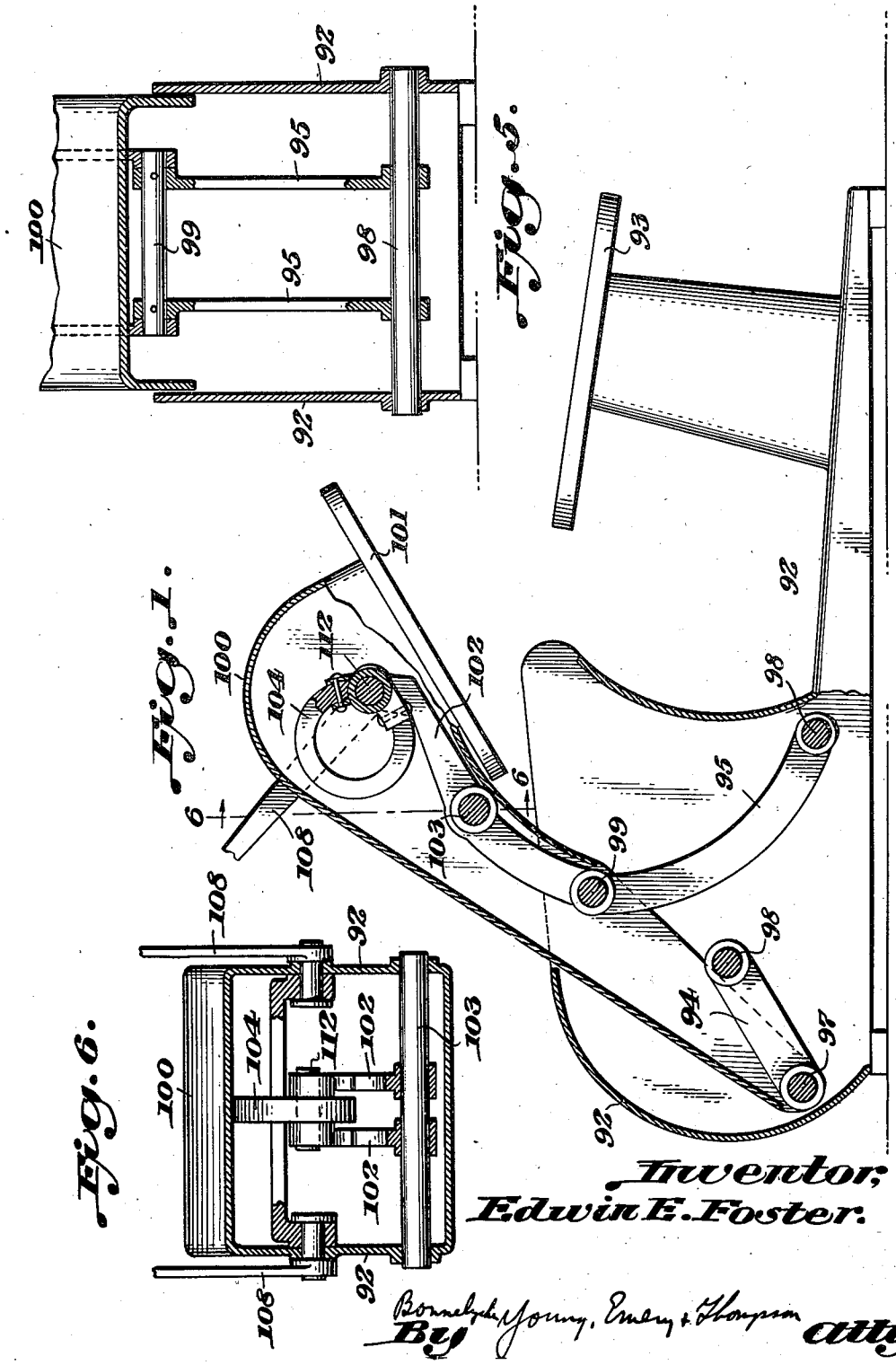
May 5, 1942. E. E. FOSTER 2,281,568

FLAT PLATE IRONER

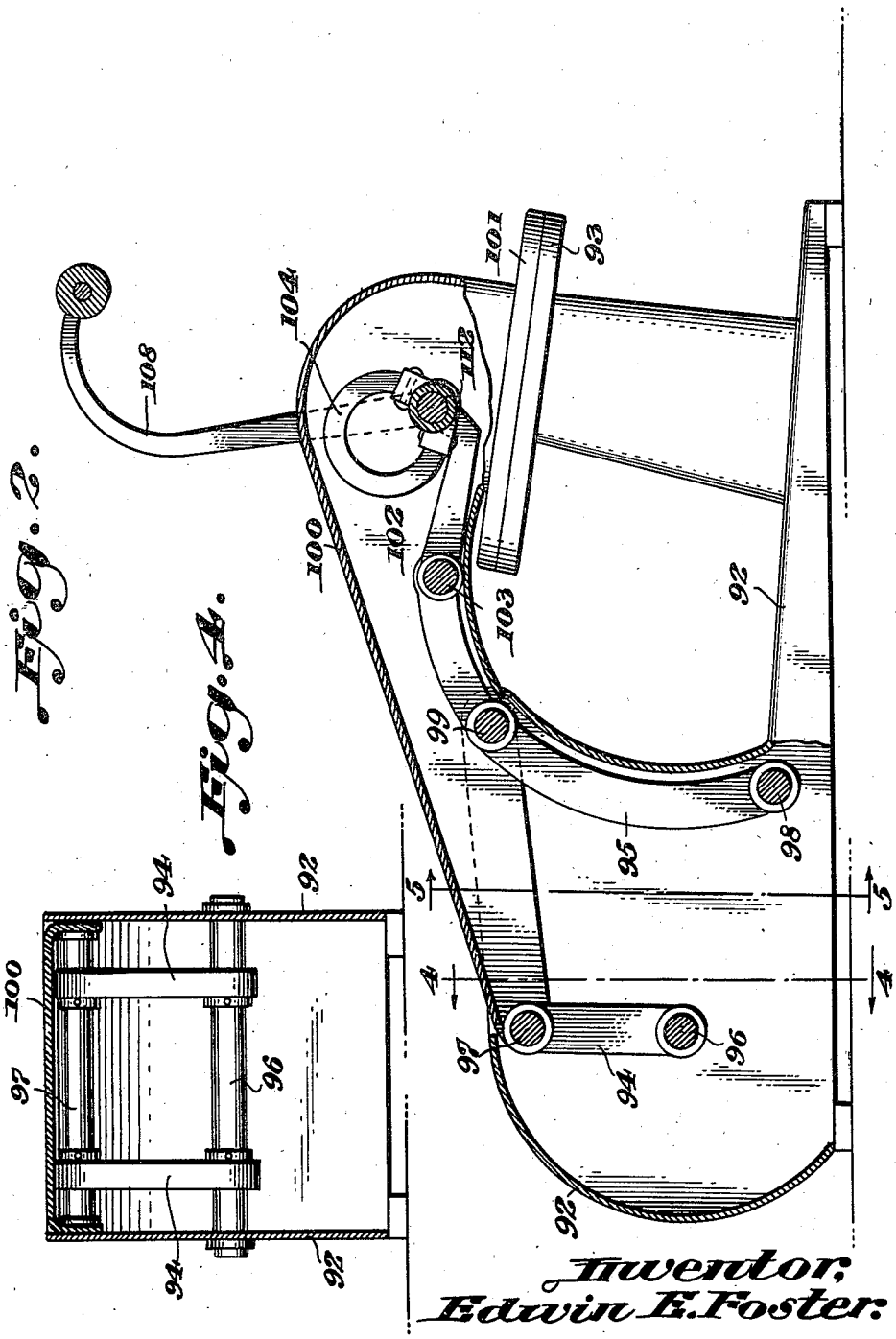
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FLAT PLATE IRONER

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Fig. 7

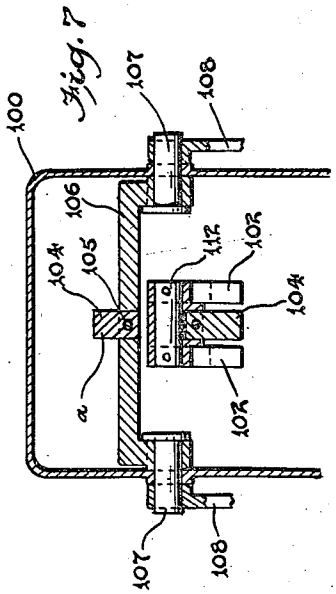
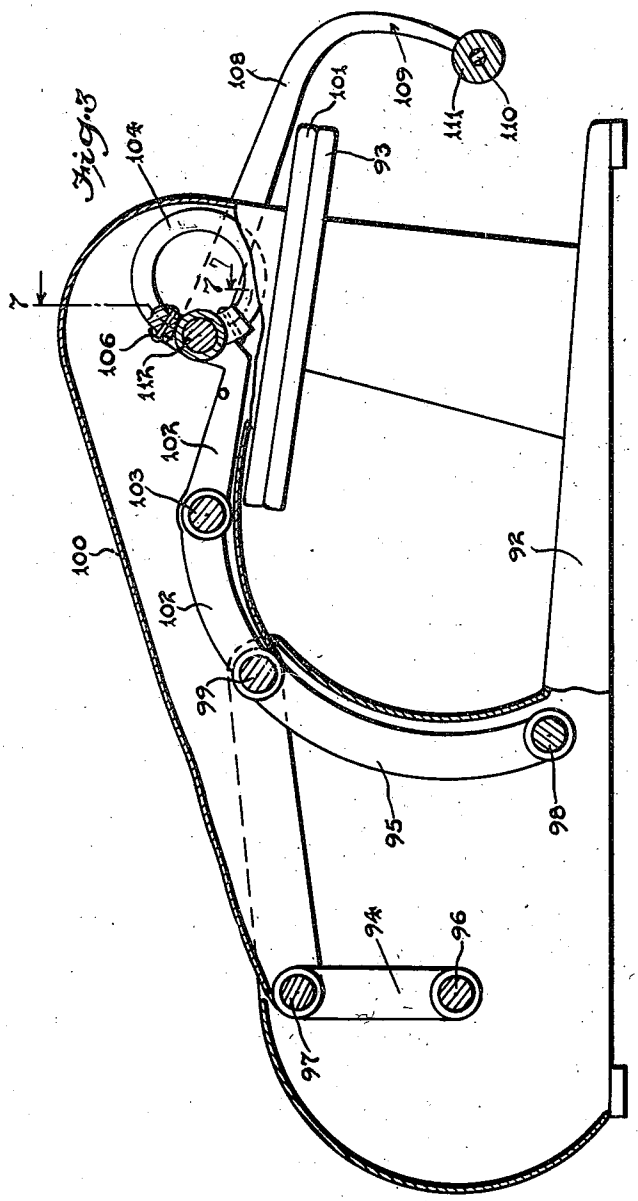



Fig. 5




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Fig. 9.

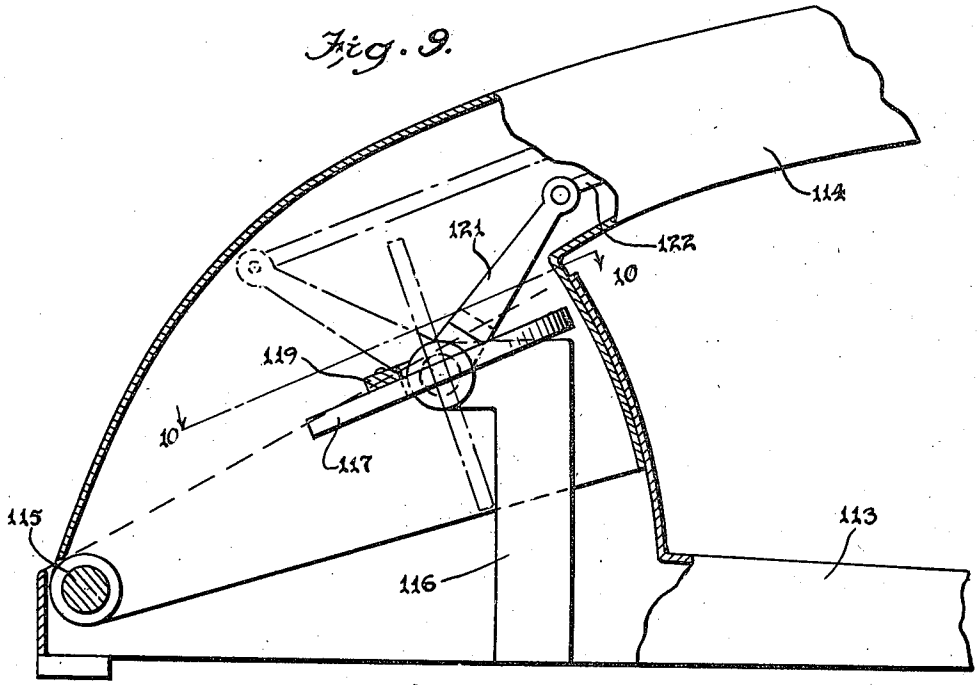
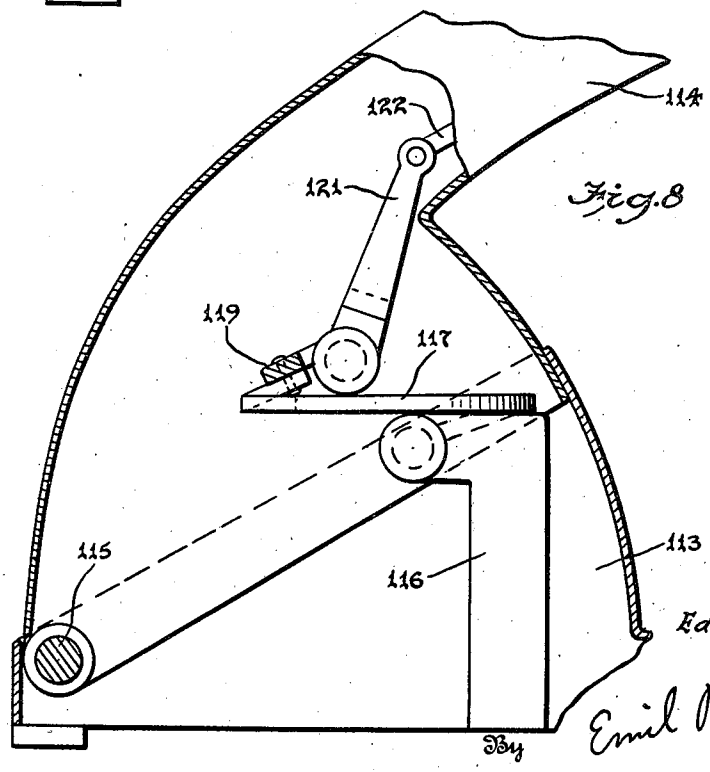



Fig. 8



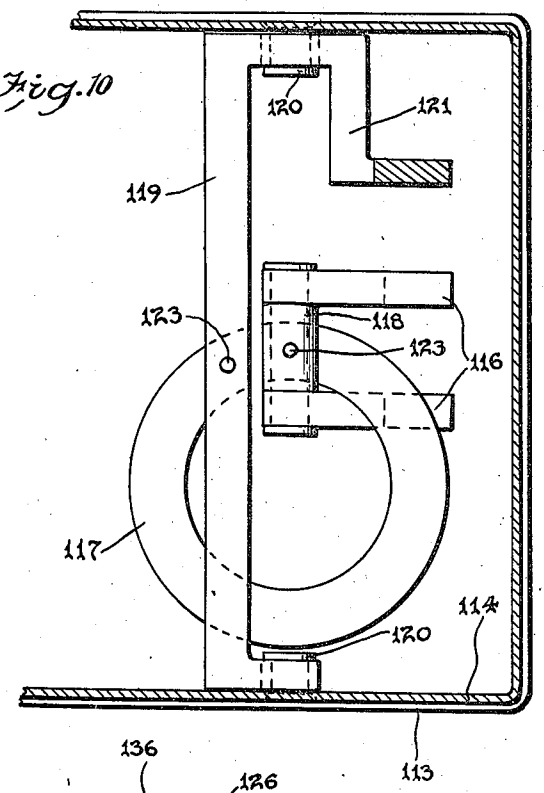

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Fig. 10



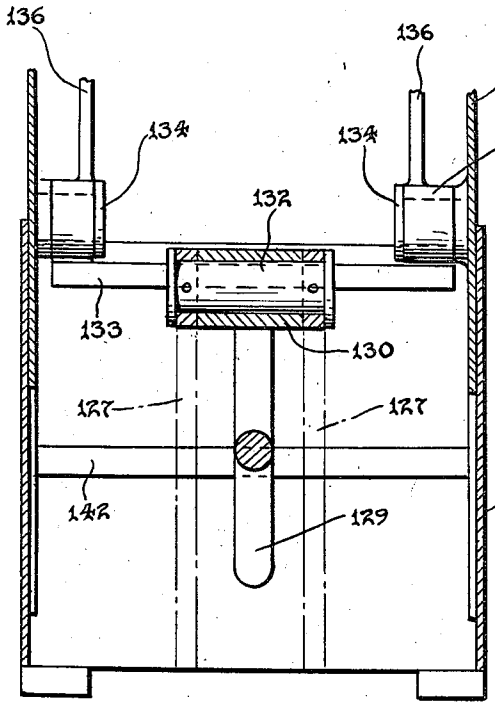




Fig. 13

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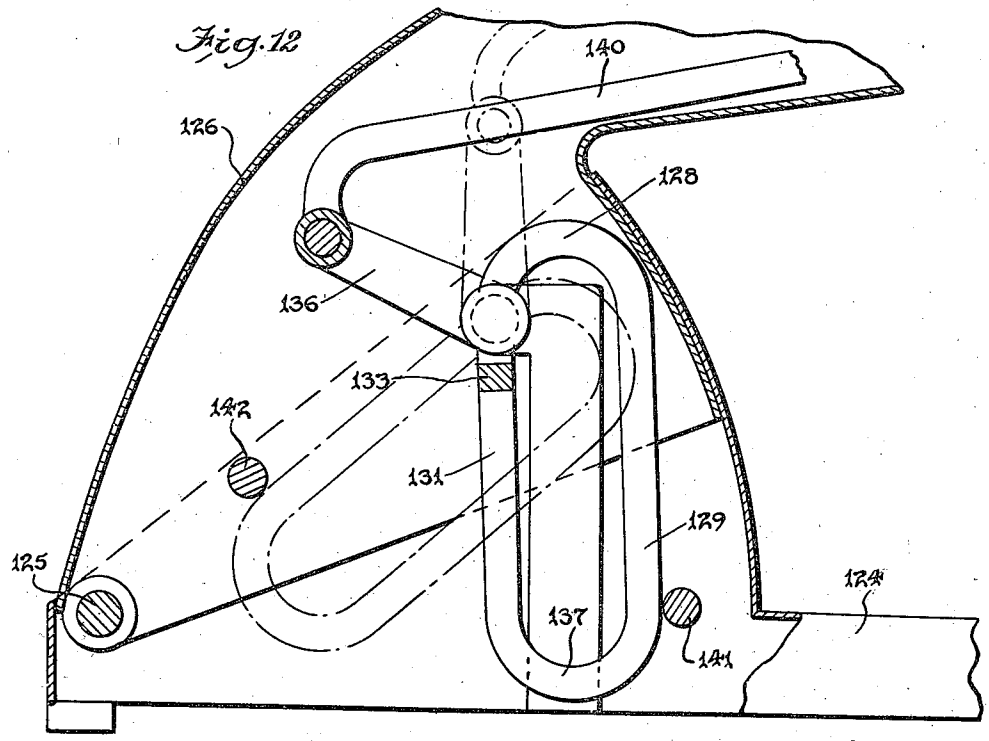
Attorney

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Fig. 12



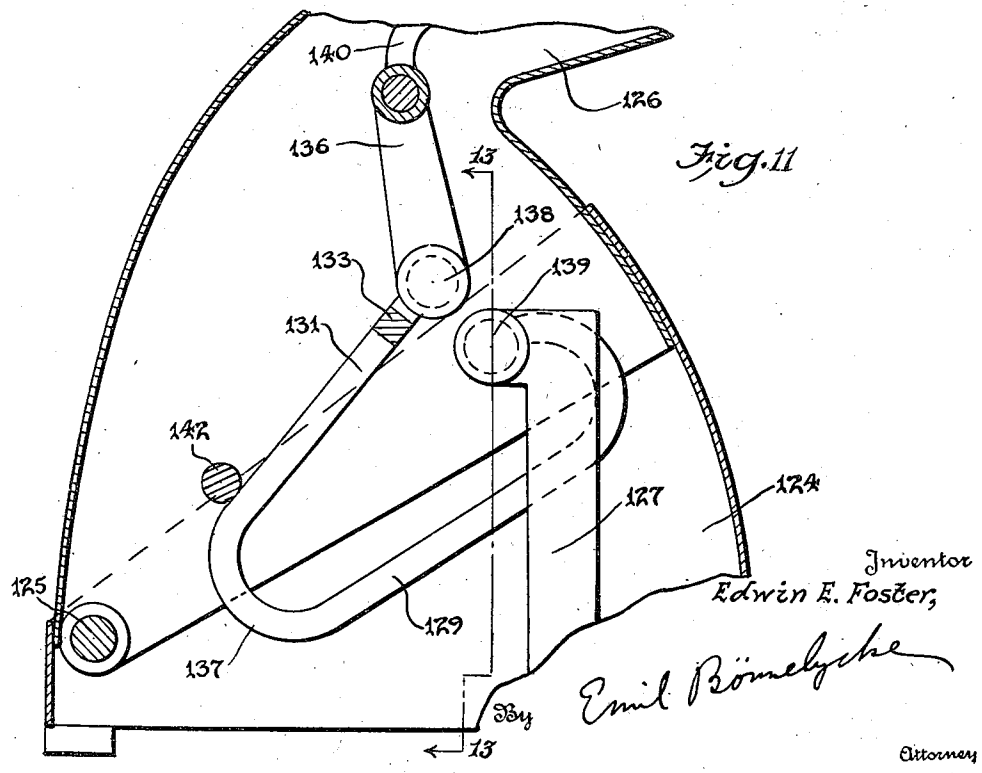




Fig. 11

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# UNITED STATES PATENT OFFICE

2,281,568

## FLAT PLATE IRONER

Edwin E. Foster, Austin, Tex., assignor to Majik-Ironers, Inc., Austin, Tex., a corporation of Texas

Application March 14, 1936, Serial No. 69,143

17 Claims. (Cl. 38—36)

The present invention relates to improvements in flat plate ironers and particularly in the force applying means of such ironers.

The object of the present invention is to provide a single loop spring as the force applying means. A further object is to incorporate means whereby a slight slippage will take place between the two flat-plate pressing members and also to automatically take care of various thicknesses of the material to be ironed without impairing the ironing effect or the ironing pressure.

Further objects will be apparent from the following description taken in connection with the drawings in which—

Fig. 1 is a part vertical sectional view of a flat plate ironer in the raised position,

Fig. 2 is a view similar to Fig. 1 showing the position of the various parts with the head member on the buck,

Fig. 3 is a view similar to Fig. 2 with the ironing pressure applied,

Fig. 4 is a cross-sectional view on line 4—4 of Fig. 2,

Fig. 5 is a cross-sectional view on line 5—5 of Fig. 2 in the direction of the arrows,

Fig. 6 is a cross-sectional view on line 6—6 of Fig. 1 in the direction of the arrows,

Fig. 7 is a cross-sectional view taken on line 7—7 of Fig. 3,

Fig. 8 is a part vertical sectional view of a modified form of ironer,

Fig. 9 is a view similar to Fig. 8 showing the parts in the non-ironing but closed position,

Fig. 10 is a cross-sectional view taken on line 10—10 of Fig. 9,

Figs. 11 and 12 are part vertical sectional views of another form of ironer showing the parts in different positions, and

Fig. 13 is a cross-sectional view taken on line 13—13 of Fig. 11.

The flat plate ironer includes a base member 92 and a movable top member 100, the member 92 having the buck 93 secured thereto and the member 100 the head member 101. These two members 92 and 100 are operatively connected to each other by means of a double link 94 and a pair of links 95. The double link 94 rotates or pivots on a pin or shaft 96 which is secured in the sides of the base member 92 as shown in Fig. 4. The upper end of the link 94 is rotatably or pivotally mounted on a pin or shaft 97 which is in turn secured in the top member 100. The links 95 are rotatably or pivotally mounted on a pin or shaft 98 which latter is mounted in the base member 92. The upper ends of the links 95 are mounted on a shaft or pin 99. A further pair of links 102 are mounted on the pin 99 and pin 103, the latter of which is secured in the top member 100. At the upper end of the links 102, as shown in Fig. 6, there is provided a short pin 112. Two stub shafts 107 are rotatably mounted or fixed in the top member 100 in suitable bearings. On each inner end of each shaft 49 a rod 106 is pivotally mounted.

The two links 52 are connected together at their outer ends by a rod 53 around which a tubular sleeve 54 as a hand grip is provided as shown in Fig. 8. Thus the links 52, rod 53 and sleeve 54 constitute the operating handle 62 of the ironer.

On the other ends of the links 51 there is provided a pin 55 which also has two spacing sleeves 56 mounted between the links 51 and a collar 57 is placed between the sleeves on the pin 55. Between the pins 46 and 55 a spring 58 is tensioned having its ends surrounding the collars 48 and 57. Thus the parts 51, 55, 56 and 57 constitute a U-shaped member 59.

Stops may be provided in the casing of the top member 35 as for instance the upper stop pin 60 against which the U-shaped member 59 abuts in its upper position as in Figs. 6 and 7. A lower stop pin 61 as in Figs. 6 to 8 is to take care of accidental tripping of the U-shaped member 59 before the buck and head are in contact so that the links 44 will abut the pin or pins 61 to prevent the loss of the energy in the spring 58.

There is provided a single spring 104 having one end 105 secured to a rotatably mounted rod 106. This rod 106 is pivotally and rotatably mounted in stub shafts 107 in the side walls of the member 100 as shown in Figs. 6 and 7. The shafts 107 also have the operating levers 108 of the operating handle 109 of the ironer and the levers 108 are connected together by the rod 110 surrounded by the handle sleeve 111.

The spring 104, in a single loop, is preferably circular but any other configuration can be used. The other end of the spring 104 is secured to a short rod 112 and the latter is mounted on the links 102.

The ironer according to Figs. 1 to 7 operates as follows. The spring 104 is tensioned during the assembly of the ironer and the force in this spring remains practically constant at all times whether the ironer is in use or not. When the material to be ironed has been placed on the buck 93 the operator grasps the handle around the sleeve 111 and draws the balanced head member 100 down from the position shown in Fig. 1 to

that shown in Fig. 2 around the pins 96, 97, 98 and 99. Then a downward movement of the operating handle 109 causes the spring 104 to be shifted from the position shown in Fig. 2 to that shown in Fig. 3. Since the ironer when it is assembled has its full energy, tensioned outwardly, placed in the spring 104 which is always maintained whether in use or not the spring in the position of Fig. 3 will now exert an ironing force between the head 101 and the buck 93. In this position the ends of the spring 104, that is, the effective ends as in Fig. 7 must be in coincidence and thus the force of the spring at the end 105 is exerted from the rod 106 to the stub shafts 107 to the top member 100 and the other end from the rod 112, links 102 and links 95 to the pin 98 on the base member 92, counteracted by the links 94.

In the position of the parts as in Fig. 2 the shafts 107 and the rod 112 are slightly out of coincidence in order to prevent the spring 104 and the handle 109 from throwing over when the top member 100 is in the non-ironing position.

Due to the mounting of the top member 100 on the links a certain amount of slippage is attained between the buck 93 and the head member 101 as the latter will move or laterally slip on the buck 93 a slight distance between the positions shown in Figs. 1 and 2.

The ironer shown in Figs. 8 to 10 also utilizes a single circular spring but the form of this ironer is similar to that shown in Figs. 1 to 3 where the spring is tensioned or has the original energy stored therein not only to use its full force for the ironing pressure but also to use a part of this force for counterbalancing the top member. In Figs. 9 and 8 the parts cut off are the same as shown in Figs. 1 to 3.

In this construction the base member 113 has a top member 114 pivoted thereto on the rod or pin 115. The base member 113 has two posts 116 secured thereto in any suitable manner so that they will be rigid thereon. To the upper ends of these posts one end of a spring 117 is secured on a pin 118 and the other end of the spring is secured to a rod 119. The latter is rotatably mounted on stub pins 120 and also has an arm 121 having the configuration as seen in Figs. 8 and 10. A lever or rod 122 is connected to the arm 121 and this arm is actuated by a suitable operating handle, not shown.

The ironer according to Figs. 8 to 10 operates as follows:

The spring 117 before it is inserted or assembled into the ironer is tensioned so that the spring has a tension laterally with considerable force tending to push the points 123 in Fig. 10 away from each other. Thus the spring 117 counterbalances the top member 114 from the position of Fig. 8 to that of Fig. 9, full lines. However a small amount of energy is imparted into the spring when moving through this position which is expended when the spring again lifts the top member 114 back to its raised position since thus the spring acts through a certain distance. Also when moving into the position of Fig. 9 from Fig. 8 the reacting ends of the spring 117 are brought into coincidence as shown by Fig. 10. When now the rod 122 is moved toward the left the arm 121 and the spring 117 are moved into the position shown by the dot and dash lines, Fig. 9, the spring is rotated to a position practically at right angles to the normal position. The spring will now impart a considerable force equal to the ironing pressure as the spring reacts at one end by means of the rod 119 and the stub pins 120 on the top member 114 and the other end by means of pin 118 and posts 116 to the base member 113. A reversal of the foregoing steps will bring the ironer into the raised position and the parts as shown in Fig. 8. In moving from the position of Fig. 9 to that of Fig. 8 the ends of the spring separate a certain distance from each other which permits the utilization of a portion of the lateral tension sufficient to counterbalance the top member 114. Thus the spring 117 need not necessarily react any force when expanding vertically as in Fig. 8 as the force is taken from the lateral expansion, that is the tendency of the points 123, Fig. 10, to move apart. In order to be operative the plane of the spring, Fig. 9 must not pass through the pin 115. Also as seen in Fig. 8 the top of the posts 116 acts as a stop for the spring 117.

The ironer according to Figs. 11 to 13 is also similar to Figs. 8 to 10 in that a base member 124 is hinged or pivoted by means of a rod 125 to the top member 126. A pair of posts 127 are suitably mounted on the base member 124 and to which one end 128 of a spring 129 is rotatably mounted on a bearing 130 by means of a bearing rod 132. The spring is shaped approximately in the form of a link open or separable at one side 131. The end 131 is secured to a rod 133 which rotates on stub pins 134 by means of bearing collars 135 as shown in Fig. 13. A lever or rod 136 is connected to each collar and rods 140 lead to the operating handle, not shown.

The operation of the ironer according to Figs. 11 to 13 is as follows.

The spring 129 as shown in Fig. 12 has the general shape of a link and has two tensions therein of different magnitudes. The end 128 is bent sharply and has therefore considerable force equal to the ironing pressure and the other end 131 has a slight force imparted therein principally from the bent portion 137 and this slight force is utilized for counterbalancing the top member 126. In actual operation when the top member 126 is moved down from the position of Fig. 11 to that of Fig. 12 (dot and dash line position) the portion 131 of the spring 129 is flexed inwardly until the points 138 and 139 reach coincidence. From the dot and dash line position of Fig. 12 the spring 129 is swung to the full line position by moving the lever 136 to the left by operating the handle to shift the operating rod 140 also to the left. In this position, that is the full line position of Fig. 12 an ironing pressure will be exerted between the ironing elements since the force reacts from the base member 124 by means of the posts 127 to the bearing rod 132 and to the end 128 of the spring. The other end of the spring reacts from the top member 126 by means of the pins 134 and rod 133 to the portion 131 thus exerting a pull between the two members 124 and 126. Rods 141 and 142 are secured to the sides of the members 124 and 126 respectively which act as limit stops for the spring.

Also in this form of ironer the ironing force is originally imparted into the end 128 of the spring which is never expended during the operation of the ironer. Also a slight force is imparted into the end 131 but a slight energy must be supplied by the operator each time the arm moves from the position of Fig. 11 to that of Fig. 12 due to the distance through which the counterbalance acts.

It is of course understood that the various ironers described in the foregoing can be made

of any suitable material or materials and that minor changes can be made in the various parts without departing from the spirit of the invention. Also there are various ways in which the spring can be mounted and operated but such variations are obvious to a skilled metal worker and thus it is not deemed necessary to show such modifications. The springs can be modified in configuration and where tension or compression springs are shown and described it is possible to use compression or tension springs respectively by making obvious changes in the connections shown.

It is to be noted particularly that in the ironers illustrated it is possible to iron thin and thick materials without making any adjustment of any kind during or at any time that the ironer is in use. Also due to the manner in which the ironer elements are mounted and the path one element travels with respect to the other it is possible to cause a certain amount of slippage between the ironing elements to thus impart a sheen to the materials which are ironed.

In all of the modifications it is of course obvious that one or both ironing elements may be heated and also that any medium may be used to heat the elements. Preferably the head element is made of metal and has an electric cord attached thereto by means of which an electric current is conveyed to heating elements or wires in the head. This construction is well known and does not form a part of this invention.

I claim as my invention:

1. A flat plate ironer comprising a base member having a buck secured thereto, a top member having a head element secured thereto to cooperate with the buck, said top member being hinged to the base member so that the top member will be movable relative to the base member, a link pivotally secured at one end to one of the members and shiftable relative to both members, a single convolution spring secured at one end to the other of said members and the other end of the spring secured to the other end of said link, said spring having its energy stored therein when the ironer is assembled and a slight amount of energy being stored therein each time the head element is moved down on the buck to equalize the counterbalance in the top member and head element along its entire downward path of travel, and means for shifting the link when the head element contacts the buck to apply the force of the spring between the head element and buck for the ironing pressure without expending the energy in the spring.

2. A flat plate ironer comprising a pair of members pivoted to each other and each having an ironing element attached thereto, one of said members being movable with respect to the other, a single loop spring having one end of the loop secured to one member and the other end of the loop secured to the other member, said spring having its energy stored therein when the ironer is assembled and being movable on the securing ends with respect to said members, and means for moving said spring around its securing ends so that in one position the force in the spring will be inoperative between the ironing elements and in another position an ironing force will be imparted between the ironing elements.

3. A flat plate ironer according to claim 2, in which the ironer includes an operating handle which shifts the movable member to contact and separate the ironing elements and operates the means for moving the spring.

4. A flat plate ironer comprising a base member having an ironing element thereon, a top member having an ironing element thereon, means for mounting the top member so that it will be movable relative to the base member, a single loop spring in the base member which has its energy stored therein at all times to impart the ironing force by utilizing the force thereof, and means in the top member to render the ironing force in the spring effective between the ironing elements when the latter are moved adjacent to each other.

5. A flat plate ironer according to claim 4, in which the spring and the last-named means are mounted in the base member.

6. A flat plate ironer according to claim 4, in which the first-named means is composed of a pair of links pivotally mounted on said members so that the top member is movable on the base member in a balanced state.

7. A flat plate ironer according to claim 4, in which the first-named means is composed of a pair of links pivotally mounted on said members so that the top member is movable on the base member in a balanced state and the spring is in the form of a single circular link having two ends.

8. A flat plate ironer according to claim 4, in which the spring is in the form of a single link having two ends of which the portion adjacent one of the ends imparts the counterbalance force and the portion adjacent the other end imparts the ironing force.

9. A flat plate ironer according to claim 4, in which the top member is provided with means whereby the ironing elements will be self-compensating for different thicknesses of material and permitting a slight amount of slippage to impart a sheen to the materials to be ironed.

10. A mechanical movement comprising a pair of members pivotally connected at one end to each other and capable of movement relative to each other so that the other ends of the members may contact with each other, a single-coil spring having a single convolution connected to the pair of members having its energy permanently stored therein and the force of the spring describing a circuit passing through the pivots by means of both members in the non-contacting position of said other ends of the members, and means for transferring the force of the spring from the pivots to said other ends of the members when the said other ends are in contact with each other so that the force circuit now passes through the said other ends of the members by means of both said members.

11. A pressing apparatus of the portable table type comprising a pair of members each having a pressing element at one end and a pivotal connection at the other end so that the members will be movable relative to each other into and out of engagement of the pressing elements, a bearing member one for each of said pair of members and each connected to its respective member, a prestressed single-coil spring of not more than one convolution connected between and on the bearing members and in one position of said spring the force of the spring being exerted only in one of said pair of members when said pressing elements are out of engagement or if in engagement no force is desired between the pressing elements, and means for shifting the position of the spring from the first-mentioned position by rotating the spring around at least one of its bearing members so that the force of

the spring will be exerted through both members when the pressing elements are in contact with each other to utilize the force in the spring in and between the pressing elements.

12. A pressing apparatus according to claim 11 in which the spring shifts around both bearings and in which the spring is a single circumferential loop.

13. A pressing apparatus according to claim 11, in which the spring shifts around both bearings and in which the spring is a single oval-shaped loop.

14. A pressing apparatus according to claim 11, in which the spring shifts around both bearings and in which the spring is link-shaped with forces of two different magnitudes.

15. A flat plate ironer comprising a base member having a stationary ironing element, a movable head member pivotally mounted to the base members and having a cooperating ironing element mounted thereon, an actuating handle member pivotally mounted in the head member, a spring composed of a single convolution having one end rotatably secured to the base member and the other end rotatably secured to the head member, said spring having its ironing force constantly stored therein, and means connected to the handle member and one end of the spring to shift said spring around its pivot axes when approximately coincident upon actuation of said handle member to apply or relieve the ironing force between the ironing elements when the latter are in contact with each other with the spring convolution in one plane.

16. A flat plate ironer according to claim 15, in which the spring is in the form of a single circumferential loop.

17. A flat plate ironer according to claim 15, in which the spring is in the form of a single link-shaped loop.

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