

A. J. SHIRK AND S. COHEN.
 STAND AND AUTOMATIC SWITCH FOR ELECTRIC IRONS.
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1,421,850.

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Fig. 1.

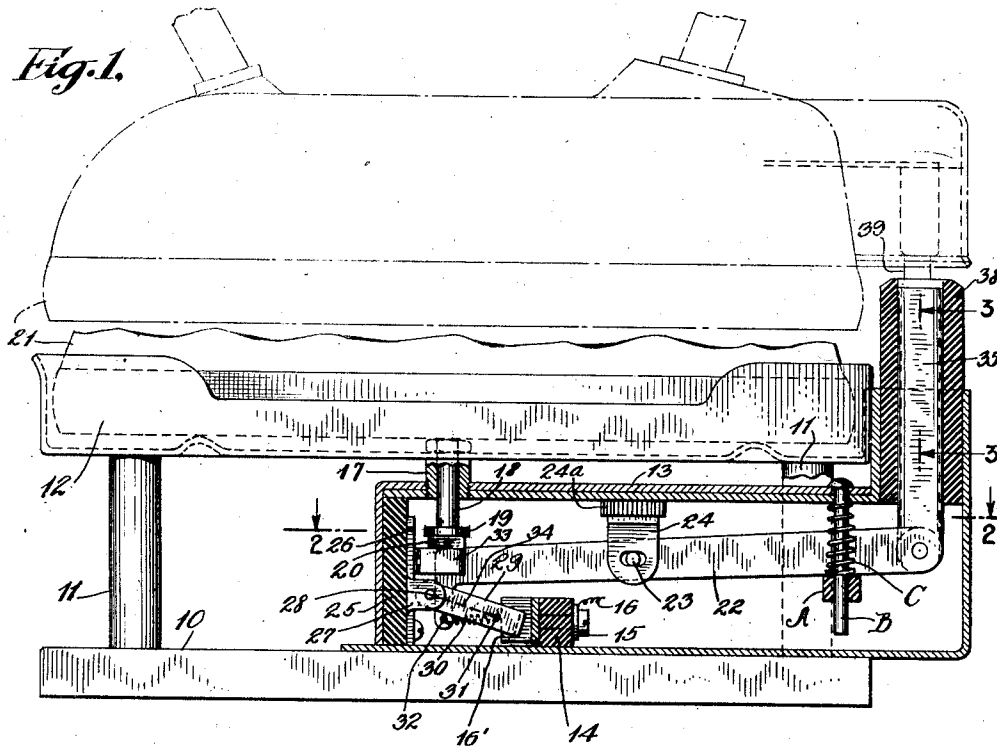


Fig. 2.

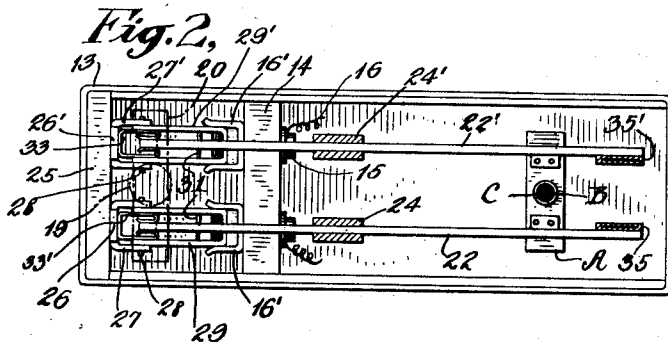


Fig. 3.

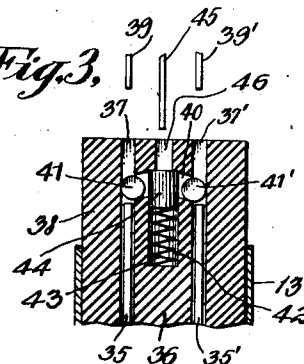
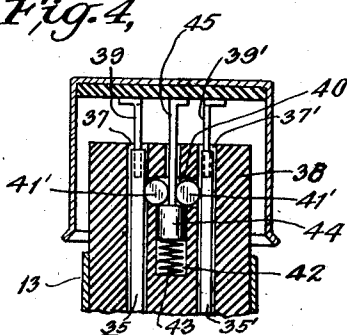


Fig. 4.



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STAND AND AUTOMATIC SWITCH FOR ELECTRIC IRONS.

1,421,850.

Specification of Letters Patent.

Patented July 4, 1922.

Application filed December 16, 1919. Serial No. 345,328.

To all whom it may concern:

Be it known that we, ART J. SHIRK and SOLOMON COHEN, citizens of the United States, and residents of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in a Stand and Automatic Switch for Electric Irons, of which the following is a specification.

10 This invention relates to electric press irons. One of the objects thereof is to provide a device of the above type of simple construction and efficient action.

15 Another object is to provide in a device of the above type practical means whereby the injurious effects of breaking electric current are substantially eliminated.

20 Another object is to provide reliable and effective means whereby the chances of accidental grounding or short-circuiting of the electric current or injury therefrom are reduced to a minimum.

25 Other objects and advantages of this invention will appear from the detailed description and the features of novelty will be particularly pointed out in the claims.

In the drawing accompanying the specification and forming a material part thereof.

30 Fig. 1 is an elevational view of a stand embodying our invention and showing in vertical cross-section the automatic switch and means for preventing tampering with the terminals on the stand, and showing further an iron in "on" and "off" position (shown in dotted lines) with reference to the stand;

Fig. 2 is a cross-sectional view in plan of the automatic switch and terminal operating mechanism cut along line 2—2 of Fig. 1;

40 Fig. 3 is a detailed cross-sectional view along line 3—3 of Fig. 1 of the mechanism for guarding and preventing tampering with the terminals on the stand showing the said mechanism in position when the iron is not in contact with the terminals; and

45 Fig. 4 is a similar cross-sectional view showing this mechanism in position with the iron in contact.

50 Referring in detail to the drawing 10 represents a base preferably of metal having the short pillars, 11 on which is mounted the support 12 for the iron. Secured to the

base and underneath the support is the casing 13 enclosing the automatic quick-break switch mechanism which will now be described.

Secured to the bottom of the casing is the insulating block 14 carrying the binding posts 15 for the lead wires 16 which go to the electric mains. These binding posts make electrical contact with the contact clips 16' secured to said insulating block 14 and insulated from the casing. Extending from the support 12 into the casing through a threaded bushing 17 is the pin 18 having a flange 19 which carries a transverse bar 20 of insulating material. This pin is adapted to be pushed down by the weight of the iron 21 when the same is placed on the support. The bar 20 will then operate a pair of links 22, 22' pivoted as at 23 in the hangers 24, 24' suspended from the top of the casing and insulated therefrom by the bar 24* of insulating material. Secured to an insulating block 25 in one end of the casing are the conducting plates 26, 26' carrying the metallic ears 27, 27' in which are pivoted as at 28 a pair of preferably U-shaped contact arms 29, 29'. A spring 30 is secured at one end as at 31 respectively to each of the contact members 29, 29' while the other ends are connected as at 32 to each of the free ends of the links 22, 22'. Secured to the conducting plates 26, 26' and in electrical contact therewith are the contact clips 33, 33' adapted to receive the forward ends of the links 22, 22' which remain always in contact with said clips although said ends move vertically relative thereto. Normally, the pin 18 projects from the casing above the support 12 with the flange 19 held flush with the underside of the top of said casing by the downward tension of a spring C carried on the bolt B extending through the bar A secured on the undersides of the links 22, 22' adjacent the rear ends thereof.

The operation of the automatic switch and the function of the construction just described will now be readily understood. When the iron 21 is placed in position on the support its weight pushes this pin down into position shown in Fig. 1 and the transverse bar 20 in turn pushes down the links 22, 22' thus extending the spring 30 and

forcing the U-shaped contact members 29, 29' into the contact clips 16, 16'. The conducting plates 26, 26' are now alive and conduct the current to the spring clips 33, 33' electrically connected thereto, which in turn conduct the current to the links 22, 22'. The links 22, 22' have thus been made alive and will conduct the current to suitable terminals at the rear of the stand. When the iron is lifted from the support the pin 18 returns to its normal position releasing the links 22, 22' which move upward and at the same time carrying up the springs 30 in the direction of travel of the links. When the springs 30 pass beyond the line of centers 34 between the pivot 28 and the points 31 where the springs are attached to the contact member 29, the spring will be extended and with a quick jerk pull these contact arms 29, 29' out of contact with the clips 16, thus quickly breaking the circuit. The relative disposition and location of the parts is such that the maximum upward and downward motion of the forward ends of the links 22, 22' necessary to operate the springs 30 as just described does not move these links out of contact with the clips 33, 33'. In this way, the circuit for the rear contacts on the stand is broken the moment the weight of the iron is taken off the pin and no matter how much time is consumed in completely moving the iron from the support the rear terminals on the stand will be dead before the contacts on the rear of the iron are completely out of contact with these terminals thus eliminating any arcing at the rear of the iron.

It will be understood also that when the iron is placed in position on the support the contacts on the rear of the iron register with the terminals on the stand before the circuit is made through the contact members 29, 29', the long leverage through the links 22, 22' effecting a sufficient upward travel of the terminals 35, 35' to receive the contacts 39, 39' before the forward end of said links have moved down beyond the line of centers 34.

In connection with the automatic quick-break switch mechanism that has just been described any form of terminals at the rear of the stand in electrical contact with the links 22, 22' and any suitable form of contacts on the rear of the iron adapted to make contact with these terminals may of course be used. In the drawing we have shown a particularly advantageous form of construction for these rear terminals and contacts on the iron which will now be described.

Pivoted to the rear ends of the links 22, 22' are hollow terminals 35, 35' insulated from each other and adapted to move vertically within the recesses 37, 37' in the insulating casing 38, mounted at the rear of the

casing 13. Extending from the rear of the iron are contact members or plugs 39, 39' adapted to enter the hollow terminals or sockets 35, 35'. The insulating material of the casing 38 is divided as at 40 to provide a recess for rollers 41, 41' of insulating material normally disposed over the terminals 35, 35' which protect these terminals from tampering from the outside, and prevent short circuits and grounds by parts that may possibly drop in through the openings 37, 37'. A recess 42 is formed in the insulation 36 for the spring 43 seated at one end on the bottom of the recess and abutting at the upper end against a block 44 adapted to be pushed down by a projection 45 extending from the rear of the iron and adapted to move vertically with the iron in the recess 46 disposed above said block. When the links 22, 22' have been forced down at the forward ends by the operation of the pin 18 the terminals 35, 35' move up against the balls 41, 41' and force these into the recess 40 as shown in Fig. 4. At the same time, the rear contact members 39, 39' have registered in these terminals to supply current to the iron and the projection 45 has moved through the recess 46 and pushed the block 44 down comprising the spring 43. When the iron is removed the spring 43 will return the block 44 to its normal position thus forcing the rollers 41, 41' out of contact into their normal position above the terminals 35, 35' and blocking the recess 37, 37'. It is seen that in this way the rear terminals of the iron are completely protected from tampering and insulated and hidden from the outside when the iron is not being heated.

Briefly outlined, certain dominant features of the action of this apparatus are as follows: The repeated making and breaking of the electric circuit is rendered harmless by the snap switch arrangement, a feature of peculiar value in the relation in which it is herein set forth by reason of the great number of breaks occurring in the practical use of this apparatus. Furthermore, the chance of short-circuiting which here requires special consideration due to the unskilled character of users of this apparatus, is substantially eliminated without sacrifice of the convenience and rapidity with which the connection may be made and broken. The connection furthermore is of a low resistance type constantly tending to maintain its contacts by their wiping action in excellent condition. It is also to be noted that both of the electric lead wires are broken, thus killing both of the terminal contacts and reducing the chance of grounding as well as of short-circuiting.

It will thus be seen that there is provided apparatus in which the several objects of this invention are achieved and which is

well adapted to meet the conditions of hard practical use.

As various possible embodiments might be made of the above invention and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:—

1. In combination with an electric iron having contacts thereon, an electric heating stand having electrical terminals for said contacts adapted to make connection therewith when the iron is upon the stand, means adapted to be operated by the weight of the iron when placed in position on the stand to connect said terminals to the electric supply and means whereby said terminals are disconnected from the supply when the iron is moved from the stand and before said contacts are moved out of contact with said terminals.

2. In an electric heating device for electric irons and the like, a quick-break switch comprising a stationary member of conducting material, a contact member in electrical contact with said stationary member, another contact member electrically connected to the electric supply, a contact arm pivoted to said stationary member, a spring member secured at one end to the free end of said arm, and means whereby said arm is forced into contact with said contact member when the other end of the spring member is below the line of centers joining the pivotal center of the arm and the point at which said spring is secured to said arm, and forced out of contact when the other end of said spring member is above said line of centers.

3. In an electric heating stand, a pin, a bar carried by said pin, a pivoted conducting link disposed beneath said bar in operative relation thereto, a contact member adapted to contact with said link, a stationary member in electrical contact with said contact member, another contact member electrically connected to the electric supply, a contact arm pivoted in said stationary member adapted to make contact with said last mentioned contact member and a spring secured at one end to said arm and at the other to the free end of said link, as and for the purpose described and specified.

4. In an electric heating stand a pin, a bar carried by said pin, a pivoted conducting link disposed beneath said bar in operative relation thereto, a contact member adapted to contact with said link, an electric terminal carried by said link, a stationary member in electrical contact with said

contact member, another contact member electrically connected to the electric supply a contact arm pivoted in said stationary member adapted to make contact with said last mentioned contact member and a spring secured at one end to said arm and at the other to the free end of said link as and for the purpose described and specified.

5. The combination of an electric apparatus carrying electric contacts of an electric heating stand having terminals for said contacts adapted to make connection therewith when the iron is upon the stand, means actuated by the weight of the apparatus when placed in position on the stand for connecting the terminals to the electric supply and disconnecting the same from the supply before said contacts are moved out of contact with the terminals.

6. The combination with an electric iron carrying electrical contacts of a stand having a supporting member for the iron and terminals for said contacts adapted to make connection therewith when the iron is upon the stand, and a switch mechanism to connect said terminals to the electric supply and adapted to disconnect said terminals from the electric supply before said contacts have moved out of contact with said terminals, comprising a pin normally projecting from said support, a bar secured to said pin, a conducting link pivotally disposed beneath said bar in operative relation thereto and adapted to be pushed down by the weight of the iron acting on said pin, when said iron is placed in position on the support, and means operated by the operation of said link for electrically connecting said terminals to the electric circuit and for disconnecting the same from the circuit before the contacts have moved out of contact with the terminals.

7. In an electric heating stand, in combination with an electric apparatus carrying electrical contacts, electric terminals on said stand adapted to make contact with the contacts on the apparatus when the latter is placed in position on the stand, an electrical contact member, means for connecting the latter to said terminals, another contact member connected to the electric supply and means for electrically connecting said contact members after said contacts on the apparatus have moved into contact with said terminals.

8. In an electric heating stand in combination with an electric apparatus carrying electric contacts, an electrical contact member, a conducting member adapted to contact with said contact member, an electric terminal connected to said conducting member adapted to make contact with a contact on the apparatus when the latter is placed in position on the stand, another contact member connected to the electric supply and means actuated by the weight of the apparatus when

placed in position on the stand for electrically connecting said contact members after said contact on the apparatus has moved into contact with said terminal.

5 9. In combination with an electric sad iron having contacts thereon, a stand having electrical terminals for said contacts adapted to make connection therewith when the iron is upon the stand, means for connecting said
10 terminals to the electric supply, and means in connection with said connecting means for disconnecting said terminals from the supply before said contacts on the iron have moved out of contact with said terminals.

15 10. In combination with an electric sad iron having contacts thereon, a stand having electrical terminals for said contacts adapted to make connection therewith when the iron is upon the stand, means for connecting said
20 terminals to the electric supply and means adapted to be operated by the removal of the iron from the stand for disconnecting said terminals from the supply before said contacts on the iron have moved out of contact
25 with said terminals.

11. In combination with an electric sad iron having contacts thereon, a stand having electrical terminals for said contacts adapted to make connection therewith when the iron
30 is upon the stand, means for connecting said terminals to the electric supply, and means adapted to be operated by the removal of the iron from the stand for disconnecting said terminals from the supply before said contacts on the iron have moved out of contact
35 with said terminals, said means including a quick-break switch element.

12. In combination with an electric sad iron having contacts thereon, a stand having
40 electrical terminals for said contacts adapted to make connection therewith when the iron is upon the stand, means for connecting said terminals to the electric supply and means adapted to be operated by the removal of the iron from the stand for disconnecting said terminals from the supply before said contacts on the iron have moved out of contact with said terminals, said means including a switch element adapted
45 to simultaneously disconnect both the lead and return conductors of the electric supply.
50

13. In combination with an electric sad iron having contacts thereon, an electric heating stand having electrical terminals for
55 said contacts, said terminals comprising socket members and said contacts on the iron comprising conductors adapted to enter said sockets to make sliding connection with said terminals.

60 14. In combination with an electric sad iron having contacts thereon, an electric heating stand having electrical terminals for said contacts, said terminals comprising socket members and said contacts on the iron
65 comprising conductors adapted to enter said

sockets to make sliding connection with said terminals, and means for locking said sockets against entry of said terminals when the iron is not in position upon the stand.

15. In combination with an electric sad iron having contacts thereon, an electric heating stand having electrical terminals for said contacts, said terminals comprising socket members and said contacts on the iron comprising conductors adapted to enter said
75 sockets to make sliding connection with said terminals, and means for locking said sockets against entry of said terminals when the iron is not in position upon the stand, said means adapted to be operated by the positioning of the iron upon the stand to unlock said sockets. 80

16. In electric press iron construction, in combination, an iron containing an electric heating element, a stand provided with
85 means for leading electric current thereto, means on said iron and stand adapted to lead current into said iron upon said iron being placed in position on said stand, said means comprising circuit making means on 90 said stand and actuating means for said circuit making means adapted to co-act therewith and means adapted to prevent access to electric current within said stand other than by the co-action of said actuating means
95 and said circuit-making means, comprising means in connection with said actuating means adapted to be operated by the co-action of said actuating means and said circuit making means. 100

17. In an electric heating stand for electric irons and the like apparatus, an automatic switch for connecting the electric supply to the iron comprising a pair of contact members connected to the electric supply, a
105 pair of switch members and means for simultaneously actuating said switch members to bring them into contact with said contact members.

18. In an electric heating stand for electric irons and the like apparatus, a quick-make and break switch comprising a contact clip connected to the electric supply, a switch blade pivoted in operative relation to said contact clip, means adapted to be operated
115 to rotate said switch blade about its pivotal point, said means comprising resilient means connected to said switch blade and adapted to be moved relatively to said pivotal point of said switch blade so as to exert a tensile force to produce a downward or upward movement on said switch blade. 120

19. In electric flat iron construction, in combination, an iron, a stand, means adapted to form a circuit-leading current from a
125 portion of said stand through said iron and back and comprising a switch adapted to break said circuit at two points and a single member engaged by said iron and adapted to actuate said switch. 130

20. In electric flat iron construction, in combination, an iron, a stand, means adapted to form a circuit leading current from a portion of said stand through said iron and back and comprising a switch adapted to break said circuit at two points and a member independent of said circuit and engaged by said iron and adapted to actuate said switch.

Signed at New York city, in the county of New York and State of New York, this 15th day of December, A. D. 1919.

ART J. SHIRK.
SOLOMON COHEN.