

March 5, 1940.

H. P. CAMPBELL  
COLLAR IRONING DEVICE

2,192,786

Filed Feb. 14, 1938

3 Sheets-Sheet 1.

Fig. 1

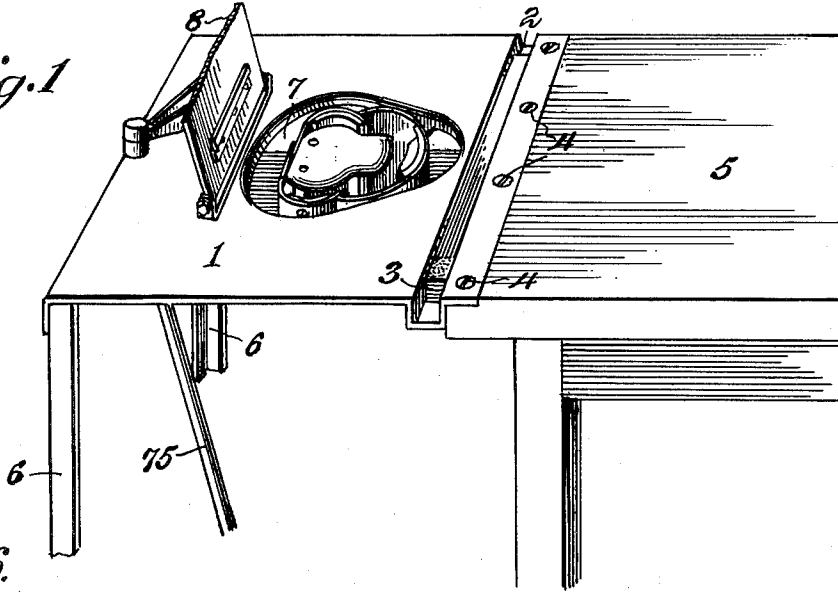
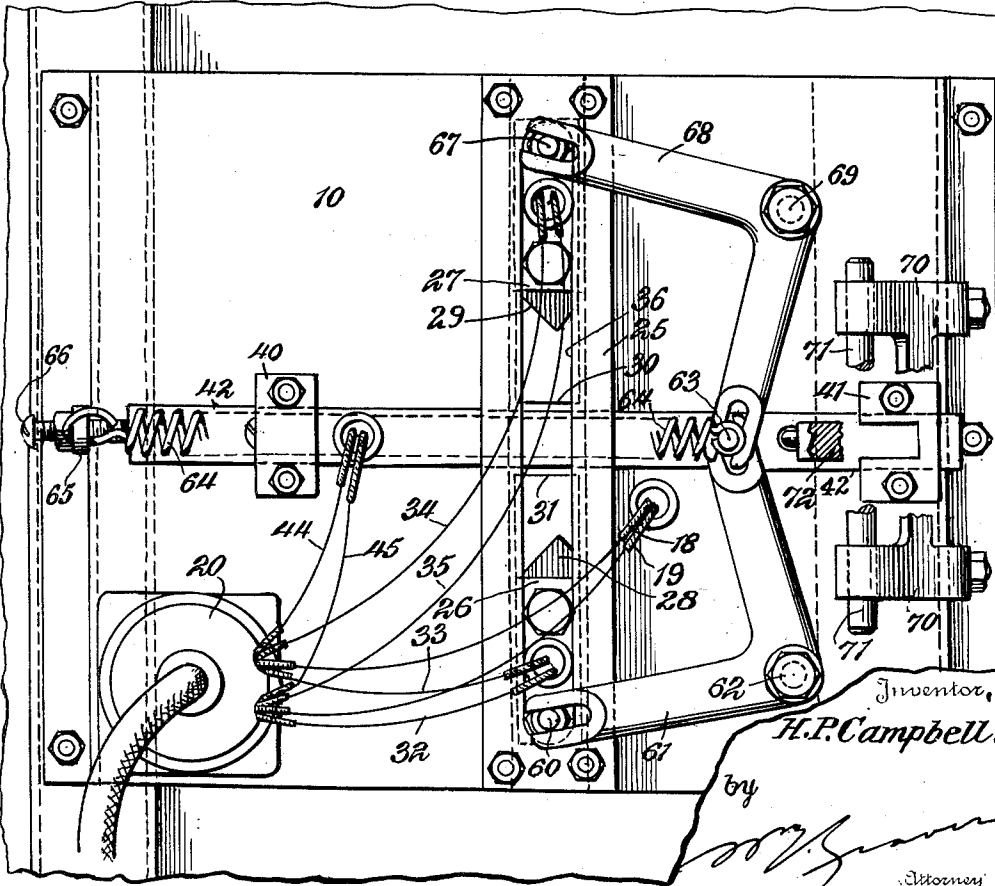


Fig. 6



Inventor,  
H.P. Campbell.

by

*[Signature]*  
Attorney

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Fig. 2.

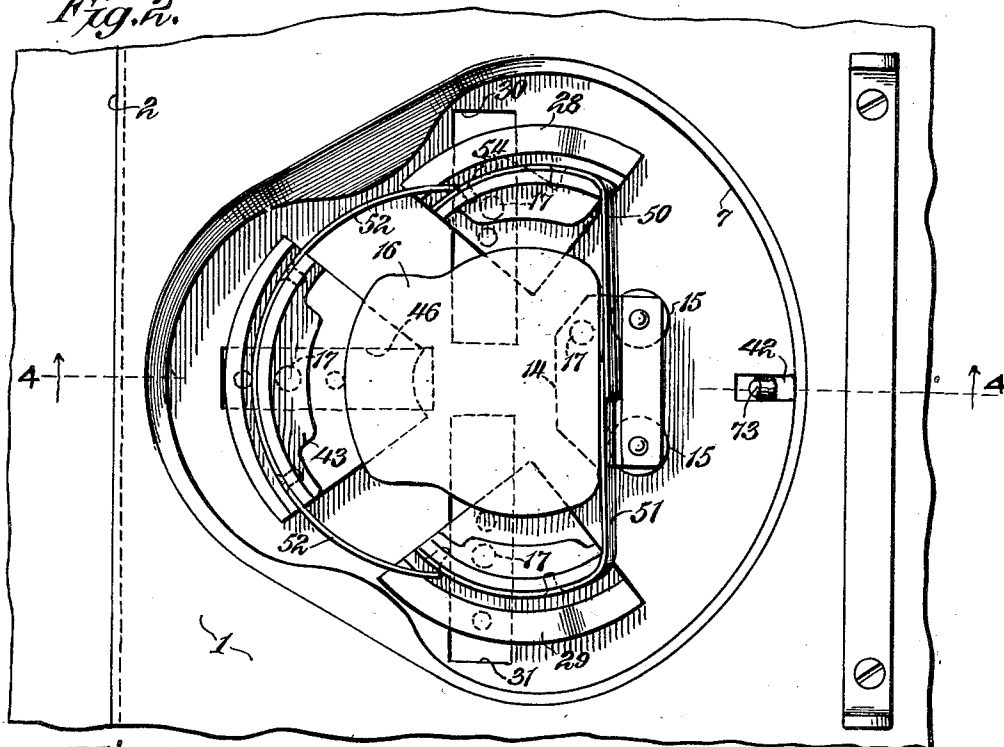
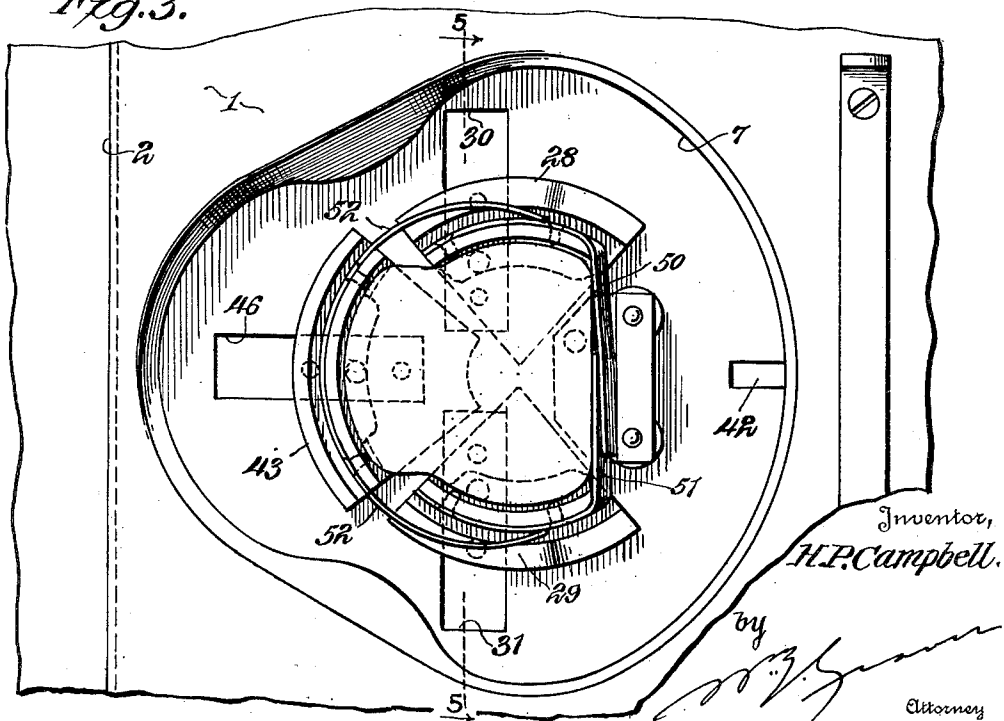


Fig. 3.



Inventor,  
H.P. Campbell.

by *[Signature]*  
Attorney

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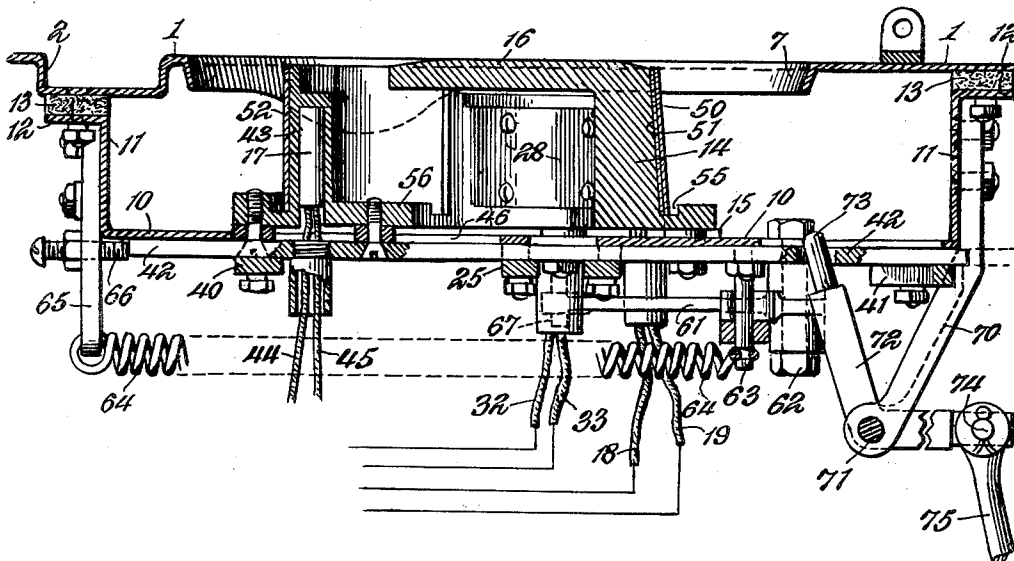
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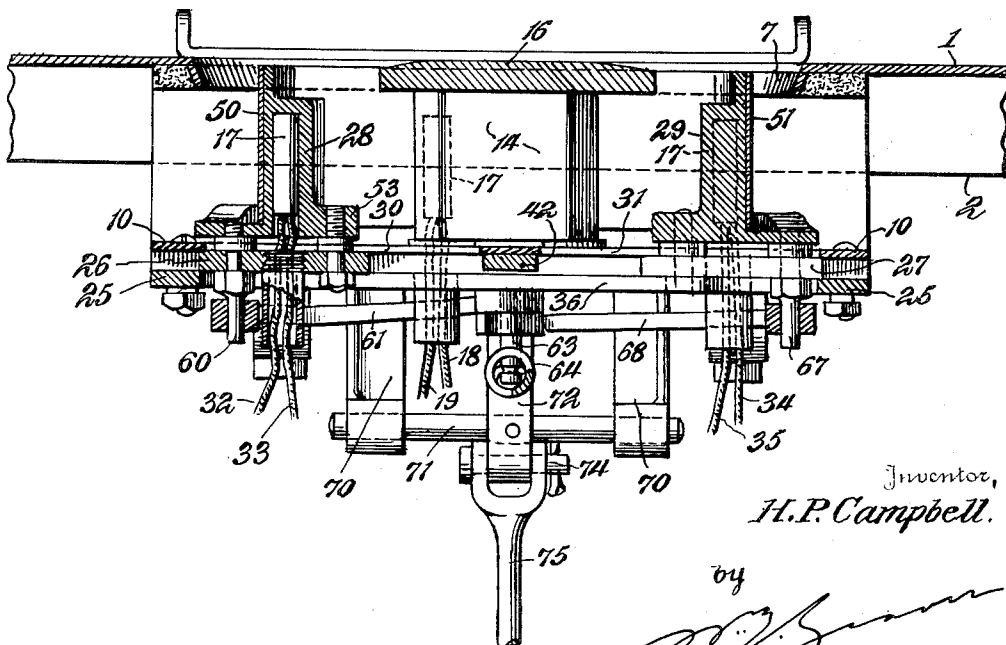
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*Fig. 4.*



*Fig. 5.*



Inventor,  
H. P. Campbell.

by *[Signature]*  
Attorney

## UNITED STATES PATENT OFFICE

2,192,786

## COLLAR IRONING DEVICE

Homer P. Campbell, Cleveland, Ohio, assignor to  
The Key-Tag Checking System Company,  
Cleveland, Ohio, a corporation of Ohio

Application February 14, 1938, Serial No. 190,478

2 Claims. (Cl. 223—52.1)

This invention relates to ironing devices for shirts and more particularly the neckband and/or collar thereof, having for its object to provide a device which is simple in construction and more efficient in operation than those heretofore proposed.

With these and other objects in view the invention resides in the novel details of construction and combinations of parts as will be disclosed more fully hereinafter and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification and in which like numerals designate like parts in all the views—

Fig. 1 is a perspective view of the device attached to an ironing table;

Fig. 2 is a top plan view of the device with the ironing members thereof in full expanded positions;

Fig. 3 is a top plan view of the device with the ironing members thereof in full contracted positions;

Fig. 4 is a vertical sectional view taken as on the line 4—4 of Fig. 2 and looking in the direction of the arrows;

Fig. 5 is a vertical sectional view taken as on the line 5—5 of Fig. 3 and looking in the direction of the arrows; and

Fig. 6 is a bottom plan view of the device.

This invention constitutes an improvement over that disclosed in U. S. Letters Patent No. 1,996,548 granted April 2, 1935, to Norman S. McEwen, for Expanding collar ironing device, and differs therefrom principally in the construction of the neckband engaging members and the means for operating the same.

Referring to the drawings 1 indicates a top plate having a transverse groove 2 therein for receiving a stack of shirt securing bands 3, said top plate either being extended to form a shirt folding table or being of limited length but adapted as by the screws 4 to be secured to an end of an existing ironing table 5, suitable legs 6 being provided for supporting the free end of the top plate. A hole 7 of any suitable shape is provided in the top plate for receiving therethrough the neckband and/or the folded over collar of a shirt which has been previously ironed but which is to be folded and banded in final shape for delivery to the customer. In other words, the ironed shirt is placed face down on the top plate and folded over the folding board 8 and banded in substantially the same manner as was disclosed in U. S. Letters Patent No. 1,937,430 granted November 28, 1933, to Norman S. McEwen and LeRoy E.

Moulthrop for Shirt folding machine. The neckband of the shirt is given a final ironing action, while the shirt is being so folded and banded, in order to smooth the neckband and eliminate therefrom any wrinkles or puckers that may have resulted from the ironing operation or collar folding prior to the folding of the shirt, and this final neckband smoothing is additionally instrumental in shaping the collar of a collar-attached shirt, all as will be more fully pointed out hereinafter.

Suspended below the top plate 1 is a bed plate 10 to be substantially parallel thereto, said bed plate having the upturned ends 11 and outwardly extending flanges 12 by means of which the bed plate is secured to the top plate, with any suitable heat insulation, indicated at 13, interposed between said flanges and said top plate. Upon the upper surface of the bed plate there is rigidly secured the back block 14 constituting the stationary member of the neckband ironing members, mica washers 15 being interposed for insulation purposes, said back block having at its upper extremity a lateral extension or canopy 16 having a slightly convex polished upper surface as shown in Fig. 4, said block being electrically heated in any well known manner as by a thermal cartridge 17 disposed in a bore therein, said cartridge having the wires 18 and 19 leading therefrom to any suitable source of electric current such as the junction box 20 secured to the underside of said bed plate.

The rear upstanding surface of the back block is not perpendicular but as a slight pitch inwardly toward the top of said block as clearly shown in Fig. 4, so that the base portion of said block is thicker than the top portion, the reason for this being pointed out hereinafter.

To the under surface of the bed plate there is secured a guide strip 25 for slidably receiving and guiding therein a pair of similar slides 26 and 27 having rigidly connected thereto the respective side neckband ironing blocks 28 and 29, the connections between said slides and their blocks passing freely through the slots such as 30 and 31 formed in the bed plate, and said connections adapted to bring the bottom surface of the said blocks above and therefore spaced from the upper surface of said bed plate to minimize the heat conductivity therebetween. Each block has therein an electrical heating cartridge similar to the cartridge 17 previously described, the cartridge of block 28 having the wires 32 and 33 leading therefrom, and the cartridge of block 29 having the wires 34 and 35 leading therefrom,

to the junction box 20. Said guide strip has a slotway 36 through which the blocks 28 and 29 are actuated.

To the under surface of the bed plate there is secured a pair of spaced guides 40 and 41 for slidably receiving therein the slide bar 42 operating in a direction substantially at right angles to that of the slides 26 and 27, the guide strip 25 being suitably apertured for the slide bar 42 to pass therethrough see Figs. 4, 5 and 6. To the slide bar is rigidly secured the front neckband ironing block 43 also electrically heated by a similar thermal cartridge 17 having the wires 44 and 45 leading therefrom to said junction box 20, the connection between said block and said slide bar passing through a suitable slot such as 46 formed in the bed plate.

Extremely thin flat springs 50, 51 and 52 are carried respectively by the ironing blocks 28, 29 and 43, these springs covering the outer substantially vertical surface of each of said blocks and being provided to contact the inner surface of the neckband and/or collar.

The block 28 has a base portion 53 from which extends upwardly the vertical heated portion and it is to the outer convex surface of this vertical portion that one end of the spring 50 is secured as by the screws 54, the other end of said spring having a flat formation and extending over the inclined outer surface of the back block 14. In other words, the spring 50 is substantially of L-shape with one leg flat and the other leg slightly curved to fit the convex surface of the block 28, said spring being of steel, pre-shaped and treated, as by a tempering process, to withstand a temperature in excess of that induced in said block by the thermal cartridge contained therein, this temperature being somewhat higher than 300° F. (the approximate ironing temperature of the block 28).

The other side block 29 is similarly but reversely formed with respect to the block 28, and its spring 51 is a reverse duplicate of the spring 50, the flat leg portions of both springs being of such extent and under such tension that they will always overlap each other and be in heat conducting sliding relationship with each other and with the inclined outer surface of the stationary back block 14, the base of said back block being provided with a groove 55 for guidingly receiving the lower edges of the flat portions of said springs.

The front block 43 likewise has a substantially horizontal base portion 56 from which extends upwardly the vertical heated portion of the block and to this vertical portion is secured the spring 52. The outer surface of said vertical portion is convex, and the spring 52 is of the same material as the springs 50 and 51 but is not angularly formed but is circularly formed throughout its extent as clearly indicated in the drawings. The spring 52 is of a length such that, when the members 28, 29 and 43 are in their full expanded positions, the ends of the spring will be under considerable tension upon the outer surfaces of the curved portions of the springs 50 and 51, and said ends will always remain in heat conducting contact with the surfaces of said springs 50 and 51 even when the blocks 28, 29 and 43 are in their full contracted positions as seen in Fig. 3. In other words, these springs 50, 51 and 52 always provide a continuous positive heat conducting medium in the region of the neck band.

The slide 26 associated with block 28 has a depending pin 60 engaged by the forked end of a

bell crank 61 freely pivoted as at 62 to the underside of the bed plate 10, the other arm of said bell crank likewise being forked at its end to engage the pin 63 depending rigidly from the slide bar 42, said pin 63 receiving one end of the power coil spring 64, the other end of said spring being secured to the bracket 65 rigidly secured to one side wall 11 of the bed plate 10, thereby placing the slide bar under the tension of said spring to hold the front block 43 in full expanded position. The bracket 65 carries an adjustable screw 66 abutting the end of the slide bar to limit the throw thereof in one direction.

In similar manner the other slide 27 associated with block 29 has a corresponding depending pin 67 engaged by the forked end of a bell crank 68 similar to the bell crank 61 and freely pivoted as at 69 to the underside of the bed plate 10, the other arm of said bell crank likewise being forked at its end to engage the pin 63.

A second bracket 70 secured to the opposite side wall 11 of the bed plate depends therefrom and supports a rock shaft 71 to which is pinned another bell crank 72 one arm of which ends in a pin 73 operatively engaging a hole in the slide bar 42, the other arm of which is pivotally connected as at 74 to a rod 75 for operatively oscillating said bell crank, the rod 75 preferably extending downwardly to a foot treadle. Thus it will be understood that when rod 75 is moved downwardly, the bell crank 72 through its pin 73 will cause a movement of the slide bar 42 to the right as seen in Figs. 4 and 6 and when this occurs the front block 43 will move with said slide bar in a direction toward the stationary back block 14. At the same time, the bell cranks 61 and 68 will be oscillated by the pin 63 carried by said slide bar to cause coincidental inward movement of the two side blocks 28 and 29 toward said stationary back block, and the parts are so dimensioned and disposed that maximum movement of said slide bar against the tension of its spring 64 will ultimately bring the uppermost portions of all the movable blocks 28, 29 and 43 substantially up against the outer edge of the canopy 16 of the stationary back block 14 to present a substantially unbroken or closed continuous surface to an applied shirt. This is made possible by the triangular shape of the bases of the movable blocks which will clear each other while moving in under the canopy 16. Inward or "contracting" movement of the movable blocks may be limited by abutment thereof with any portion of the stationary block, or by the length of the slots 30, 31 and/or 46 in the bed plate, or by contact of the pin arm of bell crank 72 with the guide 41 for the slide bar 42, or by any other suitable or desired means, the outward or "expanding" movement of said blocks being limited reversely by contact of said slide bar with the adjustable screw 66. Thus, the "expanding" movement may be adjusted or varied in accordance with neckband sizes.

In operation, the rod 75 is depressed to cause inward movement of the movable ironing members into their "contracted" positions and, while they are so contracted, a previously ironed and buttoned shirt is laid face down on the top plate with the neckband extending through the hole 7 and surrounding the contracted members. The shirt is then straightened or put in proper aligned and spread position on the top plate and/or table 5, after which the rod 75 is permitted to move upwardly resulting in the outward movement or "expansion" of the ironing members into firm

contact with the surface of the neckband. The hands of the operator are thus free, through use of a foot treadle to actuate the rod 75, for the remaining folding and banding operations upon the shirt after which the rod 75 is again depressed to "contract" the ironing members into positions away from contact with the neckband, and the completely folded and banded shirt removed from the device.

The shirt is ironed before coming to this device but is still somewhat moist from the steam, particularly the neckband and/or folded-over attached collar due to the several thicknesses of material at these locations, and consequently in many cases wrinkles or puckers develop on the inside of the neckband upon drying. This device remedies this objectionable feature by providing subsequent neckband ironing to drying temperatures, the springs conducting the necessary heat to all portions of the neckband while the shirt is being folded, and further imparting to the neckband a shape corresponding to the shape thereof when originally manufactured and thereby giving the proper and intended "set" to said neckband. In addition, the relatively large upper surface of the canopy 16 smoothly irons and dries the portion of the yoke ultimately contacting the nape of the neck, during the shirt folding, resulting in greater comfort to the wearer in the absence of any wrinkles or puckers in this region.

Particularly in the cases of collar-attached shirts, the pitch or incline of the outer surface of the stationary ironing member 14 and the springs 50 and 51 contacting therewith is an important feature of this invention in that said pitch results in throwing the folded edge of the collar at the back of the neck outwardly with respect to the neck opening, and this results in throwing the points of the collar downwardly into closer contact with the face or bosom of the shirt.

A highly important feature of the invention resides in the utilization of the thin tempered spring 52 carried by the front ironing block 43 and its arcuate formation resulting in a considerable pressure between its ends and the curved surface of the springs 50 and 51 of the side ironing members. In other words, and as clearly illustrated in Figs. 2 and 3, when the "contracted" members 28 and 29 move outwardly or away from each other, the tension on the unsupported ends of spring 52 increases, and this increased pressure has a "snubbing" effect upon the action of the power spring 64 as a result of which the "expansion" of said members is slowed, particularly should the operator's foot release pressure too suddenly upon the foot treadle controlling the rod 75. A sudden "snap" or too quick release of the treadle might ordinarily exert an "expanding" pressure upon the ironing members sufficient to break the collar button securing the neckband, and/or damage the neckband button holes, but the snubbing effect of spring 52 obviates this potential damage.

From the foregoing description it will therefore be seen that by this invention there is provided an ironing device for the inner surface of a

neckband wherein there are employed a plurality of ironing members one of which is stationary and provided with a canopy extending from the upper portion thereof, the other members movable to positions under said canopy and away therefrom, with leaf springs attached to the movable members and under tension so as to springingly contact with each other and which springs collectively constitute the ironing surface of the device, said springs disposed about all of said members. Further, said springs are in contact with each other at all times, i. e., when the members are in "contracted" or "expanded" positions and therefore said springs present a continuous ironing surface. Two of the ironing blocks constitute a pair movable in a direction toward and away from each other, with a third ironing member reciprocable toward and away from the line of movement of said pair, and operating connections are provided between all of said members for concerted movement thereof in directions toward each other as well as for concerted movement thereof in directions away from each other, said connections including the main power spring normally acting to produce the latter mentioned concerted movement, the leaf springs carried by each member, due to their constant contact under tension, cooperatively tending to slow the action of said power spring.

It is obvious that those skilled in the art may vary the details of construction and arrangements of parts without departing from the spirit of this invention and therefore it is desired not to be limited to the exact foregoing disclosure except as may be demanded by the claims.

What is claimed is:

1. In an ironing device for the inner surface of a shirt neckband the combination of a stationary ironing block having an integral canopy extending from the upper portion thereof and providing an unobstructed space beneath said canopy, said canopy having a smooth upper surface for ironing the shirt yoke at the nape of the neck; a plurality of movable ironing blocks and means to move the same bodily into and out of the space under said canopy; and means carried by each movable block and collectively constituting a continuous neckband ironing medium.

2. In an ironing device for the inner surface of a shirt neckband the combination of a stationary ironing block having a canopy extending from the upper portion thereof and providing an unobstructed space beneath said canopy, said canopy having a smooth upper surface for ironing the shirt yoke at the nape of the neck; a plurality of movable ironing blocks and means to move the same toward and away from said canopy; and means comprising a leaf spring carried by each movable block, each leaf spring having an unsecured end extending beyond its block, the free end of a leaf spring on one of said blocks having its extreme edge only in slidable contact with a surface of the next adjacent leaf spring, said springs collectively constituting a continuous neckband ironing medium.

HOMER P. CAMPBELL.