

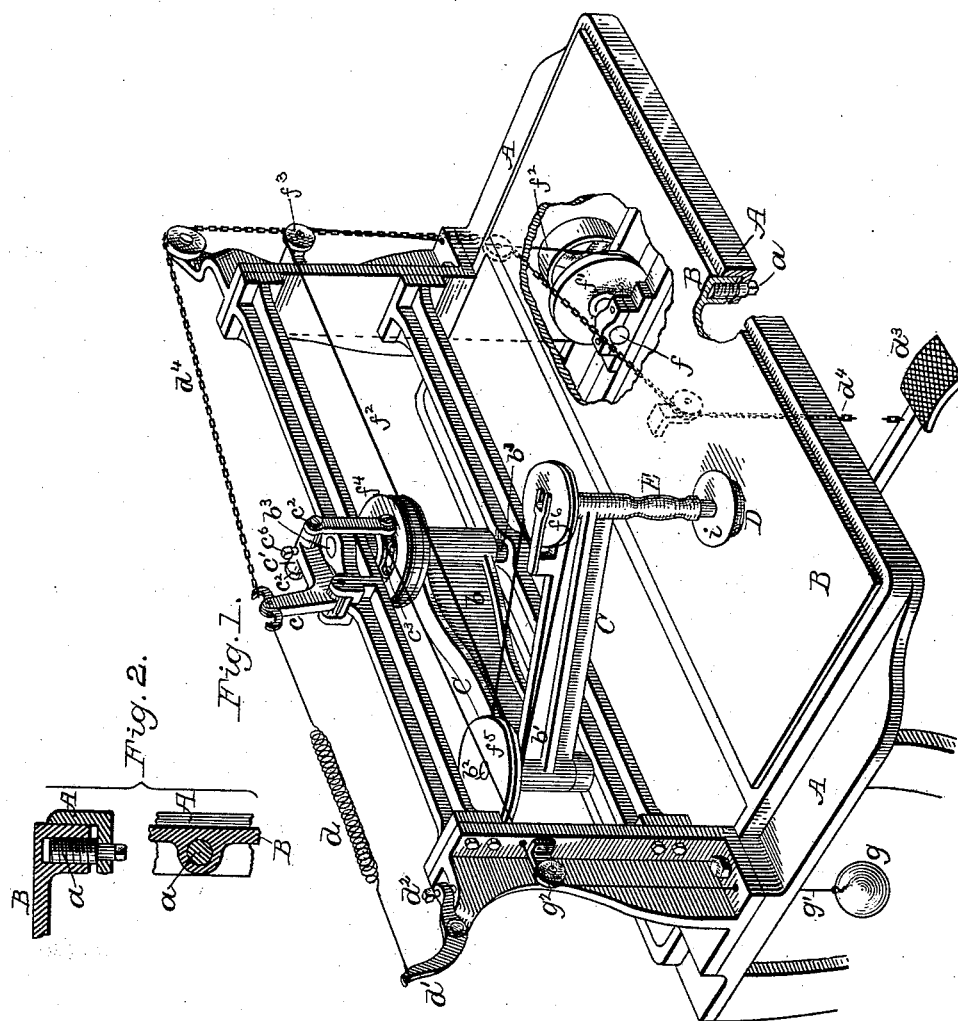
(No Model.)

2 Sheets—Sheet 1.

D. H. CAMPBELL.
IRONING MACHINE.

No. 420,405.

Patented Jan. 28, 1890.



Attest:
Philip J. Larner,
Howell Bartle.

Inventor:
Duncan H. Campbell
By *Mme. M. M. M.*
Attorney.

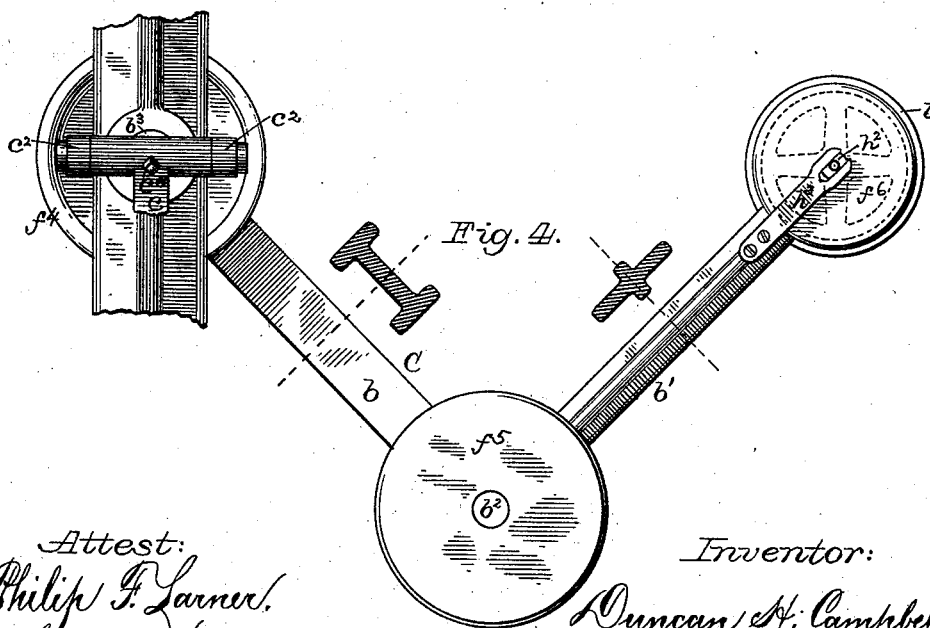
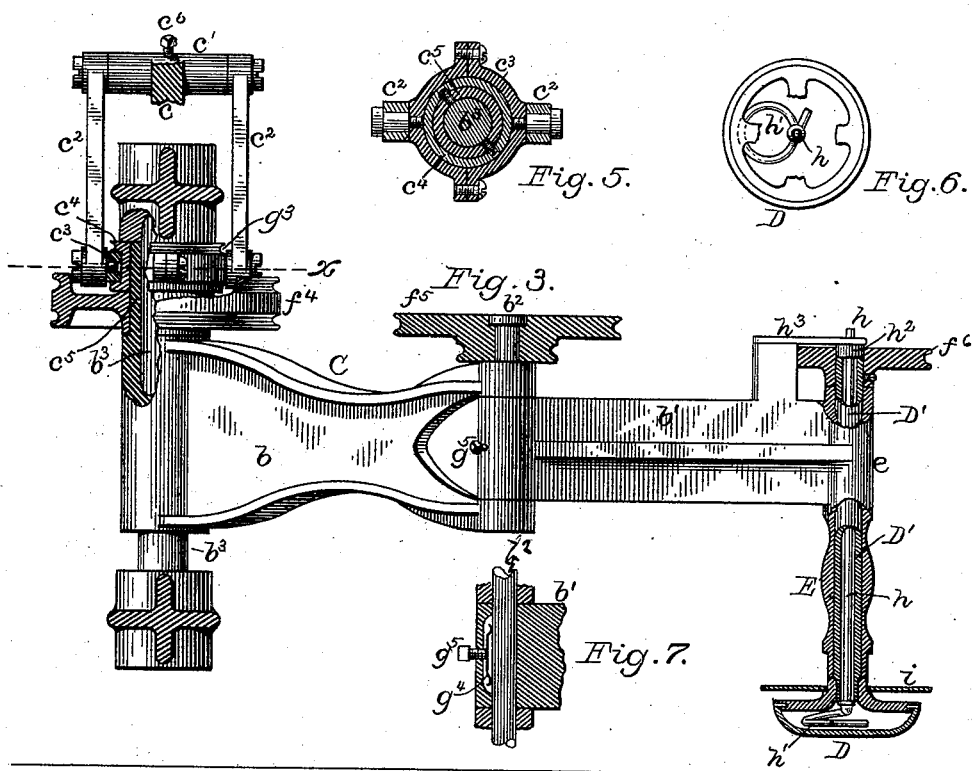
(No Model.)

2 Sheets—Sheet 2.

D. H. CAMPBELL.
IRONING MACHINE.

No. 420,405.

Patented Jan. 28, 1890.



Attest:
Philip F. Larnier,
Howell Bartle.

Inventor:
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UNITED STATES PATENT OFFICE.

DUNCAN H. CAMPBELL, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR TO
HENRY B. METCALF, OF SAME PLACE, AND WILLIAM McCLEERY, OF
BOSTON, MASSACHUSETTS.

IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,405, dated January 28, 1890.

Application filed October 30, 1883. Serial No. 110,393. (No model.)

To all whom it may concern:

Be it known that I, DUNCAN H. CAMPBELL, residing in Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Ironing-Machines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of the several features of my invention.

Machines embodying my present improvements are specially adapted for use in ironing comparatively small pieces of such fabrics as are used in the manufacture of cloth-covered buttons; but other branches of ironing can be well performed therewith. In my machine I employ an ironing-bed which is provided with leveling mechanism and a disk-shaped smoothing-iron, which has a circular flat face and is revolved upon an axis which is at right angles to its face. The said axis or chuck is mounted in the outer end of a jointed arm, which permits the smoothing-iron to be moved freely to and fro in all directions over the ironing-bed, with its flat face always parallel with the surface of said bed, although free to be moved vertically toward and away therefrom, and these latter movements, with the requisite downward pressure of the iron, are provided for by means of a spring and a treadle, so that the operator with a foot can control the vertical movements, and with one hand move the iron in all directions horizontally, while his other hand can be employed in handling or controlling the fabric.

To particularly describe my improvements I will refer to the accompanying drawings, in which—

Figure 1, Sheet 1, is a perspective view of one of my machines. Fig. 2, Sheet 1, in two views, illustrates the means for leveling the ironing-bed. Fig. 3, Sheet 2, is a side view of the jointed arm with adjacent portions of the machine shown in section. Fig. 4 is a top view of the jointed arm, the smoothing-iron, and the portion of the machine to which the arm is connected, with additional sectional views

of portions of said arm. Fig. 5 is a horizontal section of the central portion of the machine on line *x*, Fig. 3. Fig. 6 is a top view of the smoothing-iron with its central upper portions removed. Fig. 7 is a vertical section of the elbow of the jointed arm.

It is to be understood that with the exception of the smoothing-iron and the parts of the machine immediately adjacent thereto the machine here shown is like a cloth-cutting machine devised by me, as shown and described in my Letters Patent, No. 297,497, dated April 22, 1884, and it is to be also understood that I propose under this application to limit myself to such combinations of elements as are of value when organized with a smoothing-iron in an ironing-machine.

The frame A may be variously constructed, but it must have a suitable support for an ironing-bed and afford suitable bearings and seats for the several shafts, boxes, and hangers, as hereinafter described. The ironing-bed B is mounted upon supporting and adjusting screws *a*, as illustrated in Fig. 2, so that the bed can be levelly adjusted to and firmly supported in a plane exactly parallel with the face of the smoothing-iron employed by me.

The jointed arm C carries at its outer end the revolving smoothing-iron D in such a manner that the working-face of the iron always occupies a horizontal plane; but it can be moved to and fro in said plane in all directions above the ironing-bed. Said jointed arm is constructed in two lengths *b* and *b'*, elbow-jointed upon a spindle *b²*, and the portion *b* at its butt is sleeved upon a vertical spindle or rod *b³*, which is fixedly mounted in seats centrally located in cross-bars of the frame, as clearly shown. The jointed arm is arranged to slide vertically on the spindle *b³*, and it is suspended from a bell-crank lever *c* by way of a cross-bar *c'* and links *c²*, which are hinged to a sectional collar *c³*, occupying an annular recess in the sleeve *c⁴*, which is firmly secured to an upwardly-projecting hub *c⁵* integral with the portion *b* of the jointed arm, as clearly indicated in Fig. 3. The bell-crank lever *c* is normally so held as to main-

tain the jointed arm in its most elevated position, as seen in Figs. 1 and 3, by means of the retractile spiral spring d , connected to a bracket in the form of a bell-crank lever d' , which has an adjusting-screw d^2 , by which the tension of the spring may be graduated. The jointed arm is lowered upon the rod or spindle b^3 by depressing a treadle d^3 , to which is connected the chain d^4 , which, passing over suitable pulleys, is attached to the bell-crank lever c , so that by overcoming the power of the spring d the jointed arm is lowered and the smoothing-iron caused to bear upon fabric supported by the bed with any desirable degree of pressure. A screw c^6 in the bell-crank lever c enables the adjustment of the downward limit to the movement of the smoothing-iron, if desired.

The revolving smoothing-iron D is a hollow disk and has a working-face which is at right angles to its axis. The axis or chuck D' of the iron is provided with a suitable bearing e in the outer end of the jointed arm, and motion is imparted to said iron from the main shaft f as follows: A grooved pulley f' on shaft f is geared by a round belt f^2 , via two loose pulleys f^3 , (of which only one is shown,) to a horizontal loose pulley f^4 on the hub c^5 , at the inner end of the jointed arm. Said pulley f^4 is geared in like manner with the largest of the grooved pulleys f^5 , loosely mounted on the elbow-spindle b^3 of the jointed arm, and the smallest pulley f^5 is belted to the grooved pulley f^6 , which is secured to the axis or chuck D' of the smoothing-iron. The tendency of the arm to swing in a direction corresponding to the draft of the belts is counteracted by drags. One of these drags is a weight g , attached to a cord g' , passing over a loose pulley g^2 , and which at its opposite end is secured to one side of the collar c^4 , before described as secured to the hub c^5 , said collar being grooved, as at g^3 , for enabling the cord to partially encircle it. The other drag is frictional, and it consists of a spring g^4 and its adjusting-screw g^5 , these being located at the elbow-joint and carried by the outer portion b' of the jointed arm, so that the spring will bear against the spindle b^3 , which is fixedly secured to the inner portion b of said arm, as illustrated in Figs. 3 and 7. Other well-known means may obviously be employed for preventing the arm from being unduly moved by the draft of the belts.

The smoothing-iron disk in my machine is hollow and is heated by a gas jet, preferably operating on the well-known Bunsen principle, so as to obtain good combustion with a minimum of sooty deposits. The axis or chuck D' is hollow to provide for the reception of a stationary gas-pipe h , to which, at its lower end, a coil-burner h' is attached, as seen in Fig. 6. The upper end of the gas-pipe h is provided with a collar h^2 , squared upon two sides, so as to occupy a slot in a plate h^3 , which is secured to an upward projection on the jointed arm, and said plate

may be relied upon for supporting said pipe or only for preventing its rotation. As shown, the pipe is supported by the collar h^2 , which has a bearing upon the upper end of the hollow chuck recessed within the loose pulley thereon.

A suitably-covered handle E is provided at the outer end of the jointed arm surrounding the chuck D' , and a guard-plate i above the iron serves to protect the hand of the operator. I am well aware that hollow revolving smoothing-irons have been heated by internal gas-jets, but I know of none prior to my invention that have been so organized as to rotate upon a vertical axis at the end of a jointed arm, or so as to revolve in a horizontal plane and be capable of being moved to and fro over an ironing-bed and meantime reciprocated vertically.

It will be seen that the disk or smoothing-iron revolving on an axis at right angles to its working-face is well adapted to work upon small pieces of fabric, because the latter need not be specially held on account of the fact that the smoothing-surface of the iron travels circularly in the plane of the ironing-bed, and because the iron can be readily lowered and pressed upon the fabric and directly lifted therefrom.

I am aware that there has been heretofore embodied in an ironing-machine an ironing-table capable of sliding horizontally to and fro in all directions and an ironing-disk rotated upon a vertically-sliding axis and lifted and lowered by a treadle and lever.

I am also aware that in horizontal cylinder ironing-machines a sliding bed mounted on spring-cushions has been provided at each end, with an adjusting-screw beneath a cushion for raising or lowering said ends; but said bed was free to rock sidewise on said cushions and screws, and thereby enabled to adjust its surface laterally at variable angles with relation to the longitudinal surface of the ironing-cylinder, according to variations in thickness of the articles supported by said bed during the operation of ironing; but in my machine the ironing-bed is rigidly held upon its adjusting-screws, and is not only leveled thereby, but is firmly maintained in that condition.

I am also aware that a heavy rectangular and pointed smoothing-iron has been mounted at the outer end of a jointed lever and swiveled therein, and that said lever has been coupled to a treadle for causing the smoothing-iron to bear upon goods to be ironed, and also provided with a weight and pulley for lifting the iron; but in said machine the swiveling of the iron only enabled the operator to impart thereto with his hands the same movements as are given to the ordinary "goose" as commonly used by tailors, whereas in my machine the iron is rotatively driven and is also capable of being moved in all directions above the bed while rotating.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. The combination, with the ironing-bed, of the jointed arm provided with a belt-pulley at its inner end and also at its joint, the disk-shaped smoothing-iron mounted upon a vertical axis at the outer end of said arm, a belt-pulley on said axis, a treadle and spring with their connecting mechanism for lifting and lowering the arm, and a handle for moving the iron to and fro over the bed while rotating, substantially as described.

2. The combination of the jointed arm, the

revolving smoothing-iron mounted upon said arm at its outer end and having a disk-shaped working-face at right angles to its axis, the ironing-bed, and the bed supporting and adjusting screws, substantially as described, whereby said bed is adjusted vertically and firmly maintained with its surface parallel with the working-face of the ironing-disk, as set forth.

DUNCAN H. CAMPBELL.

Witnesses:

LAWRENCE A. LOCKWOOD,
JOSEPH COFFEY.