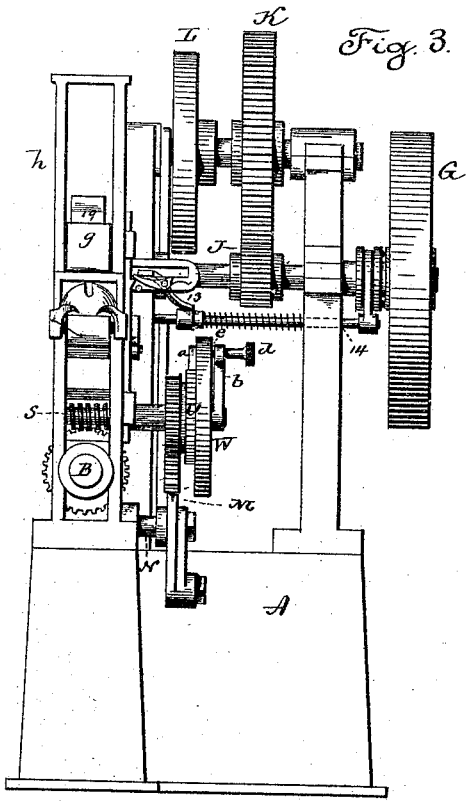

Fig. 4.

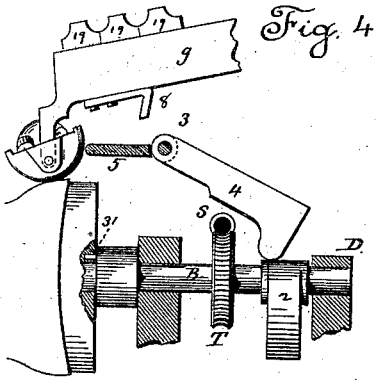

Fig. 6.

Fig. 5.

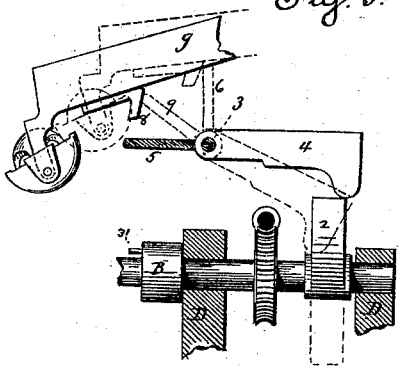

Fig. 7.

Fig. 8.

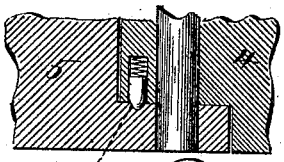

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Fig. 12.

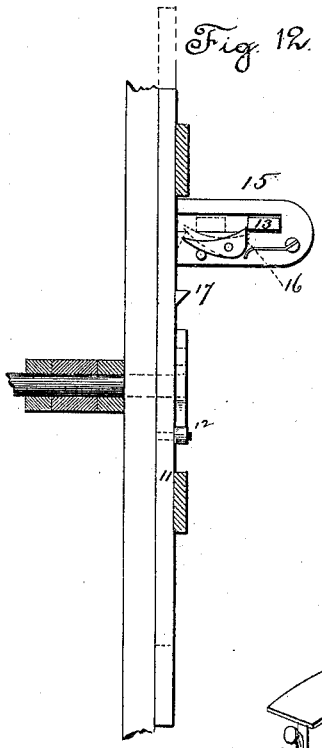


Fig. 11.

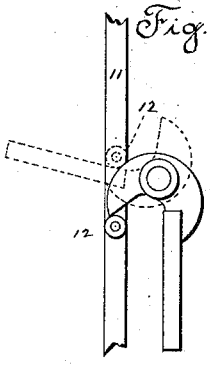


Fig. 9.

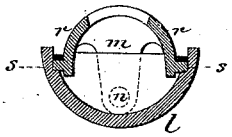


Fig. 10.

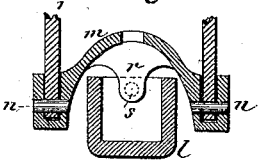


Fig. 13.

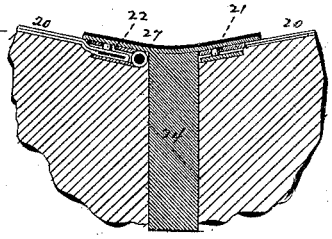


Fig. 16.

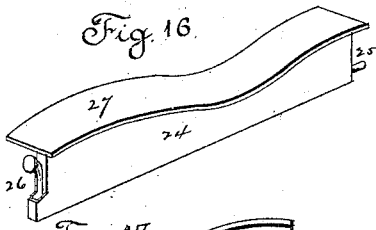


Fig. 17.

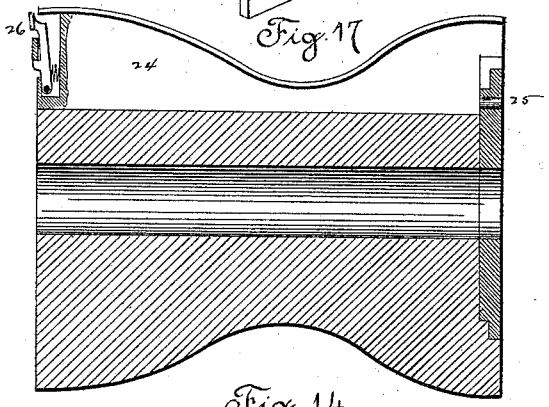


Fig. 15.

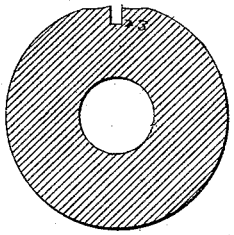
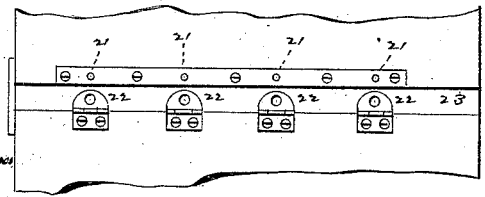


Fig. 14.



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(No Model.) 4 Sheets—Sheet 4.

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CORSET IRONING MACHINE.

No. 344,779. Patented June 29, 1886.

Fig. 18

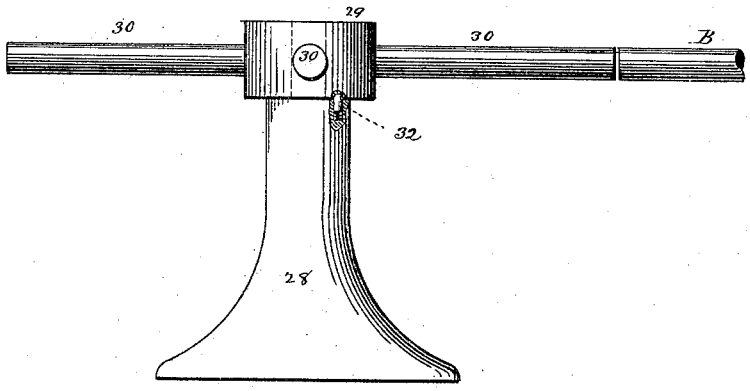
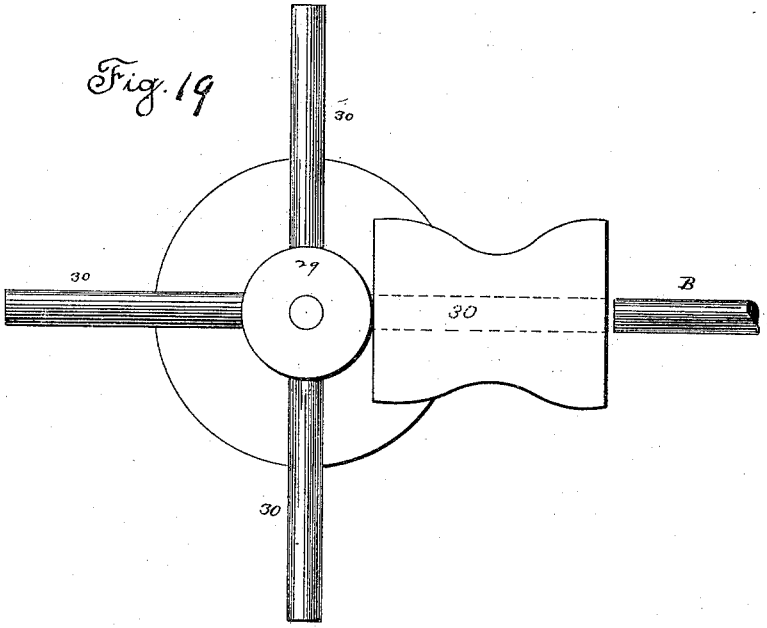


Fig. 19



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UNITED STATES PATENT OFFICE.

DAVID GROTTA, OF NEW HAVEN, CONNECTICUT.

CORSET-IRONING MACHINE.

SPECIFICATION forming part of Letters Patent No. 344,779, dated June 29, 1886.

Application filed December 7, 1885. Serial No. 184,882. (No model.)

To all whom it may concern:

Be it known that I, DAVID GROTTA, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Corset-Ironing Machines; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the machine, the parts in a state of rest; Fig. 2, a top view of the same; Fig. 2ª, an inside view of the disk W, showing the pawl-and-ratchet mechanism; Fig. 3, a front view of the machine; Figs. 4, 5, 6, 7, 8, 9, 10, 11, and 12, detached views enlarged to illustrate the construction and operation of the machine; Fig. 13, a transverse section through the form, enlarged; Fig. 14, a face view of the form at the point where the edges of the corset are engaged, and showing the groove between those points; Fig. 15, a transverse section through the form; Fig. 16, a perspective view of the cap to cover the edges of the corset; Fig. 17, a longitudinal section through the form, showing side view of the covering-cap in place; Fig. 18, a side view of the holder, showing the outer end of the spindle; Fig. 19, a top view of the same.

This invention relates to an improvement in machines for ironing corsets, and particularly to that class in which the corset is arranged upon a former adapted to rotate by an intermittent step-by-step movement, combined with a reciprocating ironing device arranged to work longitudinally back and forth over the corset on the former, and so that by continued reciprocation and the step-by-step rotation of the former the whole surface of the corset will be ironed, the invention being an improvement upon the machine for which Letters Patent of the United States No. 286,238 were granted, dated October 9, 1883, the object of the invention being to facilitate the work; and it consists in the details of construction and combination of parts, as hereinafter described, and particularly recited in the claims.

A represents the bed on which the operative mechanism is arranged; B, a spindle which carries the form C, and on which the corset is secured, the form being arranged upon or in connection with the spindle B, and concentric therewith, and so that the form may partake of the rotation of the spindle. The spindle is supported in bearings D D, and so as to revolve freely therein.

E is the driving-shaft, arranged in bearings F at the rear end of the machine, at right angles to the spindle B, power being applied to the said shaft through a pulley, G, or otherwise.

H is a second or counter shaft, parallel with the driving-shaft, supported in bearings I, and receiving rotation from the driving-shaft by means of a pinion, J, thereon working into a gear, K, on the said shaft H. On the shaft H is a side-grooved cam, L, from which intermittent rotation is imparted to the spindle B, and to impart such rotation a toothed segment, M, is hung upon a stud, N, the axis of which is at right angles to the spindle B. A lever, O, (seen in broken lines, Fig. 1,) is hung in the frame, its upper arm working in the groove of the cam L, and so as to receive therefrom a reciprocating movement in a plane at right angles to the axis of the cam. From the lower arm of this lever a connecting-rod, P, extends to an arm on the segment M, and so that the vibratory movement imparted to the lever O is communicated to the toothed segment M. The toothed segment M works into a corresponding pinion, Q, loose on the shaft R, and at right angles to the spindle B. This shaft carries a worm, S, which works into a corresponding worm-gear, T, on the spindle B, as seen in Fig. 3.

U is a toothed ratchet fixed to or made a part of the gear-wheel Q. Outside the ratchet U is a disk, W, loose on the shaft. Inside the disk W a spring-pawl, *a*, is arranged, (see Fig. 2ª,) adapted to engage the teeth on the ratchet U, and so that when so engaged the rotation which may be imparted to the gear Q and ratchet U will be imparted to the disk W, but leave the disk free to be turned in the opposite direction should occasion require.

The shaft R extends through the disk, and upon its outer end a crank-arm, *b*, is arranged,

made fast to the shaft, and in the end of the arm *b* is a handle, *d*. The handle is movable in an axial direction in the arm, as indicated in broken lines, Fig. 2. It extends through the arm and terminates in the form of a stud, *e*, adapted to enter either of several corresponding holes, *f*, in the face of the disk W, and so as to make engagement between the disk W and the shaft, in order that rotation imparted to the disk will be communicated to the shaft R, and thence through the worm and gear to the spindle carrying the corset. Each vibratory movement of the lever O imparts a corresponding back and forward movement to the segment M, which is in its turn communicated to the gear Q, and thence through the ratchet and the pawl in one direction to the disk W, which, being in connection with the shaft R, gives to the spindle B a rotation corresponding to such movement. On the return of the ratchet-wheel it escapes the pawl, and the shaft R with the spindle remains stationary during such return; hence an intermittent or step-by-step rotation is imparted to the spindle and the form.

If at any time it is desirable to turn the spindle backward, the disk W may be turned by the handle D, the pawl escaping the teeth of the ratchet; but if it is desired to turn the shaft R in the opposite direction, independent of the operative mechanism, the handle *d* is drawn outward from the arm *b*, as indicated in broken lines, Fig. 2, so as to escape the disk. Then the shaft may be turned independent of the disk.

The ironing-bar *g* is arranged in a guide, *h*. It extends rearward, and at its rear end is hung to a crank, *i*, on the shaft H, as seen in Fig. 2 and in broken lines, Fig. 1, and so that at each revolution of the shaft H a full forward and back reciprocating movement will be imparted to the bar *g*. The path of movement of the bar *g* is above and parallel with the spindle B, and the extent of such back and forward movement is sufficient to carry the smoothing-iron over the full length of the corset on the form, as from the position in Fig. 1 to that seen in broken lines, same figure. The bar carries the smoothing-iron at its forward end. This smoothing-iron is of peculiar construction, and is illustrated in Figs. 9 and 10. It consists of the smoother *l*, which in the longitudinal plane of the bar is of segment shape on its face. Its face is substantially flat, and is finished as the face of a common smoothing-iron. Above the smoother *l* a yoke, *m*, is hung on trunnions *n* in the end of the bar *g*, the forward end of the bar having a vertical opening to receive the yoke, as seen in Fig. 10. The axes of the pivots *n n* are at right angles to the line of the bar. Upon the front and rear side the yoke *m* is constructed with arms *r r*, each carrying a trunnion, *s*, (see Fig. 9,) and which take a bearing at opposite points in the smoother *l*, as clearly seen in Fig. 9, and so that the smoother *l* is free to rock transversely in the yoke *m*, while the yoke *m* is free to rock longitudinally; hence a universal adjustment is permitted to the smoother, that it may adapt itself to the surface over which it works. The heat is applied inside the smoother, preferably by gas and blast, through a tube, *t*, (see Fig. 1,) and so that the smoother will be heated to the proper degree. The smoother dropped upon the corset on the form, as seen in Fig. 4, and reciprocating movement imparted thereto, as before described, the smoother will travel back and forth over the surface of the corset from end to end, and the form carrying the corset rotating step by step, the smoother continues its work until a full revolution or several revolutions of the corset have been made, the work continuing according to the judgment of the operator.

That the machine may automatically stop its work when a full revolution of the form has been attained, and also raise the ironing-arm to take it from the form, I arrange a cam, 2, on the spindle B, (seen detached in Fig. 6,) the periphery of the cam being a gradually progressive movement from its lowest point, as seen in Fig. 4, to its highest point, seen in Fig. 5.

In the frame beneath the ironing-bar *g* and upon a fulcrum, 3, a lever, 4, is hung, free to swing in a vertical plane. It extends rearward and its nose rests upon the cam 2, as seen in Figs. 4 and 5, and so that as the cam revolves from its lowest point to its highest it will correspondingly raise the lever 4 from the position seen in Fig. 4 to that seen in Fig. 5; but so soon as the highest point of the cam is reached, as seen in Fig. 5, the lever will fall to its lowest position, as indicated in broken lines in that figure, and as also seen in Fig. 4. On the same pivot or axis upon which the lever 4 is hung a trip, 5, is hung, which may extend forward beneath the bar, as seen in Figs. 4 and 5. The trip may be readily turned upward from the position seen in Fig. 5 to the vertical position 6, seen in broken lines in the same figure. Between the trip 5 and the lever 4 a coupling device is provided, as seen in Fig. 8. This consists of a round-nose bolt, 7, arranged in the hub of the lever 4, provided with a spring, the tendency of which is to force the bolt outward, and in the trip 5 is a corresponding seat to receive the nose of the bolt. The rounded nose of the bolt, while sufficient to couple the lever 4 with the trip, may escape therefrom under sufficient force applied to disconnect the two.

On the under side of the ironing-bar *g* is a stop, 8, which is adapted under certain conditions to engage the trip 5 or to escape therefrom, as the case may be; but when in its down position, as indicated in Figs. 4 and 5, it is out of the path of the stop 8 under the reciprocating movement of the bar—that is, in such reciprocating movement the stop will pass above the end of the trip.

The machine at work, the rotation of the

form starts with the lowest point, 9, of the cam 6 upward, and the lever 4 rests thereon, as seen in Fig. 4. At this time the bolt 7 in the lever 4 is disengaged from the trip. As the form rotates and the reciprocation of the bar *g* continues the lever 4 gradually rises to the extreme up position, as indicated in Fig. 5. At this point the bolt 7 is in line with the corresponding recess in the trip 5, and flies into that recess, so as to engage the lever with the trip; then as the lever 4 falls on the cam it will turn the trip up, as indicated by the broken lines 9, Fig. 5, and stand in the path of the stop 8, so that on the next return of the bar *g* the stop 8 will engage the trip 9 and turn it to its up position, as seen at 6, Fig. 5, and in so doing will raise the bar, as indicated in broken lines, that figure, such turning of the trip by the bar causing the bolt 7 to be moved back and escape from its engagement with the trip. In this condition the machine should stop. To produce such stopping, a cam, 10, is hung outside the frame, on the same axis as the trip. (See Figs. 1 and 11.)

On the side of the frame and adjacent to the cam 10 is a vertical sliding rod, 11, from which a stud, 12, projects into the path of a corresponding shoulder on the cam 10, and so that as the trip is turned upward it turns the cam and correspondingly raises the rod 11. Above the cam is a lever, 13, in connection with any suitable clutch between the pulley and the driving-shaft, the mechanism shown being a sliding bar, 14, with a fork working in an annular groove on the clutch. This construction of clutch is common and well known, and does not require detailed description.

The lever 13 extends forward through a guide, 15, above the cam 10, as seen in Figs. 2 and 12. The lever is thrown to its out position, as seen in Fig. 15, to engage the power with the machine, and is there caught by a latch, 16, the tail of which stands in the path of a shoulder, 17, on the vertical rod 11, and so that as the said rod 11 rises, as before described, it will strike the tail of the latch, turn it upward and release the lever, permitting it to fly inward under the action of its spring, as indicated in broken lines, Fig. 15, and disengage the power, whereupon the machine instantly stops.

To start the machine, the lever 13 is thrown to its out position, when the latch readily engages it. The trip is turned downward, as indicated in Fig. 4, by means of a suitable handle, 18, provided for the purpose. Such turning of the cam permits the rod 11 to fall, and the trip having been turned out of the path of the stop 8 on the bar, the reciprocation of the bar will continue throughout another revolution.

To graduate the pressure of the smoothing-iron upon the corset, the outer end of the bar *g* is constructed in the form of a box and adapted to receive more or less weights 19, according to the amount of pressure required.

The form is adapted to take the whole corset. The two parts at the rear or eyelet edge are secured together by any suitable device—may be lacing or straps—the front and rear edges are brought around the form and near each other, as seen in Fig. 13, 20 indicating the two sides of the corset. At one side several studs, 21, are applied, corresponding to the eyes on the one part, and on the other side hinged catches 22 are arranged, adapted to turn over the studs or hooks of the other part, the catches provided with a hole corresponding to the stud, and as seen in Figs. 13 and 14. The parts may be and generally will be first applied to the studs and catches, and then the edges upon the opposite side drawn together by lacings, straps, or otherwise.

To protect the hooks and eyes from possible injury by the smoothing-iron, I construct the form with a longitudinal groove, 23, between the securing devices for the corset, and provide a cover for the edges of the corset, consisting of a flange, 24, adapted to enter the groove 23 in the form. At one end it is provided with a locking device to engage the form—say a pin, 25, to enter a corresponding hole in that end of the groove. At the other end I provide a latch, 26, which, as the flange is pressed into the groove, will interlock with the form, as seen in Fig. 17. On the upper edge of the flange is a thin cap, 27, extending each side of the flange 24, and so as to cover the locked portions of the corset, as seen in Fig. 13. I make the cap so thin that the smoothing-iron readily runs onto it from the surface of the corset, and so that the smoother may work upon the corset close up to the edge of the cap. The cap longitudinally corresponds to the shape of the form.

In order to avoid the stopping of the machine, which would be necessary in removing an ironed corset from the form and placing another thereon to be ironed, I arrange a vertical post, 28, (see Fig. 18,) in line with the spindle, and on the top of this post I arrange a hub, 29, from which radial arms 30 project, (preferably four such arms,) the plane of the arms being in the same plane with that of the spindle, and standing in such relation to the spindle, as seen in Fig. 19, that each arm in its rotation is brought into line with the spindle B of the machine. The arms 30 correspond in diameter to the spindle B, and each is adapted to receive a form, such as employed for ironing the corset. The operator, having, say, four forms for the four arms 30, arranges the forms on the respective arms and places the corsets to be ironed thereon. One of the arms having a form being brought into line with the spindle, as seen in Fig. 20, the operator slides the form from the arm onto the spindle, the form and spindle being provided with means of engagement, say as by a stud, 31, (see Fig. 4,) to enter a corresponding hole in the end of the form, and so that the form will partake of the rota-

tion of the spindle. Any suitable interlocking device between the two may be employed. The arm from which the form was moved onto the spindle remains in that position until the corset on that form has been ironed. Then the operator returns the form from the spindle onto the said arm, then turns the holder until a second arm, with its form, is in like manner brought into line with the spindle, then slides that second form onto the spindle, and the work progresses, and while so progressing the operator removes the corset already ironed from the first form and places another thereon, and so continuing the work, the only delay in the machine is in the simple operation of the transfer of the form from one arm of the holder to the spindle and return.

A check, 32, may be applied to catch the holder in its rotation when the arms shall be brought into line with the spindle, the check readily yielding to the advance movement of the form, yet sufficient to temporarily retain the holder in its proper relative position to the spindle.

In another application for corset-ironing machine, Serial No. 173,014, I have shown certain features embodied in this application; but I do not wish to be understood as claiming in this application anything shown or described in the said application No. 173,014, except as hereinafter particularly recited.

I am aware that ironing-machines have been constructed with an iron adapted to universal movement over irregular surfaces, and whereby in its path of movement it will adapt itself to such irregular surfaces, and therefore do not claim, broadly, a reciprocally self-adjusting smoothing-iron.

I claim—

1. In a machine for ironing corsets, consisting of an intermittently-rotating holder for the corset and an iron-carrying bar reciprocating in a plane parallel with the axis of the corset, the yoke *m*, hung upon trunnions at the free end of the said bar, constructed with arms *r r*, the one in front and the other in rear of the axial line through the trunnions on which the yoke is hung, and in a line at substantially right angles thereto, combined with the smoother *l* within said yoke and between said arms *r r*, and hung upon pivots in said arms, substantially as described, and whereby the said smoother *l* is free to rock transversely upon its pivots, while the yoke is free to rock longitudinally.

2. In a corset-ironing machine, the combination of an intermittently-revolving form, a longitudinally-reciprocating ironing-bar free for up and down movement and carrying a smoothing-iron at its free end adapted to pass longitudinally over the form, a cam, 2, partaking of the rotation of the form, a lever, 4, hung in the frame, and so as to swing in a vertical plane, its end resting upon said cam, the trip 5, hung upon the same axis as the lever 4 and beneath the ironing-arm, the said lever and trip provided with an interlocking device to engage the two when the cam is at its highest position, and a stop, 8, on the ironing-bar, substantially as described.

3. In a corset-ironing machine, the combination of the intermittently-rotating form, the longitudinally-reciprocating ironing-bar *g*, carrying the iron at its forward end and free for up and down movement, the trip 5, hung in the frame, corresponding stop, 8, on the ironing-bar, adapted to engage said trip, a cam, 10, on the axis of the trip, clutch-lever 13 in connection with the clutch between the driving-shaft and the power, a latch, 16, adapted to engage said lever when the power is applied, and a vertical bar, 11, between said cam 10 and said latch, substantially as and for the purpose described.

4. In a corset-ironing machine, the combination of the longitudinally-reciprocating ironing-bar *g*, the spindle B, the axis of which is parallel to said bar, a worm-gear, T, on said spindle, a shaft, R, at right angles to said spindle, and carrying a worm, S, adapted to work in said worm-gear, a pawl-and-ratchet mechanism, substantially such as described, whereby intermittent rotation is imparted to said shaft R and communicated to the spindle B, substantially as described.

5. In a corset-ironing machine, the combination of the longitudinally-reciprocating ironing-bar *g*, the spindle B, carrying a worm-gear, T, the shaft R at right angles to said spindle, and carrying a worm, S, working into said worm-gear, the gear Q, loose on said shaft, a toothed segment, M, arranged to work in said gear Q, a cam with lever-connection between it and said segment, whereby vibratory movement is imparted to said segment, with the disk W, also loose on said shaft, a pawl and ratchet between said disk and gear, with an arm, *b*, fixed to said shaft R, and a stud, *e*, in said arm, adapted to engage or disengage said disk with said shaft R, substantially as described.

6. A form for corset-ironing machines, constructed with a longitudinal groove, 24, provided with fastening devices each side said groove for the respective edges of the corset, a cap, 27, constructed with the flange 24, the said flange adapted to enter said groove, and the cap to lie upon the adjacent edges of the corset, with interlocking devices between said cap and form, substantially as described.

7. In a corset-ironing machine, an intermittently-revolving spindle adapted to engage with the form on which the corset is placed, a longitudinally-reciprocating ironing-bar free for up and down movement and carrying the iron at its free end the said ironing-bar constructed in box form at its free end and adapted to receive weights, substantially as described, and for the purpose of adjusting the pressure of the smoothing-iron upon the corset.

8. In a corset-ironing machine having an

intermittently-rotating spindle adapted to receive a corset-form, and a reciprocating bar carrying the smoothing-iron, arranged to move in a path parallel with the axis of the said form, the combination therewith of a holder consisting of a hub with arms projecting therefrom adapted to revolve in the plane of the said spindle, and to successively be brought into axial line with the spindle, each of said arms of the holder adapted to receive a corset-form, substantially as described, and so that the form on the one arm in line with the spindle may be moved from said arm onto the spindle, or vice versa, as the case may be.

DAVID GROTTA.

Witnesses:
W. L. THOMPSON,
W. W. DUDLEY.