

(No Model.)

3 Sheets—Sheet 1.

G. C. ROBERTS.  
IRONING MACHINE.

No. 436,192.

Patented Sept. 9, 1890.

Fig. 1.

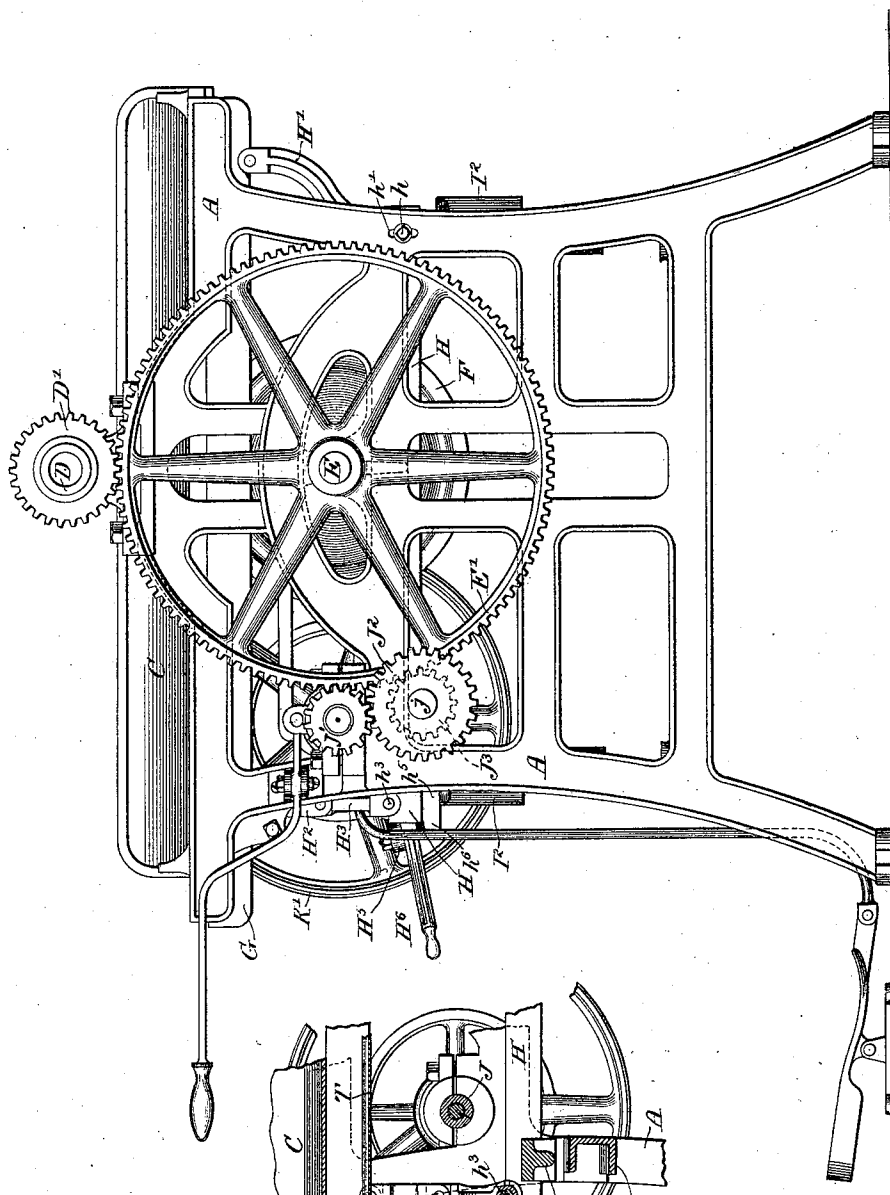
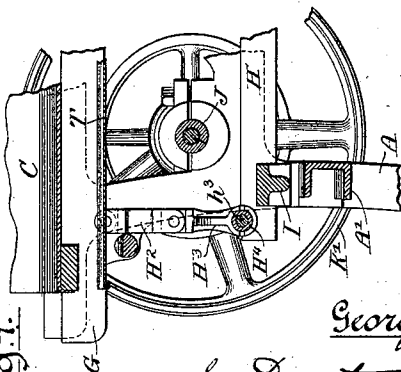


Fig. 4.



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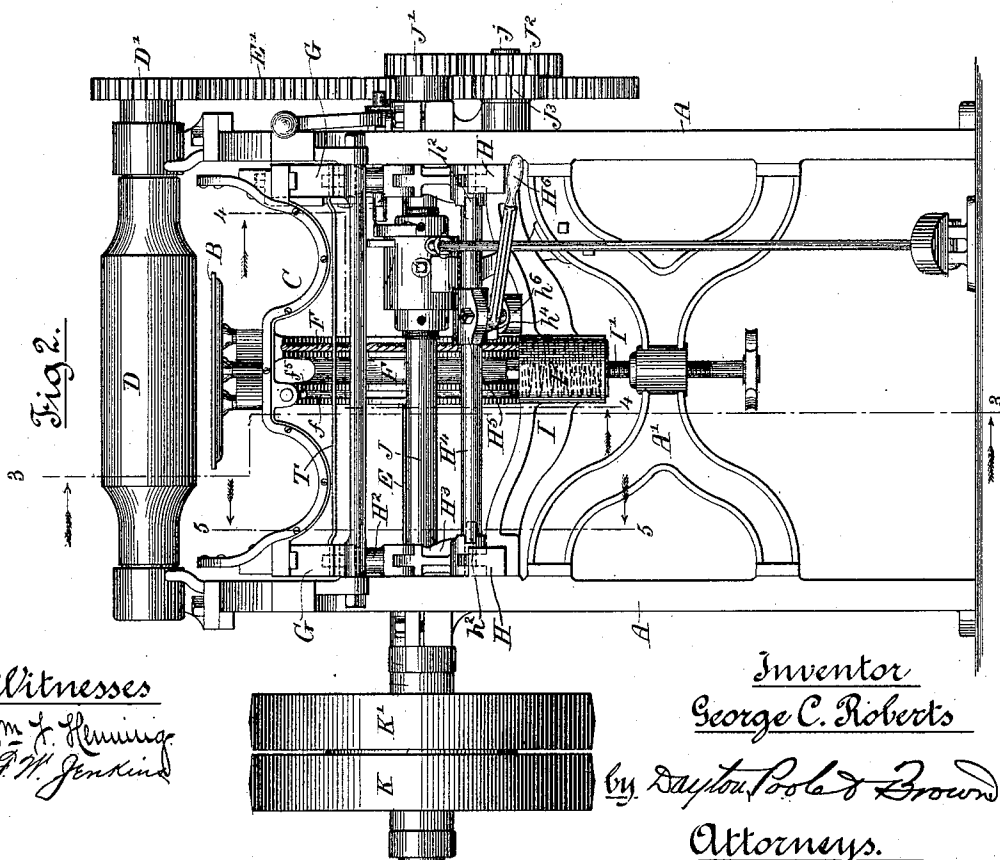
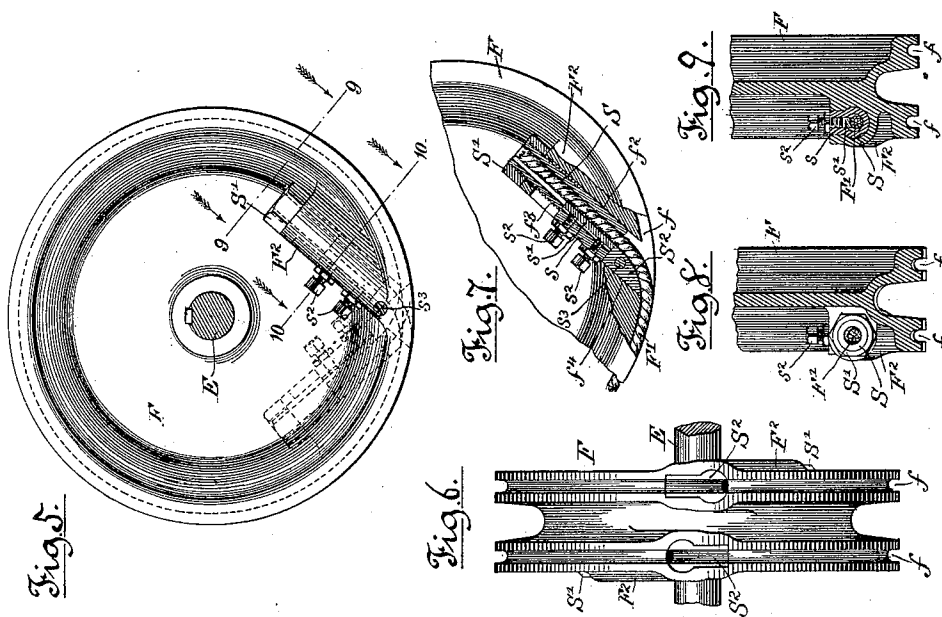
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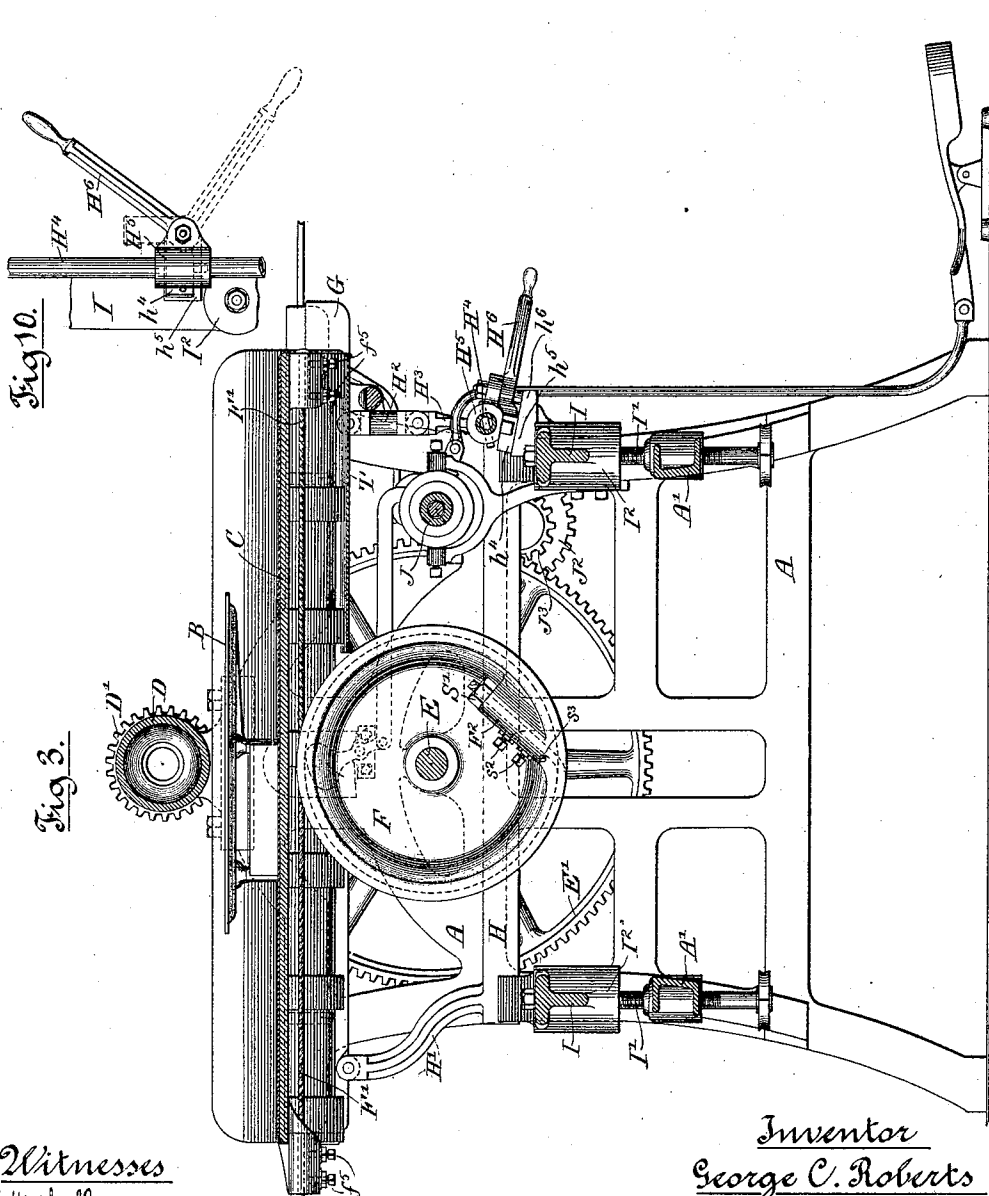
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3 Sheets—Sheet 3.

G. C. ROBERTS.  
IRONING MACHINE.

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# UNITED STATES PATENT OFFICE.

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## IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 436,192, dated September 9, 1890.

Application filed September 27, 1888. Serial No. 286,546. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE C. ROBERTS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ironing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in ironing-machines of that class which embrace a reciprocating ironing board or table and a rotating heated ironing-roller acting upon the article placed upon the board or table as the latter is reciprocated.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of a machine embodying the invention. Fig. 2 is a front or end view thereof. Fig. 3 is a vertical section taken upon line 3 3 of Fig. 2. Fig. 4 is a detail section taken upon line 5 5 of Fig. 2, showing the toggle-arms which support the carriage guide-bars. Fig. 5 is a side view of the pulley by which the reciprocating table is moved. Fig. 6 is an edge view thereof. Fig. 7 is a fragmentary side view of one of said pulleys with parts in section, showing the devices for attaching the ropes to said pulley. Fig. 8 is a detail section taken upon line 9 9 of Fig. 5. Fig. 9 is a detail section taken upon line 10 10 of Fig. 5. Fig. 10 is a detail plan view of the devices for holding, raising, and lowering the ironing-board by hand.

As illustrated in said drawings, the main frame of the machine consists of two parallel side frame-plates A A, which are connected with each other at the ends of the machine by means of cross-girts A' A'.

B designates the ironing-board, and C designates as a whole a reciprocating carriage which supports the same.

D is an ironing-roller located above and acting upon the ironing-table B.

E is a transverse shaft arranged transversely of the machine-frame at the middle

of the latter and operating to drive the said ironing-roller and the reciprocating carriage. The said shaft E is turned alternately in opposite directions by reversing-gear, hereinafter described, and communicates a similar motion to the roller D, the direction of motion of which is reversed at each reversal of the movement of the ironing-table. The said ironing-roller is driven from the shaft E by means of a spur-wheel E' upon one end of the said shaft, which spur-wheel intermeshes with a pinion D' upon the end of the ironing-roller D. The carriage C is given motion by means of a grooved pulley F upon the shaft E, to which pulley are attached two wire ropes or chains F' F', which engage two parallel grooves ff in the pulley, said ropes or chains being attached at the ends remote from the pulley to the opposite ends of said carriage C.

The carriage C is supported and travels upon two parallel guide-bars G G, located at the sides of the frame, said guide-bars being located inside of and adjacent to the side frame-plates A A. Means are provided for supporting said guide-bars adapted to afford vertical adjustment of the ironing-board toward and from the ironing-roller, and adapted also to enable the said ironing-board to be dropped away from and brought against said ironing-roller at the will of the operator, as follows:

H H are two horizontal bars located beneath and parallel with the said guide-bars G G and supported at their ends upon cross-pieces or yokes I I, which are adjustably sustained from the cross-girts A' A' of the machine-frame by means of vertical screw-shafts I' I', which pass through screw-threaded apertures in said girts and are engaged with the central parts of the said yokes I I. The said yokes I I are provided with central cylinders I<sup>2</sup> I<sup>2</sup>, which contain springs engaging the said yokes and the upper ends of the screw-shafts I' I' in such manner as to afford a yielding as well as an adjustable support to said yokes and the parts sustained thereby in a manner fully described and shown in a prior application for Letters Patent of the United States, Serial No. 247,524, made by George N. Downs, August 22, 1887, and shown in dotted lines in Fig. 2 of

the present application. At the rear end of the machine the bars H H are connected with the frame-plates A A by means of bolts  $h$   $h$ , which pass through vertical slots  $h'$   $h'$  in the said plates. Said bolts allow vertical movement of the said bars H H while holding the same from shifting forwardly or backwardly in the frame under the action of the revolving ironing-roller upon the ironing-board, said bolts serving to take any strain or pressure (which in their absence would come upon the yokes I I and screw-shafts I' I') from said yokes and screw-shafts, which, as will be readily seen, are not well adapted to withstand backward or forward pressure.

At the rear end of the machine the bars H H are provided with upwardly-extending arms H' H', to the upper ends of which the guide-bars G G are pivotally connected in such manner as to allow the opposite or forward ends of said guide-bars to swing in vertical planes. At the opposite or forward end of the machine the guide-bars G G are supported from the bars H H by means of toggle-arms H<sup>2</sup> H<sup>2</sup> H<sup>3</sup> H<sup>3</sup>, which are pivoted to the said bars G G and H-H and are pivotally connected with each other at their meeting ends.

H<sup>4</sup> is a rock-shaft arranged in alignment with the lower pivots of the toggle-arms H<sup>3</sup> H<sup>3</sup> and rigidly attached to said arms, the particular attaching devices shown consisting of transverse lugs  $h^2$   $h^2$  at the ends of the rock-shaft engaging transverse slots in the arms, Figs. 2 and 5, and pivot-bolts  $h^3$   $h^3$ , inserted through the said arms H<sup>3</sup> H<sup>3</sup> and lugs upon the bars H H into the ends of the rock-shaft.

H<sup>5</sup> is a metal block affixed to the shaft H<sup>4</sup> by means of set-screws, as shown, or otherwise, and H<sup>6</sup> is a hand-lever, which is pivoted to said block H<sup>5</sup> by means of a pivot-bolt arranged transversely with reference to the said shaft H<sup>4</sup>, so that the said hand-lever may swing in a plane parallel with the longitudinal axis of the shaft. The said hand-lever is provided adjacent to its pivot with a short arm  $h^4$ , Figs. 2 and 10, which is desirably arranged at an angle with reference to the main part of the lever, and is so disposed as to engage a block or lug  $h^5$  upon the yoke-piece I when the hand-lever is in one position and to pass free from said lug  $h^5$  when the hand-lever is swung upon its pivot into another position. In Fig. 2 the said hand-lever H<sup>6</sup> is shown as in position with its short arm  $h^4$  engaged with the said lug  $h^5$  and in Fig. 10 as engaged with said lug in full lines and free from the same in dotted lines.

When the arm  $h^4$  is engaged with the lug  $h^5$  the rock-shaft H<sup>4</sup> is thereby held from turning and the parts are so disposed that the said parts are in position for engagement with each other when the toggle-arms are straightened out, so that by engaging said arm  $h^4$  with the lug  $h^5$  the toggle-arms may be locked to hold the said guide-bars G G in their elevated position. The lug  $h^5$  is herein shown as cast

integral with the yoke-piece I; but it may be otherwise made, as found convenient or desirable.

To prevent the rock-shaft from turning backward when the hand-lever is in its normal position and the guide-bars G G elevated, and thereby allowing the toggle-arms to become flexed in the direction the reverse of that in which they are intended to bend, a stop or projection  $h^6$  (herein shown as made integral with the lug  $h^5$ ) is located upon the yoke-piece I in position to engage the head upon the pivot-bolt connecting the lever with the block H<sup>5</sup> in the manner shown. The said stop  $h^6$  may be arranged to engage any part of the said lever or the said block with the same result. By swinging the lever H<sup>6</sup> so as to disengage the arm  $h^4$  from the said lug  $h^5$  the lever may be swung by hand in a vertical plane, so as to rotate the rock-shaft and flex the toggle-arms, thus allowing the descent of the said guide-bars and table supported thereby. The rock-shaft is actuated by hand in the manner described when it is desired to drop the ironing-board away from the ironing-roller during the time the machine is in operation.

Devices are herein shown for giving rotary movement alternately in opposite directions to the shaft E and driving-pulley F, by which the carriage C is reciprocated as follows: J is a horizontal shaft arranged parallel with the shaft E and provided with two loose belt-pulleys K K', which are constantly driven in opposite directions by suitably-arranged belts, said belts, when both pulleys are driven from a single counter-shaft, usually being arranged with one belt crossed and the other straight in a familiar manner. At its end opposite the pulleys K K' the driving-shaft J is provided with a gear-pinion J', which intermeshes with a gear-wheel J<sup>2</sup>, to which is secured a pinion J<sup>3</sup>, which intermeshes with the spur-wheel E' upon the shaft E. Said gear-wheel J<sup>2</sup> and pinion J<sup>3</sup> are mounted upon a short shaft or stud  $j$ , affixed to the frame-plate A, as clearly shown in the drawings. The gearing described is used in order that the shaft J may be driven at a relatively high speed without any increase in the speed of the ironing table and roller, and I have shown in Fig. 2 a clutch device which I prefer to use, constructed both for automatic operation and to be actuated positively by the operator, whereby the two loose pulleys K and K' may be connected with the drive-shaft J. Any desirable form of clutch, however, may be substituted which will accomplish the purpose mentioned, and the particular one illustrated is not herein specifically described or claimed, as it forms the subject-matter of another application filed by me in the United States Patent Office on the 1st day of August, 1889, Serial No. 319,448.

As a further improvement in ironing-machines embracing a reciprocating carriage which is actuated by means of a pulley con-

nected by ropes or chains with the carriage, I provide an improved means for attaching the said ropes or chains to the pulley, by which the length of the said cords or chains may be adjusted and any slack therein taken up when necessary or desirable. As herein shown, wire ropes  $F'$   $F'$  are employed for connecting the carriage with the pulley; but the same features of construction may be employed when a chain is used.

The said improved adjustable attaching device for each rope  $F'$  is made as follows: A lug or projection  $F^2$  is cast upon the side of the pulley  $F$  in the same vertical plane with the rope  $F'$ , and through said lug or projection is formed a cylindric aperture  $f^2$ , which intersects the groove  $f$  of the pulley at an angle therewith. A slot or opening  $f^3$  is cut through the side of said lug  $F^2$  into the opening  $f^2$ , as clearly shown in Figs. 7 and 9.  $S$  is a separate tube or thimble inserted within the passage or opening  $f^2$  and provided with a lateral extension or flange  $s$ , which extends outwardly through the slot  $f^3$ . At its end remote from the groove  $f$  of the wheel the thimble  $S$  is exteriorly screw-threaded and extends beyond or protrudes from the end of the lug  $F^2$ , and upon the projecting screw-threaded end of the said thimble is placed the nut  $S'$ , which bears against the end of the said projection  $F^2$ . Within the thimble and opposite the flange or projection  $s$  is placed a gib  $s'$ , and in said flange  $s$  are inserted two set-screws  $s^2$   $s^2$ , which bear against the outer face of the gib. The said gib  $s'$  and set-screws act as a clamp device for securing the end of the rope  $F'$  within the sleeve  $S$ , said rope being permanently secured within said sleeve at the time the machine is put together. The nut  $S'$  upon the end of the sleeve affords means of drawing the sleeve bodily inward, and thereby tightening the rope, which is secured thereto. The engagement of the flange  $s$  of the sleeve with the slot  $f^3$  prevents any turning of the sleeve within the aperture of the pulley when the nut  $S'$  is being turned upon the sleeve. To enable the said sleeve with the flange  $s$  to be inserted in the passage  $f^2$ , the slot  $f^3$  is continued outwardly through the solid metal of the pulley-flange to the rope-groove  $f$ , as indicated at  $f^4$ , Fig. 8, and the space thus formed is filled by a block  $S^2$ , which is secured in place by a screw  $s^3$ . The outer surface of said block  $S^2$ , against which the rope  $F'$  rests, is desirably convexly rounded or curved, as shown in the drawings, so as to give a smooth bend to the rope resting thereon. The rope  $F'$  is attached to the carriage  $C$  by means of a gib and set-screws  $f^5$   $f^5$ , Fig. 3, in the same manner that the opposite end of the rope is secured in the sleeve  $S$ .

$T$  is a horizontally-arranged shield formed by a plate secured to the guide-bars  $G$   $G$  beneath the carriage  $C$  and acting to prevent the sleeves or other parts of garments which may overhang from the said carriage  $C$  from

dragging upon or over the parts beneath the carriage when the latter is near the limit of its movement at either end of the machine. Said shield may obviously be sustained otherwise than from the guide-bars.

The ironing-board and carriage together constitute a support for the articles to be ironed, which support may obviously be made of other form than the particular one herein illustrated.

I claim as my invention—

1. The combination, with an ironing-roller and a reciprocating support for the articles to be ironed, of means for actuating the support, comprising a revolving shaft, a pulley mounted upon the said shaft, ropes connected with the support and engaging the pulley, and means for adjustably connecting the ropes with the pulley, comprising sliding and longitudinally-adjustable sleeves inserted in guide-recesses in the pulley and clamps for securing the ropes within the sleeves, substantially as described.

2. The combination, with a pulley  $F$ , provided with an integral recessed lug or projection  $F^2$ , having a slot  $f^3$ , of a sleeve  $S$ , inserted in said lug or projection and provided at one end with a flange  $s$ , engaging said groove  $f^3$ , and at its opposite end with an external screw-thread, a rope secured in said said sleeve, and a nut  $S'$ , placed upon the said screw-threaded end of the sleeve and bearing against the said lug  $F^2$ , substantially as described.

3. The combination, with the pulley  $F$ , of a sleeve  $S$  adjustably secured therein, a rope the end of which is inserted in said sleeve, and means for clamping the end of the rope within the sleeve, comprising a movable gib and set-screws inserted through the sleeve and bearing on the gib, substantially as described.

4. The combination, with the pulley  $F$  and rope  $F'$ , of a sleeve  $S$ , inserted in the pulley and adjustably secured therein, and a bearing-block  $S^2$ , inserted in said pulley adjacent to the outer end of the sleeve, substantially as described.

5. The combination, with the pulley  $F$ , provided with an integral recessed lug  $F^2$ , having a longitudinal slot  $f^3$ , of a sleeve  $S$ , inserted in the lug and provided with a flange  $s$ , fitting in the slot  $f^3$ , a gib, clamp-screws inserted through the flange  $s$  and bearing against the gib for securing the end of the rope within the sleeve, a nut  $S'$ , placed upon the screw-threaded end of said sleeve, and a bearing-block  $S^2$ , secured in a recess of the pulley to the outer end of the said sleeve, substantially as described.

6. The combination, with an ironing-roller, a reciprocating support for the articles to be ironed and guide-bars sustaining said support, said guide-bars being pivotally connected with one end of the frame, of toggle-arms supporting the free ends of said guide-bars, a rock-shaft rigidly attached to said toggle-

arms, a hand-lever mounted upon the said rock-shaft and adapted to turn about a pivot arranged transversely to the shaft, and a lug or projection upon the machine-frame adapted  
5 to engage said hand-lever in one position of the latter to hold the toggle-arms from becoming flexed, substantially as described.

7. The combination, with an ironing-roller and a reciprocating support for the articles  
10 to be ironed, of guide-bars sustaining said support and pivoted at one end to the machine-frame, toggle-arms supporting the free ends of said guide-bars, a rock-shaft rigidly attached to said toggle-arms, a hand-lever  
15 pivoted to said rock-shaft upon a pivot ar-

ranged transversely to the shaft, a lug or projection located in position to engage the said hand-lever in one position of the same, and a stop upon the frame located in position to engage the hand-lever to hold the rock-shaft  
20 from turning backwardly, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

GEORGE C. ROBERTS.

Witnesses:

C. CLARENCE POOLE,  
F. W. JENKINS.