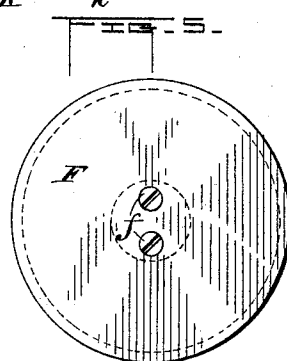
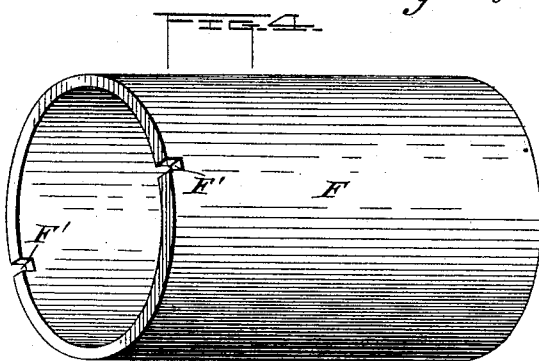
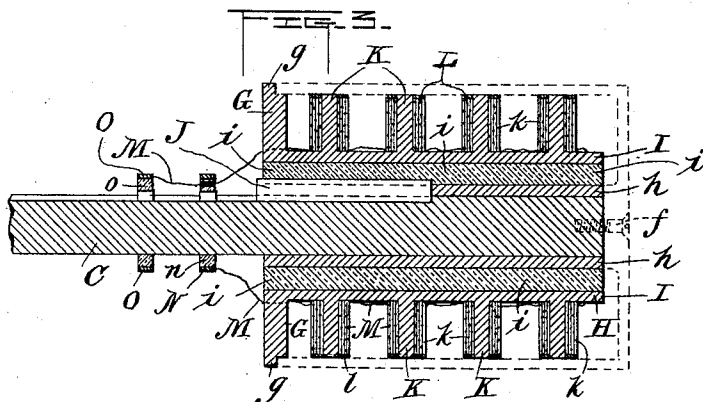
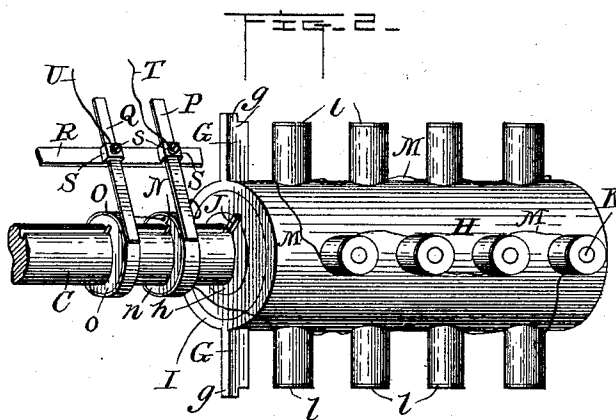
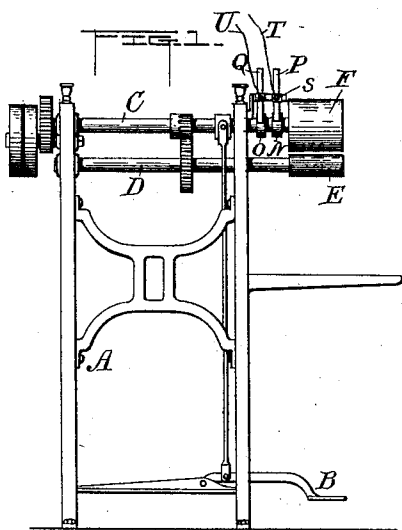


(No Model.)

W. MITCHELL.  
ELECTRICALLY HEATED SMOOTHING CYLINDER.

No. 468,426.

Patented Feb. 9, 1892.



WITNESSES

*Cleverance,*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

WILLIS MITCHELL, OF MALDEN, ASSIGNOR TO THE BUTTERFIELD-MITCHELL  
ELECTRIC HEATING COMPANY, OF BOSTON, MASSACHUSETTS.

## ELECTRICALLY-HEATED SMOOTHING-CYLINDER.

SPECIFICATION forming part of Letters Patent No. 468,426, dated February 9, 1892.

Application filed May 26, 1891. Serial No. 394,121. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIS MITCHELL, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electrically-Heated Smoothing-Cylinders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to ironing or smoothing devices for garments or fabrics in which the latter are passed between cylinders or rolls, one of these being heated by electrical devices contained therein.

My object is to increase the serviceability and heating power of these internal devices. To this end I make use of a cylindrical heating-body of magnetic metal inclosed within the shell of the hollow smoothing-cylinder, this body being formed with radial studs or cores, which are wound with wire helices in an electric circuit, the said cores being magnetized thereby and the said body being heated both by the magnetic action or induced electric currents set up therein and by the resistance of the wires, the heat thereof passing through the said studs to the said body by conduction, all as hereinafter set forth.

In the accompanying drawings, Figure 1 represents in elevation a smoothing-machine embodying my invention. Fig. 2 represents an enlarged perspective view of the heating-body and circuit-closing devices with a part of the shaft on which the said body is mounted and the supporting-arm for the circuit-closing brushes or springs. Fig. 3 represents a detail longitudinal section through the said body. Fig. 4 represents a detail perspective view of the outer case or shell of the cylinder, and Fig. 5 represents an end view of the same.

A designates the frame of the machine; B, the treadle; C, the upper shaft; D, the lower shaft geared thereto, and E the lower roll or cylinder, which supports the clothes or fabric while these are being ironed by the upper heating and smoothing cylinder carried by the said shaft C.

F designates the outer shell of this heating-

cylinder, which affords the heating-surface for smoothing the garments. The closed outer end of this shell is fastened to the shaft C by screws *f*. The open inner end of said shell is constructed with inwardly-extending slots *F'*, which receive studs or lugs *g*, formed on the outer ends of relatively-fixed arms *G*, the engagement of these studs or lugs with the sides of the said slots preventing the said shell from turning. These arms extend radially and rigidly from a heating-body *H* of cylindrical form, which is concentric with and mounted on the shaft C. This heating-body consists of a metallic inner cylinder or lining *h*, an exterior cylinder *I* of magnetic metal, and an interposed layer *i* of insulating material. The outer cylinder *I* is the chief and only essential part of the body and may be used without the others on a shaft constructed of or coated with insulating material; but when a shaft of electrically-conducting material is used an interposed mass of insulating material becomes necessary, and if this is attached to cylinder *I* a harder lining is also necessary to insure the proper attachment of said body to said shaft without turning. This attachment is effected by a radial stud or pin *J* on shaft C, which enters a longitudinal groove in the inner face of the said inner cylinder or lining *h*.

The cylinder *I* is provided with a number of radial studs or cores *K*, on each of which an electric heating-cylinder *L* is sleeved, consisting of a wire *M*, wound in concentric spirals about the said core, interposed cylindrical layers *k*, of asbestos or other insulating material, serving to prevent short-circuiting. Each heating-cylinder *L* has a metallic or other protective conducting-cap *l* covering it. The same wire *M* is used throughout, passing from one heating device *L* to another, and it is in an electric circuit. When this circuit is closed, the cores *K* are heated, and they are also magnetized. The heat generated in these cores passes by conduction to the cylindrical body *I*, and the magnetization of the cores also extends thereto, causing molecular disturbance and probably induced electrical currents, and thus indirectly increasing the heat of the said body or cylinder to a considerable degree. This heat passes both by

radiation and by conduction to the outer shell F, which is in contact with the caps l and arms G of conducting material. The ends of the wire M extend through the open inner end of the smoothing-cylinder to rings N O, of conducting metal, fast on rings of insulating material, which are fast on shaft C, one end of the wire going to ring N and the other through insulating-ring n to ring O. Brushes or contact-springs P Q are in contact with rings N O, respectively, and are supported by a rigid horizontal arm R of frame A, being held adjustably by set-screws s, passing through insulating-blocks S, attached to said arm. This attachment allows the said brushes or contact-springs to be raised or lowered when necessary and held in such new position. Circuit-wires T U extend from these brushes or contact-springs to the source of electricity. Owing to this arrangement and combination of circuit-making devices, the rotation of the shaft and the devices mounted thereon will not tend to break the circuit or entangle the wires.

The space between the heating magnetic cylinder I and the outer shell may be filled with soapstone for better retention of the heat.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electrically-heated smoothing device, a cylindrical heating-body of magnetic

metal provided with studs or cores, in combination with an electrical conductor forming part of an electric circuit and wound in helices about the said cores for heating by resistance and magnetization, substantially as set forth.

2. A cylindrical outer shell for smoothing fabrics, in combination with the shaft on which it is mounted, an interposed cylinder of magnetic material provided with radial magnetic studs or cores, helices and interposed insulating material forming electric heaters around said cores, caps of heat-conducting material covering said heaters and in contact with the said shell, and devices for closing an electric circuit, including the said cores, for the purpose set forth.

3. A magnetic metallic cylinder provided with studs or cores, in combination with a wire wound thereon and forming part of an electric circuit, for the purpose set forth.

4. In an electrically-heated smoothing-cylinder, the combination, with the outer smoothing-shell, of a shaft upon which it is mounted and a series of bobbins provided with metallic cores and composed of a wire forming part of an electric circuit, substantially as set forth.

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

WILLIS MITCHELL.

Witnesses:

E. W. PIERCE,

W. R. JOHNSON.