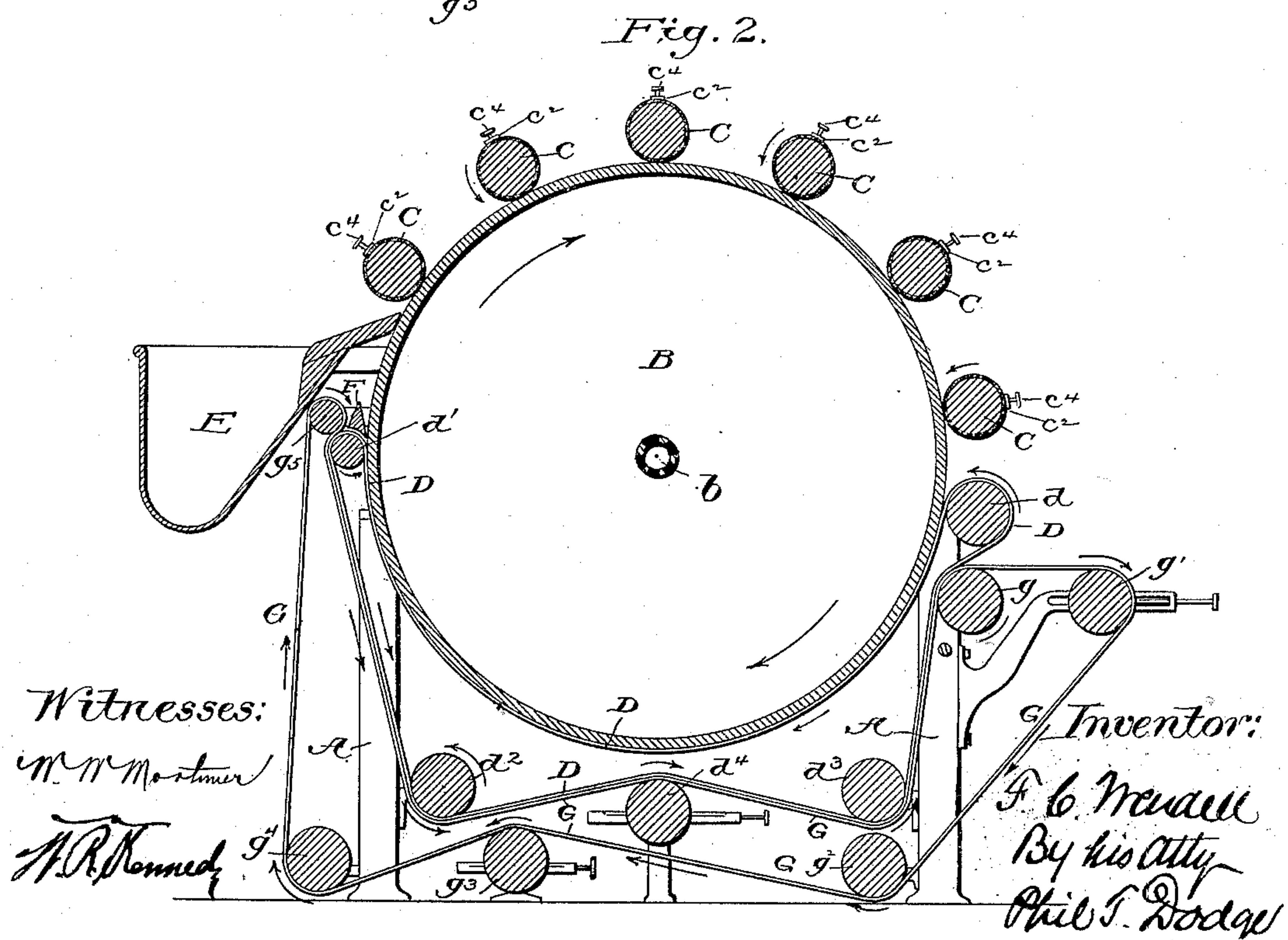
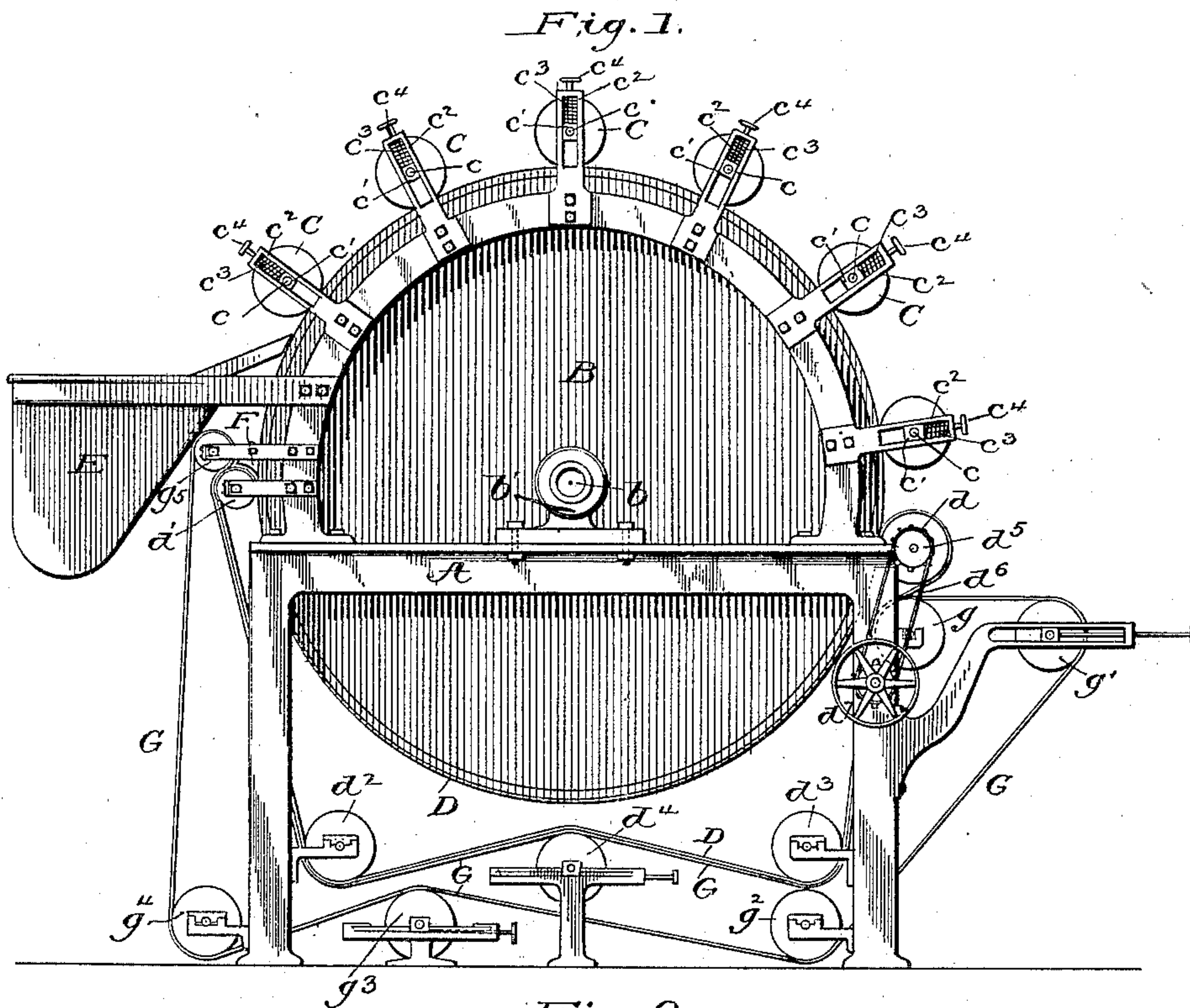


(No Model.)

F. C. WENDELL.  
IRONING MACHINE.

No. 466,815.

Patented Jan. 12, 1892.





# UNITED STATES PATENT OFFICE.

FRED C. WENDELL, OF BROOKLYN, NEW YORK.

## IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 466,815, dated January 12, 1892.

Application filed March 30, 1891. Serial No. 386,999. (No model.)

*To all whom it may concern:*

Be it known that I, FRED C. WENDELL, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Ironing-Machines, of which the following is a specification.

My invention relates to machines for ironing bed and table linen, and has as its primary object the construction of a simple machine of great capacity adapted to deliver the fabrics with smooth-finished surfaces and in a thoroughly-dry condition.

Heretofore machines of this character have generally been constructed with a hollow steam-heated drum combined either with ironing-rolls acting to confine the fabrics thereon or with an endless belt partly encircling the drum for the same purpose. My invention is directed to the full and complete utilization of the heating-surface of the drum and to the delivery of the fabric in a perfectly-dry condition at a convenient point.

In constructing my machine I combine with the heating-drum a series of overlying co-operating rolls, which press the advancing fabric into intimate contact with the drum, and also an endless belt, which encircles the drum on the opposite side from the rollers, so that after the fabric is acted upon by the rolls it is carried around the remaining portion of the drum by the belt, being thus subjected during the secondary part of the operation to a further drying action. Inasmuch as the belt serves to carry the fabrics back to that side of the drum on which they were introduced, and as it is inconvenient to have them delivered into and out of the machine on the same side, I propose to combine with the belt or apron above mentioned a second endless belt or other suitable carrier adapted to return the finished fabrics to the rear side of the machine and there deliver them.

It will be obvious to the skilled mechanic that the details of my construction are not of the essence of my invention and that they may be modified at will, provided only the drum is combined with the rolls and the aprons in such manner that they act successively to confine the fabrics upon the drum and carry them completely around the same, or nearly so.

In the accompanying drawings, Figure 1

represents a side elevation of my improved machine in its preferred form. Fig. 2 is a transverse vertical section of the same. 55

Referring to the drawings, A represents a rigid main frame, which may be of any appropriate form, and B a horizontal hollow drum sustained by a central shaft *b*, mounted in suitable bearings *b'* on the main frame. The drum is made hollow and with a smooth exterior surface of metal, its shaft-journals being hollow in order to admit of steam being introduced into the interior to maintain the same in a highly heated condition. 65

C C are series of horizontal rolls clothed with felt or similar material and arranged to bear on the upper surface of the drum at short distances apart. These rolls may be mounted in any suitable manner; but I prefer, as shown, to mount their journals *c* in boxes *c'*, arranged to slide in standards *c''* on the main frame, a spring *c'''* being arranged above each box subject to the action of a pressure-screw *c''''*, in order that the rolls may be pressed with more or less force toward the drum, as circumstances may admit. 75

D represents an endless apron of felt, tapes, canvas, or other suitable material covering the lower half of the drum and passing thence around guide-pulleys *d*, *d'*, *d''*, *d'''*, and *d''''*. This apron is driven in any suitable manner at the same or practically the same speed as the surface of the drum. A simple driving mechanism is that shown in the drawings, in which *d''''''* represents a sprocket-wheel on the roller *d*, connected by chain *d''''''''* to a driving-pulley *d''''''''''*. 85

E represents a basket, table, or other support at the front of the machine, from which the fabrics are delivered between the surface of the drum and the first roll C. As the drum revolves the fabric is carried forward there-with under the successive rolls until it arrives at the rear side of the drum. By this time the fabric, which has been subjected to a high heat and to considerable pressure and entirely exposed to permit the escape of the vaporized moisture, is comparatively dry and presents a smooth surface. In passing the last roll at the rear the fabric continues its downward course and is carried between the apron D and the surface of the drum under the latter and up to the front of the machine. In this passage under the drum the fabric is 100



subjected to a further drying influence, so that on delivery at the front it is in a thoroughly-dried condition. The delivery of the fabric over the front end of the apron is insured by the presence of a beveled doffer-bar F, which may, however, be replaced by any suitable device.

The foregoing parts constitute a complete and operative machine well adapted to the end in view. In order, however, to return the fabric to the rear and there deliver it, I provide a second endless apron or carrier G, which is passed around the pulleys  $d^2$ ,  $d^3$ , and  $d^4$  in contact with the under surface of the main apron D and then extended over the guiding-rolls  $g$ ,  $g'$ ,  $g^2$ ,  $g^3$ ,  $g^4$ , and  $g^5$ . As the fabric is delivered at the front from between the drum and the main apron it is directed outward by the doffer and passed between the rolls  $d'$  and  $g^5$ , and thence in a downward and rearward direction between the two aprons D and G to the rear side of the machine, where it is automatically delivered on the horizontal portion of the belt G, extending between the rolls  $g$  and  $g'$ .

While it is preferred to employ solid belts or aprons, particularly in the case of the main apron D, it is to be understood that a series of narrow belts or tapes or a perforated belt may be employed in order to permit the more rapid escape of the moisture. The bearings of the various rolls may be constructed and made adjustable in any appropriate manner to maintain the tension of the aprons.

It will be observed that in my machine I utilize the heated surface of nearly the entire circumference of the drum, so that when a drum of reasonably large size is used the fabrics are quickly and thoroughly ironed and dried in passing once through the machine. It will also be observed that the belt covering the under side of the drum prevents the loss of heat which ordinarily occurs by radiation from uncovered drums.

It will be observed that in my machine the ironing-rolls, instead of being geared to the drum as usual, are driven by frictional contact with the intervening fabric. This is found in practice to be of decided advantage, as the rollers, turning somewhat slower than the drum, act with a frictional effect to retard the advance of the fabric while it is being subjected to the polishing action of the drum. I also find it advantageous to make the rolls of successively-increasing diameter, preferably by giving the felt covering an increased thickness, and to adjust them so that they bear successively with increasing pressure on the drum. I find that when thus proportioned and adjusted and when driven from the drum by the frictional effect of the intervening fabric, instead of being driven by gearing, each roll will turn at slightly higher speed than the one next in advance. The result of this is that the rolls act to draw or stretch out the fabric, keeping the same under tension, so that the drum acts to give

them a smoother and better finish than when the rolls are positively driven, as usual.

It is to be distinctly understood that while I prefer to clothe the rolls with felt, as hereinbefore pointed out, they may be clothed with any analogous soft material, and that the word "felt" is used in the present specification in a generic sense as including all soft or felt-like material.

Having thus described my invention, what I claim is—

1. In an ironing-machine, the combination of a hollow drum, a series of rolls co-operating with the periphery of the drum on one side, and a traveling apron co-operating with the periphery of the drum on the opposite side and arranged to automatically receive the fabric from the last roll and return it in contact with the drum toward the side of the machine at which it entered, whereby the fabric is automatically subjected, first, to the action of the successive ironing-rolls and thereafter to the heating and drying action of the drum.

2. In an ironing-machine, the combination of the rotary steam-heated metallic drum, the series of felt-covered rolls acting upon its upper surface, the endless apron surrounding its under surface, and means, substantially as described, for driving said apron.

3. In combination with the steam-heated metallic drum, the series of overlying rollers covered with felt, the endless apron encircling the lower portion of the drum to return the fabric to the front of the machine, and the second apron or carrier co-operating with the first to return the fabric to and deliver it to the rear of the machine.

4. In an ironing-machine, in combination with a rotary steam-heated drum and means, substantially as described, for maintaining the fabrics in contact with the drum throughout substantially its entire circumference that they may return to a point near the point of introduction, a secondary carrier to deliver the fabrics after leaving the drum to the rear of the machine.

5. In an ironing-machine, the hollow drum, in combination with a series of felt-covered frictionally-driven rolls acting successively upon the fabric passing between them and the drum, whereby the fabric is subjected to a stretching action in addition to the ordinary ironing action.

6. In an ironing-machine, the hollow drum, in combination with the series of felt-covered frictionally-driven rolls adjusted to act with successively-increasing pressure toward the drum.

In testimony whereof I hereunto set my hand, this 14th day of March, 1891, in the presence of two attesting witnesses.

FRED C. WENDELL.

Witnesses:

W. R. KENNEDY,  
P. T. DODGE.