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COIN CONTROLLED ELECTRIC SWITCH

Filed May 2, 1927

2 Sheets-Sheet 1

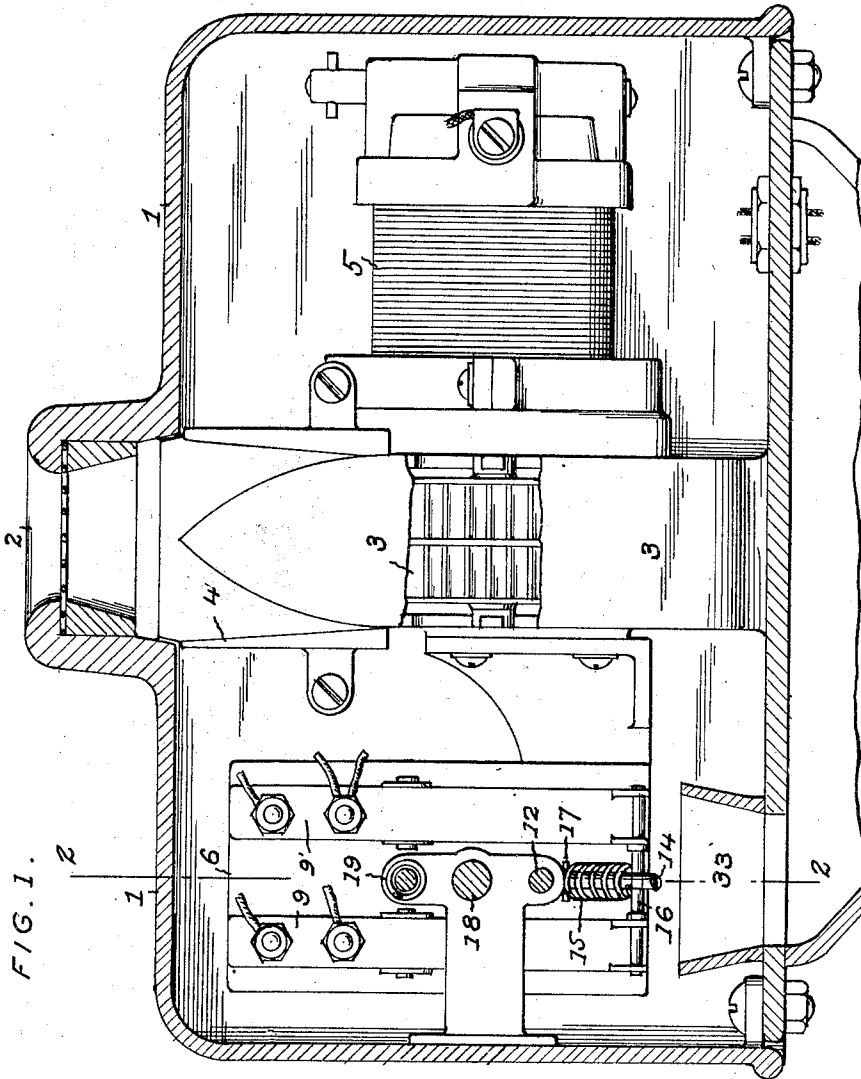


FIG. 1.

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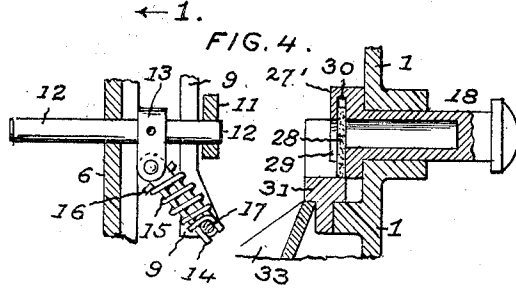
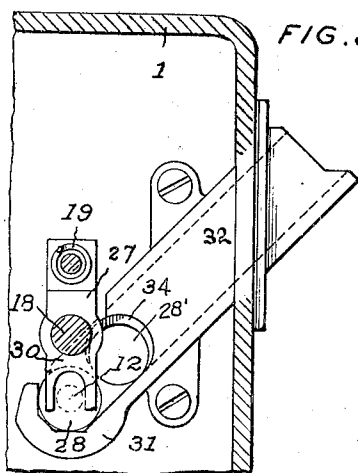
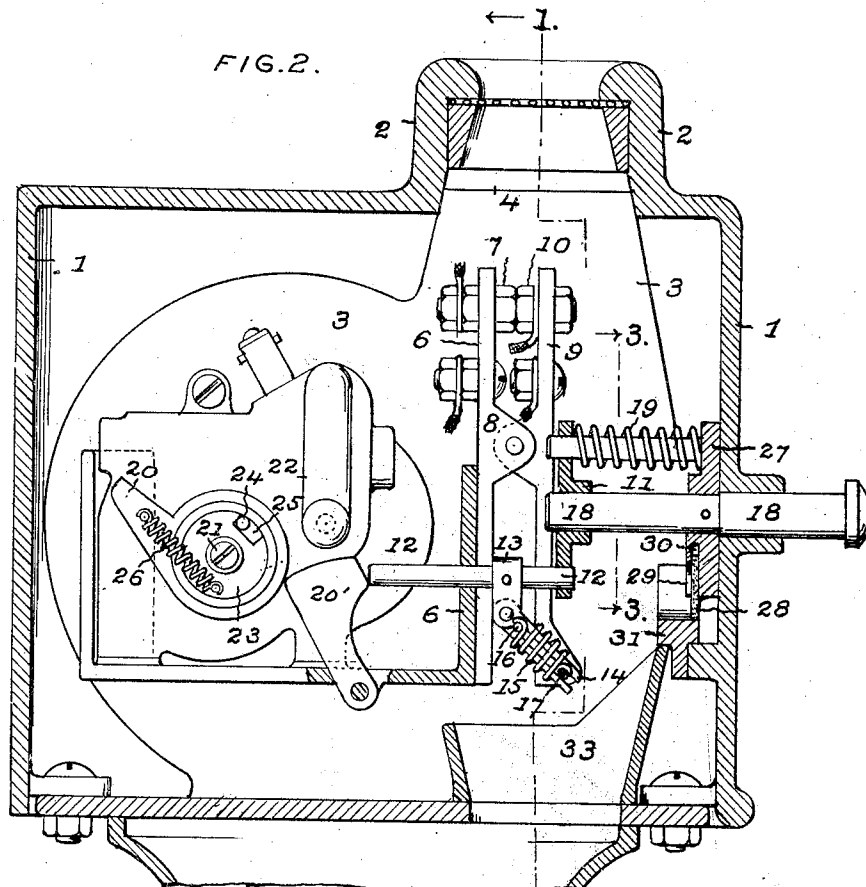
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COIN CONTROLLED ELECTRIC SWITCH

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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COIN-CONTROLLED ELECTRIC SWITCH.

Application filed May 2, 1927. Serial No. 188,189.

This invention relates to that type of coin controlled hot blast drying and like apparatus in which an inserted coin or like token constitutes the coupling means between the manually actuated plunger and the operating toggle mechanism of a make and break switch of the snap type described in my prior application for Letters Patent, Serial No. 114,058, filed June 7, 1926, so that said plunger may operate the normally inactive switch mechanism to a circuit make or closed condition. The subsequent break or opening of the circuit being attained after a predetermined period of time, by a cam mechanism operatively associated with the motor of the apparatus and adapted to force the switch mechanism back into its normally inactive or open condition.

The present improvement has for its object:—To provide a structural formation and combination of parts with a switch mechanism of the above described type, whereby the manually actuated plunger is operatively coupled to the toggle mechanism of the switch by a coin or like token inserted and held by said plunger in its path of movement, and so that with the ending of its active stroke the plunger will release and deposit such coin or token in a suitable receptacle after which the return movement of the plunger is attained by an associated spring the yielding tendency of which is to maintain said plunger in its forward position ready to receive a coin or like token, and in connection with such arrangement of parts provide means whereby on an insertion of an extra or additional coin, the same will be eliminated from the guiding chute of the mechanism and thus avoid choking and rendering the mechanism inoperative, all as will hereinafter more fully appear.

In the accompanying drawings:—

Fig. 1, is a longitudinal sectional elevation on line 1—1, Fig. 2, of a hot blast drying apparatus to which the present invention is applied.

Fig. 2, is a transverse sectional elevation on line 2—2, Fig. 1.

Fig. 3, is a fragmentary longitudinal sectional elevation on line 3—3, Fig. 2.

Fig. 4, is a fragmentary transverse sectional elevation, and a companion to Fig. 2, of a modification.

Like reference numerals indicate like parts in the different views.

The hot blast drying apparatus to which the present invention is shown in associated relation comprises an enclosing shell or housing 1, having an outlet nozzle 2, and containing the rotary air mover or fan 3, the electrical air heating unit 4 and operating electric motor 5, said parts being of any usual form and arrangement. The switch mechanism for closing and opening the electric circuit of the motor 4 and heating unit 5, is the same as the snap type of switch shown in my aforesaid application Ser. No. 114,058, and comprises a fixed base or carrying plate 6 for the pair of stationary contact members 7, and for pivot lugs 8, in which the carrying levers 9—9' of the pair of movable contact members 10, are pivotally mounted. With such construction one of said carrying levers is individual to the current supply to the motor and heating elements of the apparatus, and the other of said carrying levers is individual to the return of said current from said elements. The base plate 6 also carries a guide and stop bracket 11 for the sliding rod 12 which in turn has operative connection through a collar 13 and toggle link 14 with the lower ends of the aforesaid levers 9 of the movable contact members 10 aforesaid. In order to attain the usual snap action of the switch parts, the toggle link 14 is of a longitudinally slotted form, and has pivotal connection at one end with the collar 13 of the push rod 12, and at the other end has sliding engagement through the longitudinal slot with a cross pin 17 carried on the lower ends of the levers 9 aforesaid. Encircling the link 14 is a coiled compression spring 15 having abutment at one end against the cross pin 17 aforesaid, and at its other end against a cross pin or collar 16 on the link 14. The described construction is adapted to operate the same as the ordinary snap switch mechanisms in general use, to wit:—

In an initial movement of the movable contact carrying levers 9, in either direction, the spring 15 is gradually compressed until the links 14 reaches a position a slight distance past a parallel relation with a line cutting the centers of the cross pin 17 and pivot pin of the levers 9, when the stored energy in the spring is automatically re-

leased to complete the movement of the pair of levers 9 in a rapid manner, with corresponding rapid make and break movements between the contact members of the switch mechanism. The opening or break movement of the switch mechanism is of the usual periodic nature and is attained by a revolving cam or tappet 20, forming a peripheral portion of an annular ring or hub which in turn is loosely mounted in manner hereinafter described on a fixed hub 23, on a countershaft 21, which has operative connection with the power shaft of the motor 5 through an intermediate train of speed reduction gearing arranged in a fixed enclosing casing 22 within the main enclosing housing 1.

The cam or tappet 20, at each revolution effects the above mentioned opening movement of the switch mechanism, and the cam or tappet 20, preferably acts through an intermediate rocker block 20' against the adjacent end of the sliding rod 12, of the switch mechanism in an attainment of said initial opening movement.

With a view to avoid any liability of the cam or tappet 20 coming to a stop in the path of the push rod 12 and render the apparatus inoperative, the loose annular hub carrying the cam or tappet has its independent turning movement on the inner hub 23 restricted by means of a stud 24 and an elongated recess 25 carried by and formed in the respective parts. In coacting connection with such construction a spring 26 has connection at its respective ends with the annular and inner hubs aforesaid, and adapted to function in manner set forth in detail in my aforesaid application Serial No. 114,058. Initial closing or make movement of the switch mechanism, is attained by an engagement of a manually actuated push rod or stem 18 with the aforesaid sliding push rod 12 of the switch mechanism. Said push rod or stem 18 has movement in an orifice in the front wall of the enclosing housing 1, with its headed outer end adapted for convenient manual actuation, and is yieldably returned to and held in its normal outward position by an associated spring 19, as shown.

In the preferred form of the present improvement shown in Figs. 1, 2 and 3, the sliding push rod or stem 18 has its path of movement above the path of movement of the sliding push rod 12 of the switch mechanism, and the inner portion of said rod or stem 18, is provided with a fixed head 27 that extends into the path of the push rod 12, while in the construction shown in Fig. 4, the sliding push rod or stem is of a tubular formation arranged in line with the aforesaid push rod 12, and carrying a fixed head 27' substantially similar to the head 27 above described. The fixed heads 27, 27'

above described, extend into the path of the sliding push rod 12, and are both cut away so as to have no direct operative connection therewith, so that the manually actuated push rod can only operate and aid in effecting the closing or circuit make movement of the switch mechanism with the presence in a head 27 or 27', of a coin or token 28 to act as an operative connection between said push rods 12 and 18. The presence of such coin or token 28 at such points in said heads being attained by a detail construction and arrangement of parts as follows:

The portion of either head 27 and 27' in line with the push rod 12 of the switch mechanism, is formed with a longitudinal passage 29 to permit a free and independent reciprocation of the push rod or stem 18 in the absence of a separate means of connection between said stem 18 and the rod 12 aforesaid, and with a view of attain an operative connection between said parts, in a temporary manner, a construction of the parts is provided as follows:—

Transversely of the lower part of a head 27 or 27' and intersecting the passage 29 thereof, a coin or token receiving slot 30 is formed, and in conjunction therewith a rest piece 31 of a saddle form, open at both front and rear ends, as shown in Figs. 2, 3 and 4, is fixedly arranged beneath a head 27 or 27' to provide a support for a coin or token 28 in the transverse slot 29, so that said coin or token may act as a positive connection between the push rods 18 and 12 in effecting the before described initial closing or circuit make movement of the switch mechanism. With the final rearward movement of the manually actuated push rod 18, the coin or token 28 is moved from off the saddle or rest piece 31, and allowed to fall into a receiving chute or container 33 arranged in the interior of the apparatus.

Associated with one side of the head 27 or 27' and the rest piece 31 is an inclined chute 32, extending from the exterior of the enclosing housing 1, and adapted to conduct a coin or token 28 onto said rest piece 31 and into the transverse slot 29 of an aforesaid head 27 or 27'. In the construction shown, the coin passage or channel of the chute 32 is of a narrow rectangular form in cross section, and a rear wall of said channel, adjacent to the rest piece 31 is formed with an opening 34, to permit an extra coin or token 28' which may be in the chute to be moved along with the intended coin or token, and thus prevent said extra coin from forming a holding engagement between the chute 32 and the transverse slot 28 of a head 27 or 27' and thus interfere with the further serial operation of the parts.

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

1. In a time limit electric switch mechanism, the combination of a make and break switch of an electric supply circuit, a manually actuated push rod adapted to move said switch to its circuit make position, a power operated push rod connected to said switch and adapted to move the same to its circuit break position independent of the manually actuated push rod, a coin or token holder and support arranged in a path between said push rods to provide an operative connection between said rods and so that the manually actuated rod may function to move the switch mechanism to its circuit make position, and a chute for conducting a coin or token to said holder and support, said chute having an opening in its rear wall for the passage and escape of an excess coin or token.

2. In a time limit electric switch mechanism, the combination of a make and break switch of an electric supply circuit, a manually actuated push rod adapted to move said switch to its circuit make position, a holding head secured on an inner portion of said push rod and formed with a transverse coin holding slot, a power operated push rod connected to said switch and adapted to move the same to its circuit break position independent of the manually actuated push rod, a coin or token rest piece arranged beneath the holding head aforesaid to maintain the coin or token in the path of the push rods and provide an operative connection be-

tween the same, so that the manually actuated push rod may function to move the switch mechanism to its circuit make position, and a chute for conducting a coin or token to said holding slot and rest piece, said chute having an opening in its rear wall for the passage and escape of an excess coin or token.

3. In a time limit electric switch mechanism, the combination of a make and break switch of an electric supply circuit, a manually actuated push rod adapted to move said switch mechanism to its circuit make position, a power operated push rod connected to said switch and acting to move the same to its circuit break position independent of the manually actuated push rod, the said push rods having movement in separated paths, a holding head secured on the inner portion of the manually actuated push rod on the inner portion of the manually actuated push rod and formed with a transverse coin holding slot in the path of said power operated push rod, a coin or token rest piece arranged beneath the aforesaid holding head to maintain a coin or token in the holding slot of said head, and a chute for conducting a coin or token to said holding head and rest piece, said chute having an opening in its rear wall for the passage and escape of an excess coin or token.

Signed at Waukegan, Illinois, this 28th day of April, 1927.

GEORGE A. BURGESS.