

No. 707,968.

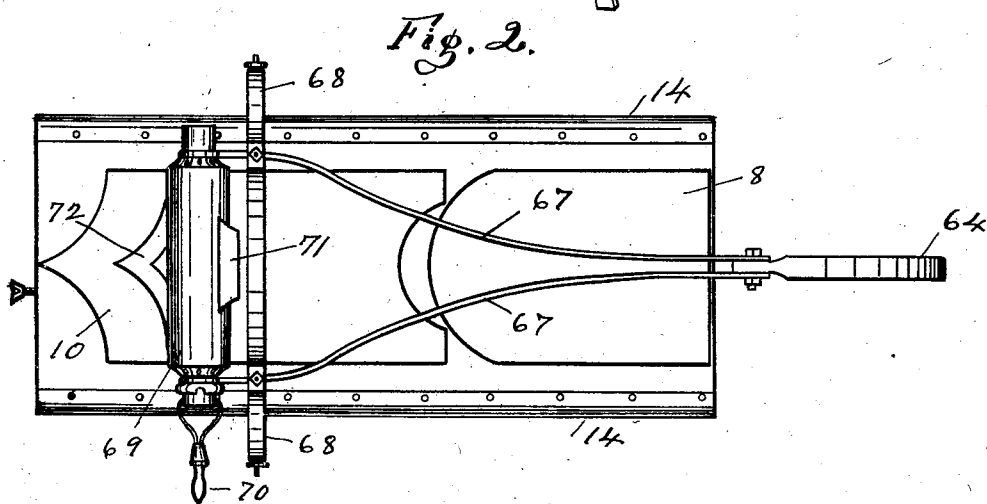
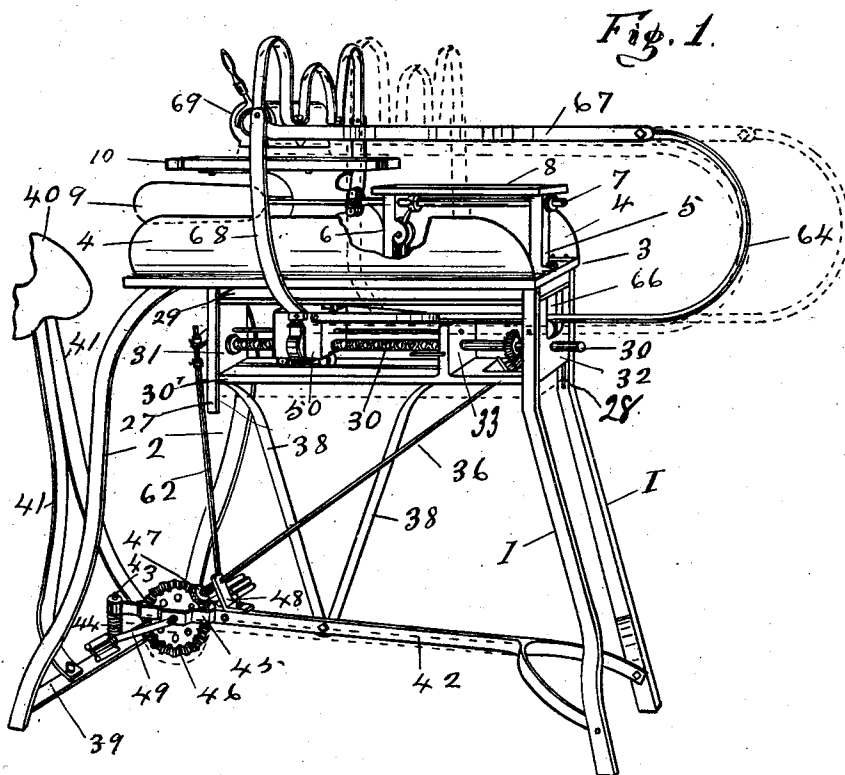
Patented Aug. 26, 1902.

I. HARRIS.
IRONING MACHINE.

(Application filed Mar. 15, 1901.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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Isaiah Harris INVENTOR

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I. HARRIS.
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(Application filed Mar. 15, 1901.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 3.

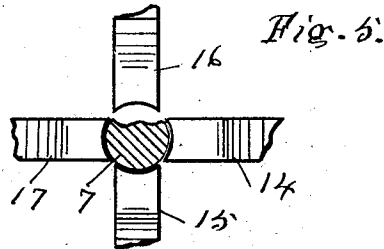
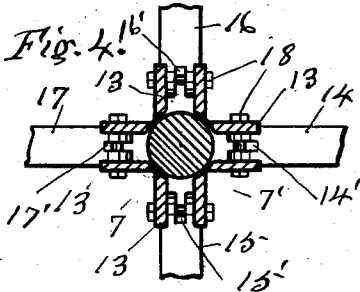
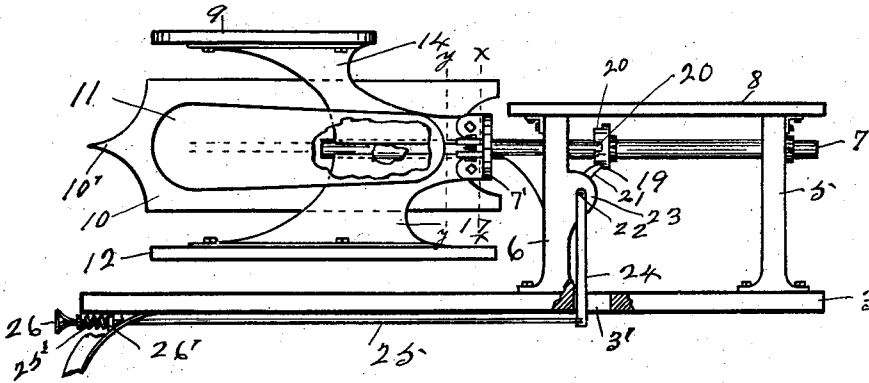


Fig. 8.

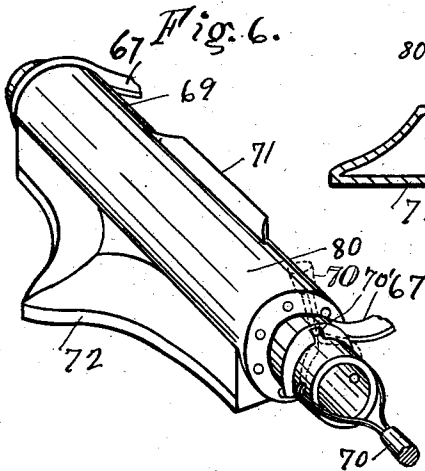
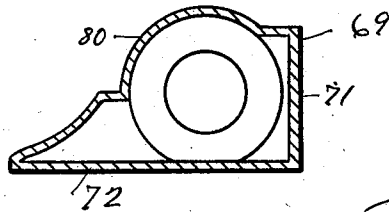
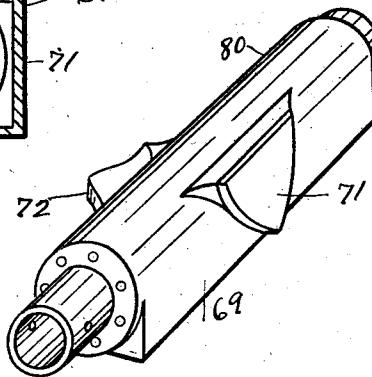


Fig. 7.



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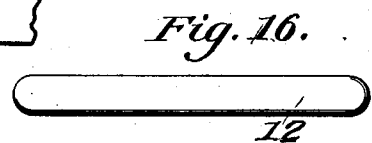
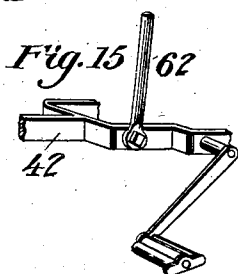
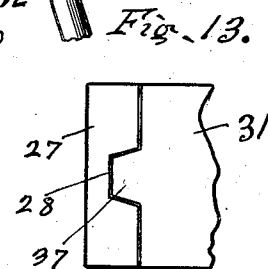
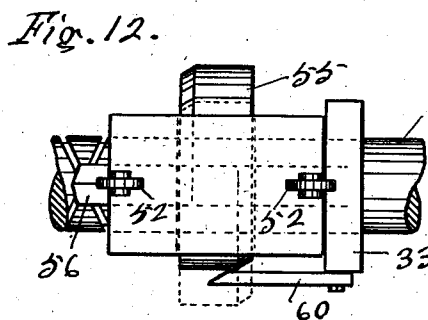
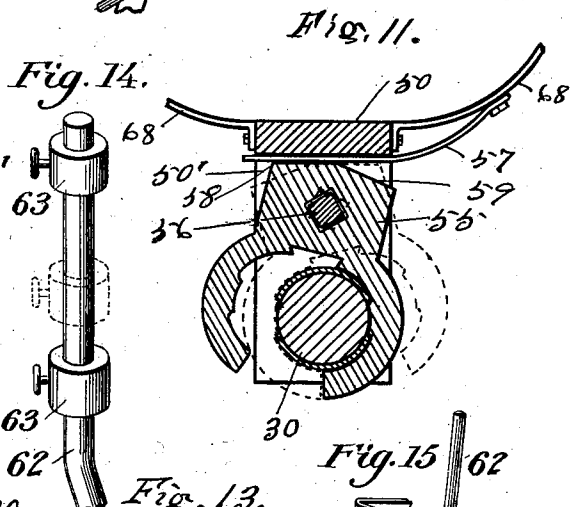
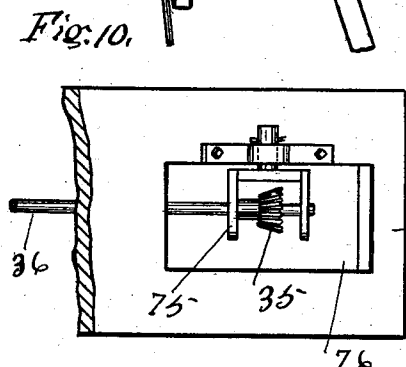
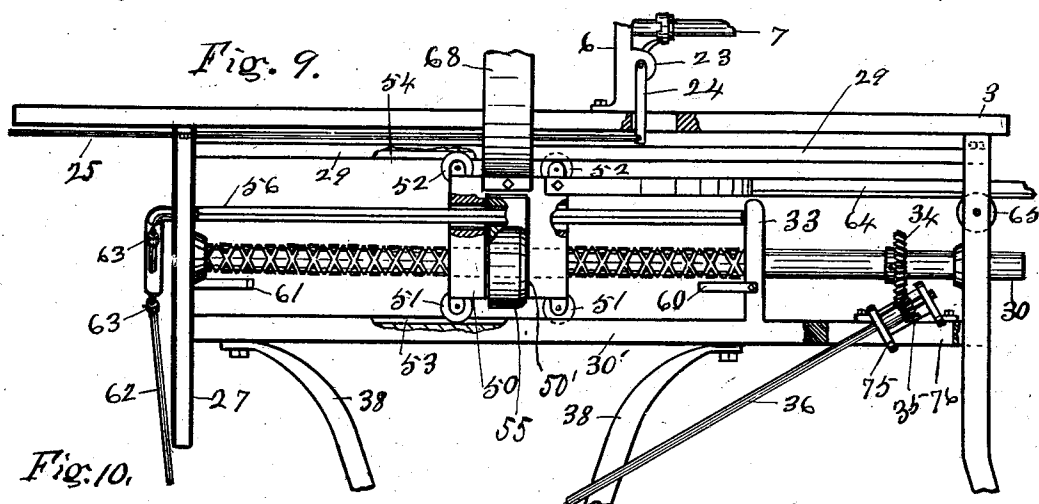
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I. HARRIS.
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

ISAIAH HARRIS, OF VAN WERT, OHIO.

IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 707,968, dated August 26, 1902.

Application filed March 15, 1901. Serial No. 51,241. (No model.)

To all whom it may concern:

Be it known that I, ISAIAH HARRIS, a citizen of the United States, residing at Van Wert, in the county of Van Wert, in the State of Ohio, having invented certain new and useful Improvements in Ironing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in ironing-machines specially designed and adapted for use in laundries.

The object of my present invention is to provide an ironing-machine for laundry use of simple and economical construction, convenient, efficient, and reliable in action, in which the iron has both a vertical and a longitudinal movement in use, and a sectional ironing-board is rotatably mounted in co-operative relation with the iron and is adjustable at the will of the operator.

My invention consists of an upright supporting-frame surmounted by a fixed table having lateral clothes-shields, a sectional ironing-board rotatably mounted on the said table, a smoothing and polishing iron yieldingly supported above the ironing-board in co-operative relation therewith, improved means for imparting to the iron a limited reciprocating horizontal movement, means for automatically reversing the said movement of the iron at each limit of its movement, and means for reversing the movement of the iron at the pleasure of the operator.

The principal novel features of my invention are the improved construction of the iron, the revoluble sectional ironing-board, and the means for automatically reversing the horizontal movement of the iron at each limit of its travel.

Referring now to the accompanying drawings, in which similar reference-numerals indicate like parts throughout the several views, Figure 1 is a perspective view of my improvement, showing the relative arrangement of the operative parts and also showing in dotted outline the limit of the vertical and horizontal movements of the working parts.

Fig. 2 is a plan view of the same, showing manner of supporting the iron in position. Fig. 3 is an enlarged detail of the sectional ironing-board and the means for operating and securing the same in position for use. Fig. 4 is a cross-section of the ironing-board shaft and spider on the line *xx* of Fig. 3, showing the manner of securing the sections of the ironing-board to its supporting-shaft. Fig. 5 is a cross-section of the same shaft and the radial webs of the said ironing-board on the line *yy* of Fig. 3 with the shaft broken away in part to show the concave lower face of the ironing-board brackets. Figs. 6 and 7 are perspective details of my improved iron, and Fig. 8 is a cross-section of the same midway of its ends. Fig. 9 is a detail of the iron-actuating carriage in position on its driving-shaft. Fig. 10 is a detail plan of the bevel-pinion which actuates the said driving-shaft, showing the manner of supporting the same. Fig. 11 is a cross-section of the carriage and actuating screw-shaft, taken through the split nut which engages said shaft, showing the means for securing it in its working engagement with said shaft. Fig. 12 is a detail plan of the means for reversing the movement of the carriage. Fig. 13 is a detail showing the vertical ways for the vertically-movable frame and the ribs for engaging the same. Fig. 14 is an enlarged detail of the adjustable collars in position on the upper end of the rod 62. Fig. 15 is a detail of the lower end of the rod 62, showing the manner of securing the same to the bar 42. Fig. 16 is a detail of or section of the ironing-board 12, showing its relative width.

All parts of my invention are made of suitable metal except the ironing-board, which is preferably made of wood.

The supporting-frame, consisting of the forward legs 1 and the rear legs 2, of proper dimensions, is surmounted by a fixed table 3, Fig. 1, to the opposite sides of which are rigidly secured the upright shields 4 for the purpose hereinafter described. Upon the forward portion of the table 3 are erected the fixed standards 5 and 6, having coincident circular openings in which the horizontal shaft 7 is revolubly mounted. To the top of these standards 5 and 6 a short table 8 is rigidly fixed by bolts or other proper manner, Fig.

3, adapted to aid in supporting the clothes during the operation of ironing. Upon the rearwardly-projecting end of the shaft 7 the four sections 9, 10, 11, and 12 of the ironing-board are adjustably mounted, as follows:

5 The shaft 7 at a suitable distance from its rear end is provided with a spider-casting 7', having apertured peripheral lugs 13, arranged in pairs, as shown in Fig. 4, to which the metallic brackets 14, 15, 16, and 17 are respectively secured by proper pivots 18.

10 The lower faces of these brackets are extended, as shown, and are made concave, Fig. 5, to fit the adjacent portion of the perimeter of the shaft 7, against which they rest. To the upper edge of the said brackets 14, 15, 16, and 17 the said ironing-board sections 9, 10, 11, and 12 are respectively secured by proper bolts.

15 The said ironing-board sections are so arranged on the shaft 7 that their inner ends clear the adjacent end of the said table 8 when the shaft 7 is revolved for the purpose hereinafter described. As shown in Fig. 4, the forward ends of the said brackets 14, 15, 16, and 17 are provided with the terminal slits or slots 14', 15', 16', and 17', respectively, whereby when the said ends are clamped between the said ears and secured by the pivots 18 they will normally bind therein, whereby the operator can give the three ironing-board sections not in use a limited radial adjustment out of his way. At a suitable point on the shaft 7 is fixed the clutch 19, having a series of peripheral notches or recesses 20, adapted for a holding engagement with the pawl 21, which is fixed on the short horizontal shaft 22, rotatably mounted in the apertured ears 23 on the inner face of the standard 6. To the outer end of the shaft 22 is fixed the upper end of the crank-arm 24, which passes through a vertical slot 3' in the table 3 and has its lower end pivotally connected to the forward end of the rod 25, whose free end has a suitable knob 26, which is grasped by the operator and pushed inward to release the said pawl from its holding engagement with the said clutch when it is desired to rotate the shaft 7. The outer end of the rod 25 is loosely supported in a suitable bracket 26' on the lower face of the table 3 and has a coiled retractile spring 25', adapted to return the said rod to its normal position. At a proper point on the lower face of the table 3 and near the rear end thereof are rigidly fixed the pendent brackets 27 in transverse and parallel arrangement, and are provided upon their inner faces with the longitudinal slots or ways 28. The inner faces of the upper portion of the legs 1 are also provided with similar grooves or ways for the purpose about to be described. A rectangular frame is provided, consisting of the top plate 29 and the bottom plate 30', rigidly united at their opposite extremities by the end plates 31 and 32. At a proper point on the bottom plate 30', near the forward end thereof, is arranged

a fixed or integral transverse plate or lug 33, having an opening in which the screw-shaft 30 is rotatably mounted. These end plates 31 and 32 have on their opposite upright edges a longitudinal rib 37, Fig. 13, adapted to loosely fit the said slots or ways 28 to prevent any longitudinal movement of the said rectangular frame, which is firmly supported by the upright braces 38. This screw-shaft 30 has its opposite ends rotatably mounted in the said end plates 31 and 32, has its rear portion provided with right and left hand screw-threads, and has a fixed bevel gear-wheel 34 near its forward end, adapted for an actuating engagement with a bevel gear-wheel 35 on the upper end of the oblique shaft 36, whose upper end passes through a suitable opening in the bottom plate 30'. The lower ends of the rear legs 2 are rigidly connected by the cross-bar 39, on which a suitable operating-seat 40 is fixed by proper standards 41. The lower ends of the legs 1 are connected by the bifurcated and pivoted forward end of the longitudinal bar 42, whose rear end is loosely mounted on the upright post 43, which is fixed on the said bar 39. The rear end of this bar 42 is supported on the coil-spring 44 on the post 43, whereby it has a limited vertical movement against the tension of the said spring 44 in the manner hereinafter described. The lower end of the said braces 38 are rigidly connected to the said bar 42 at or near the middle of its length, whereby the said rectangular frame carrying the shaft 30 also has a limited vertical movement. In a suitable bifurcation 45 in the rear end of the bar 42 is revolubly mounted a bevel gear-wheel 46 of proper dimensions, adapted for an actuating engagement with a meshing gear-wheel 47 on the lower end of the said shaft 36. The lower end of the shaft 36 is rotatably mounted in a supporting-bracket 48, and the upper end thereof is supported in an oblique hanger-bracket 75, pivotally mounted on the plate 30' and arranged in a slot 76 therein. By this construction the upper end of the rod 36 has a slight yielding movement to accommodate the vertical movements of the frame carrying the screw-shaft. Each end of the shaft on which the driving gear-wheel 46 is fixed is provided with a pedal-crank 49, whereby the screw-shaft 30 is rotated by means of the driving-gear 46. On the said screw-shaft 30 is loosely mounted the metallic block or carriage 50, having upon its opposite ends the wheels or rollers 51 upon its lower surface, adapted to snugly fit the grooved way 53 on the bottom plate 30' and having upon its upper face similar wheels or rollers 52, adapted to run in the grooved way 54 in the top plate 29, whereby the weight of said block or carriage in use is supported by the said plates 29 and 30' instead of by the shaft 30, thereby greatly diminishing the friction. This carriage 50 is provided upon its lower face with a vertical transverse recess 50', in which is loosely suspended the split nut 55,

adapted to form an actuating engagement with but one side of the shaft 30 at a time. This nut is mounted on the rod 56, which is square in cross-section, as shown in Figs. 9 and 11. The ends of this rod are journaled in suitable bearings in the said standard 33 and the end plate 31, respectively. One inner face of the said nut 55 is provided with right-handed screw-threads, and the opposite inner face thereof is provided with left-handed screw-threads, whereby when one side of the said nut is held in engagement with the said revolving shaft 30 the carriage 50 will be driven forward thereon, and when the other side of the nut 55 is held into engagement with the shaft 30 the carriage 50 will be forced to travel in the opposite direction. A flat spring 57, secured at one end to the yoke-spring 68, has its free end arranged in the upper part of the said recess 50'. The nut 55 is provided with two inclined faces at 58 and 59, adapted to be in parallel arrangement, respectively, with the adjacent face of the said recess 50' when the correspondingly-opposite side or jaw of the nut is in its engagement, whereby the said spring 57 will be held against its tension into contact with the carriage 50, as shown in Fig. 11. This spring 57 will thus in turn firmly hold the nut 55 to its engagement with the shaft 30, as follows: The center of the shaft 56 is at all times in a vertical line with the center of the shaft 30, whereby when the said nut is rocked into either one of its two operative positions the tension of the spring 57 will be so exerted upon said nut just over or beyond this line as to firmly hold it to its engagement in an obvious manner. The means for automatically reversing the direction of movement of the said block or carriage 50 is as follows: At one side of the upright standard 33 is fixed a rearwardly-projecting plate, stud, or lug 60, having its inner edge beveled, as shown, and projecting into the path of the nut 55 when the opposite side thereof is engaged with the shaft 30 and is adapted by contact with the forward beveled edge of the said nut to force the adjacent side or jaw thereof into engagement with the screw-shaft 30, thereby automatically reversing its direction of travel on the shaft 30. To the inner face of the end plate 31 and upon the opposite side of the shaft 30 is fixed a similar lug or stud 61, which projects into the line of travel of the said nut in the opposite direction and in the same manner shifts the engagement thereof, and so reverses its direction of travel. The limit of the travel of the said carriage in either direction is thus determined by the location of the said lugs or studs 60 and 61. To enable the operator to reverse the direction of travel of the said carriage at will, as in an emergency, the said rod 56, on which the nut 55 is slidably mounted and from which it is suspended, has its outer rear end bent to a right-angular relation and vertically perforated to loosely contain the upper end of a trip-rod 62, having a pair of

adjustable collars 63, whose distance apart regulates the play of said rod in said slot without disturbing the nut 55 by any rocking motion of the rod 56. The lower end of this trip-rod 62 is rigidly connected to bar 42 at or near its rear end. The mechanism for mounting my improved iron on the said carriage 50 is as follows: To the front end of said carriage 50 is secured the lower bifurcated end of the curved bar 64, which is supported on the grooved perimeter of an idler 65, mounted in an opening 66 in the end plate 32. To the upper end of said bar 64 are bolted the forward ends of the spread bars 67, whose rear ends are loosely secured to the opposite ends of the iron 69 by being bent about the same, as shown in Fig. 6. To the sides of said carriage at or near the middle of its length are fixed the lower ends of the double yoke-spring 68, which is rigidly bolted at its upper portion to the said bars 67, near the forward end thereof. The iron 69 of any proper internal construction and rotatably mounted in the bent ends of the said bars 67, as described, is heated by a gas-jet or other proper manner, has an operating-handle 70 for rotating the same, and has two flat peripheral surfaces 71 and 72, the former being triangular in contour and is specially designed and adapted for ironing seams and between ruffles, while the latter is adapted for the ironing of ruffles in the manner hereinafter described and for ironing in general. The cylindrical surface 80 of said iron is used for polishing in a well-understood manner.

The operation and manner of employing my invention thus described is obvious and, briefly stated, is as follows: The article to be ironed is placed upon the small table 8, where it is within easy reach of the operator on the seat 40, who can readily and conveniently manipulate the same on either of the said ironing-board sections above which the iron 69 is normally suspended by means of the said bars 67. He then rotates the said driving-gear 46 by means of the pedals 49, thereby rotating the said screw-shaft 30 continuously in the same direction, which in turn imparts to the said carriage 50 a longitudinal movement on said shaft 30 by the engagement of the said nut 55 therewith, as described, and thus imparts a like longitudinal movement to the said iron 69, which it carries. As the said rectangular frame in which the screw-shaft 30 is revolvably mounted is movably mounted in the vertical ways 28 in the said brackets 27 and in the upper ends of the said legs 1 and is supported on the pivoted bar 42 by means of the bars 38, it is obvious that under proper adjustment the downward pressure of the operator on the pedals 49 will bring the adjacent end of the lever 42 down against the tension of the spring 44, as shown in dotted outline in Fig. 1, thereby bringing downward to its lowest limit the said frame carrying the screw-shaft and carriage, whereby the said iron is brought

down with a proper pressure upon the said ironing-board, and the continued revolution of the screw-shaft 30 imparts to the iron a reciprocating horizontal movement back and forth upon the said ironing-board. As the rod 56, upon which the meshing split nut 55 is slidably mounted, is angular in cross-section, it cannot turn thereon, and the operator can at the same time shift the said nut at will by means of the said trip-rod 62 for the purpose of reversing at pleasure the horizontal movements of the iron, as follows: When the iron is approaching the operator, a proper decreased or relaxed pressure of the feet on the said pedals will reverse the movement of the iron, and when the iron is receding from the operator its movement can be reversed by a proper increased pressure on said pedals. The manipulation of the iron in coöperation with the ironing-board is as follows: For general purposes the board 10 is employed, as it presents the largest surface. It is also used for ironing ruffles, the point 10' coacting with the point 72 of the iron for that purpose in an obvious manner, the pointed and concave rear end of the board 10 permitting the operator to hold, spread, and manipulate the ruffle directly beneath the point 72 of the iron without danger of contact therewith. It is well known that the operation of ironing seams and between ruffles by machinery is a difficult one, but which is perfectly and conveniently accomplished by using the triangular face 71. For ironing puff sleeves the short board 9 is used, while the long and narrow board 12 is adapted for pressing seams, and the board 11 is employed for pressing pants. As before described, the sectional ironing-board can readily be rotated with the shaft 7 and is securely locked in a position to coöperate with the iron, which is also conveniently rotated to employ either of the surfaces 71 or 72 or its cylindrical surface 80 for polishing by means of the handle 70 and is securely locked in the desired operative position by the engagement of the handle 70 with the notch 70' or other proper manner. When the article to be ironed is supported on the table 8 for manipulation upon either of the ironing-boards, the lateral shields 4 prevent any contact thereof with the moving parts of the machine. As before described, the longitudinal movements of the iron-supporting carriage are limited and automatically reversed by the engagements of the lugs 60 and 61, respectively, with the adjacent face of the nut 55, and these movements can be reversed at pleasure by actuating the rod 62 by either an increased or decreased pressure on the said pedals, as above described.

While I have shown my improved machine as being operated by foot-power, any suitable motive power can readily be connected to the projecting free end of the said screw-shaft 30 in a well-understood manner.

My improved ironing-machine is thus simple and substantial in construction, conven-

ient and efficient in use, and positive and reliable in operation.

Having thus described my invention and the manner of employing the same, what I desire to secure by Letters Patent is—

1. In an ironing-machine, an upright supporting-frame surmounted by a fixed table; a vertically-movable frame arranged within said upright frame beneath said table; a right and left screw-threaded shaft revolubly mounted in said movable frame; means for actuating said shaft; a carriage loosely mounted on said shaft and provided with a split nut suspended therein and adapted for a meshing engagement with but one side of said shaft at a time, whereby the said carriage is afforded a longitudinal movement thereon; means for automatically reversing the movement of said carriage at predetermined limits of its travel; means for normally holding said nut to its actuating engagement; a sectional ironing-board revolubly mounted on said table as described; lateral shields fixed on said table as shown; an iron supported by said carriage normally suspended above and in coöperative relation with the said board; and means for actuating the said vertically-movable frame to bring the said iron into operative relation with the said ironing-board.

2. An ironing-machine consisting of an upright supporting-frame; a horizontal screw-shaft having right and left screw-threads revolubly and yieldingly mounted in said frame; means for rotating said shaft and for imparting thereto a limited vertical movement; a carriage mounted on said shaft and adapted to be actuated thereby in opposite directions; means for automatically reversing said carriage at each limit of its travel; a sectional ironing-board rotatably mounted on said frame as described; and an iron supported from said carriage and normally suspended above said board and in coöperation therewith.

3. The combination of an upright frame; a right and left handed screw-shaft rotatably mounted and yieldingly supported in said frame; means for rotating said shaft, and means for imparting thereto a limited vertical movement; a carriage movably mounted on said shaft and adapted to be actuated thereby in opposite directions; means for automatically reversing said carriage at each limit of its travel; an ironing-board mounted on said frame; an iron yieldingly supported above and in coöperative relation with said board; and means for rigidly connecting the said iron with the said carriage.

4. In an ironing-machine of the class specified, mechanism for imparting to the iron a reciprocating motion in a horizontal plane consisting of a horizontal shaft having right and left handed screw-threads; a carriage movably mounted on said shaft, and provided with a split nut adapted to alternately engage the said shaft upon opposite sides for

the purpose of actuating the said carriage in opposite directions; means for automatically reversing the said carriage at each limit of its travel; and means for rigidly supporting the said iron upon the said movable carriage.

5 In an ironing-machine means for actuating the iron to and fro in a horizontal plane, consisting of a horizontal screw-shaft having right and left handed threads; a carriage
10 movably mounted thereon and provided with a pivoted split nut whose threaded jaws are adapted for an alternate actuating engagement with the said shaft whereby the said carriage is alternately actuated in opposite
15 directions; means for rotating the said shaft; means for automatically reversing the movement of said carriage at each limit of its travel; means for reversing the movement of said carriage at any desired point in its travel;
20 and means for firmly supporting the said iron upon the said carriage.

6. In an ironing-machine, an ironing-board

consisting of radial sections pivotally mounted upon a revoluble shaft as described, and means for locking the said board in any desired position. 25

7. In an ironing-machine means for supporting a movable iron consisting of a rotatable screw-shaft having right and left hand threads; a carriage movably mounted on said shaft and provided with a pivoted nut having oppositely-arranged threaded jaws adapted for a meshing engagement with the said shaft alternately as described; means for normally holding said nut in its engagement; 30 and means for supporting said iron upon said carriage. 35

Signed by me at Van Wert, Van Wert county, State of Ohio, this 8th day of March, A. D. 1901.

ISAIAH HARRIS.

Witnesses:

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WILLIAM H. DAILEY.