Nov. 26, 1940. W. K. HOWE 2,223,105

ELECTRIC CIRCUIT CONTROLLER

Filed Jan. 29, 1938

FIG. 1.

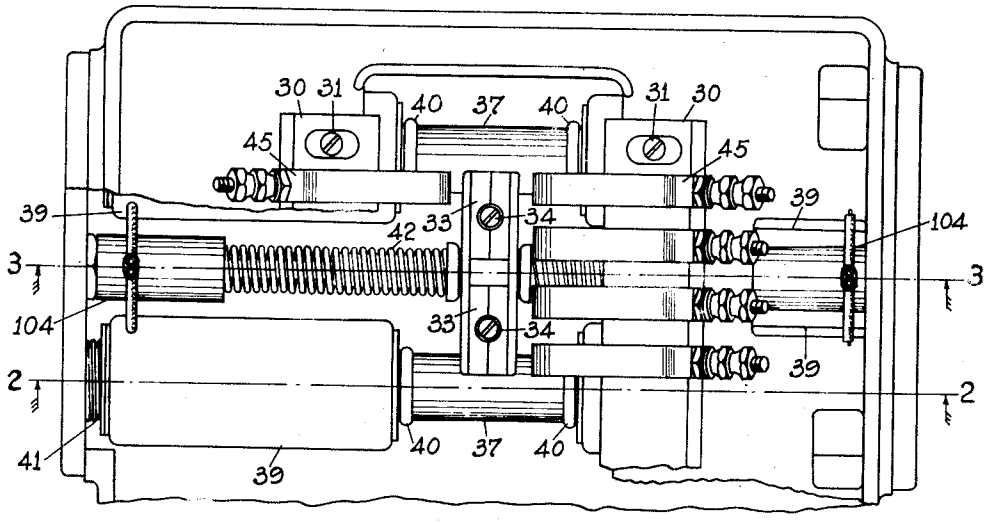
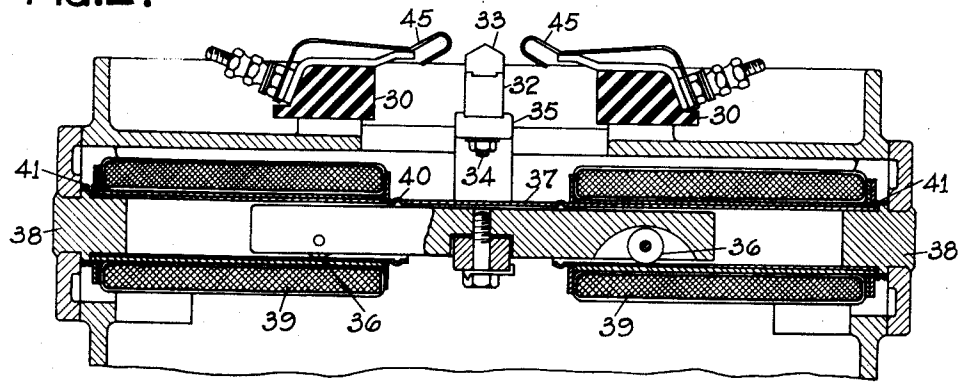



FIG. 2.



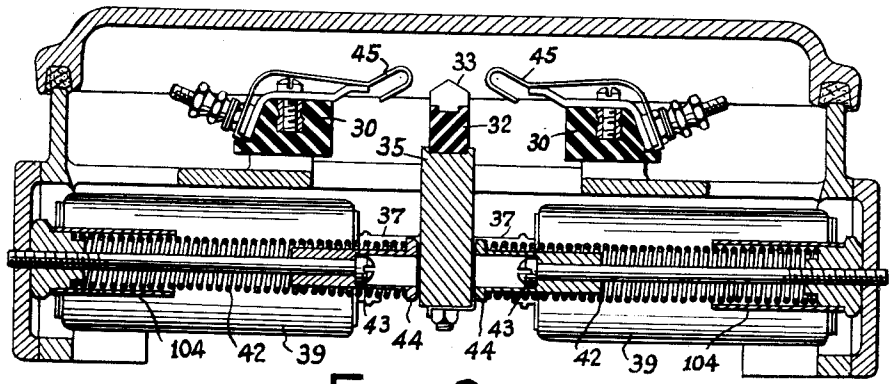




FIG. 3.

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2,223,105

## ELECTRICAL CIRCUIT CONTROLLER

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2 Claims. (Cl. 200—100)

This invention relates to traffic controlling devices for railroads, and more particularly pertains to apparatus employed in the remote control of power operated track switches.

In the remote control of power operated track switches, it is desirable to have the power current for the switch machines controlled locally by suitable circuit controllers capable of handling the heavy currents but which circuit controllers in turn require but a relatively small amount of current to actuate them so that their control by suitable contacts on track relays, locking relays, and the like, may be easily effected through contacts that are much smaller and lighter. In view of this, the present invention proposes to provide a spring centered contactor for a switch machine which is readily capable of accomplishing the above mentioned purposes, which is reliable in its operation and which readily adapts itself to the characteristic controlling features required in the governing of power driven switch machines.

Other objects, purposes and characteristic features of the present invention will be in part obvious from the accompanying drawing and in part pointed out as the description progresses.

In describing the invention in detail reference will be made to the accompanying drawing, in which similar reference characters refer to corresponding parts throughout the several views, and in which:

Fig. 1 is a plan view of one of the circuit controllers;

Fig. 2 is a fragmentary sectional view of the same circuit controller shown in Fig. 1, as viewed on line 2—2;

Fig. 3 is a fragmentary sectional view of the circuit controller shown in Fig. 1, as viewed on line 3—3.

Although the specific form of this invention shown is directly applicable for use with a particular type of power operated switch machine such, for example, as that shown in my prior Patent No. 1,466,903, dated September 4, 1923, it is to be understood that with minor changes the invention can be applied to the control of track switches by various other types of switch machines.

The circuit controller is an electrically operable controller which has its movable contact block biased in a center position and which is mechanically independent of the operating mechanism of the switch machine, and will be hereinafter referred to as the motor circuit controller.

The motor circuit controller consists of two stationary contact blocks **30** constructed of suitable insulating material and secured in place at opposite sides from a movable contact block **32** by screws **31**, with a plurality of resilient contacts **45** secured to each stationary block. The movable contact block **32** is a contactor constructed of insulating material having contact bars **33** secured thereto by screws **34** in such a manner that when the movable block is operated to the right the contact bars can be used to close contacts on the right-hand stationary block for two independent circuits and in such a manner that when the movable block is operated to the left the contact bars can be used to close contacts on the left-hand stationary block for two independent circuits. It is, of course, to be understood that other contact arrangements could as well be provided in accordance with specific conditions encountered in practice.

The movable contact block **32** is secured to a yoke **35**, which in turn is secured at the bottom to the center of two solenoid plungers which are constructed of magnetic material and are provided with rollers **36** for allowing them to slide freely within the tubes **37** in which they are enclosed. The tubes **37** extend horizontally between the opposite sides of the switch machine frame, and beneath the stationary contact blocks **30**. Each of the tubes has an opening at the bottom through which the yoke is secured to the plungers and the length of each opening is sufficient to allow for the movement of the yoke to both of the operating positions of the circuit controller. Each tube is secured in place by studs **38** which are fitted into the ends of the tubes and riveted to the sides of the switch machine frame.

A coil winding **39** is fitted over each end of the tubes **37** and it is prevented from sliding forward toward the middle by the enlarged sections **40** in those tubes. Further movement of the coils is prevented by springs **41** at the outside ends of the coils.

The length of the coil windings and the length of the solenoid plungers is such that the plungers are attracted with maximum magnetic force toward whichever of the windings **39** is energized.

The movable contact block **32** is biased in a mid-position by springs **42** which are held in place by studs **43** threaded into the frame of the switch machine, and the longitudinal movement of the biasing springs is limited by the tubular members **44** which slide longitudinally within the limits of the heads of the studs **43** (Fig. 3). The

enlarged heads of the tubular members **44** holds the biasing springs **42** in place at one end and the tubular members **104**, together with sleeves fitted over those tubular members, hold the springs in place at the other end.

Having described my invention it is to be understood that various modifications, adaptations and alterations may be applied to the specific form shown to meet the requirements of practice, without in any manner departing from the spirit or scope of the present invention except as limited by the appending claims.

What I claim is:

1. In a power operated switch machine, a circuit controller having opposed stationary contacts extending inwardly toward each other from opposite sides of the machine, tubes extending from one side to the other of said machine and beneath the stationary contacts, an electric coil around each end of each tube, a solenoid plunger in each tube and of sufficient length to be attracted by the energization of the winding on the end of the tube containing it, a yoke secured to said plungers through slots in said tubes which are of sufficient length to allow movement of said yoke between said stationary contacts, a compression spring extending between each side of said yoke and the adjacent side of the machine, a tubular member for each spring and loosely fitted within the inner end of the spring, a head on each tubular member and projecting over the inner end of its spring and bearing on the side of the yoke, a stud extending longitudinally through the center of each tubular member and its spring and fixed at one end to the side of the machine, a head on the other end of the stud, a bore in each tubular member slidably receiving the head end of the stud, a shoulder preventing the tubular member from sliding past the stud head, and a contactor secured to the top of the yoke in position to make contact with the stationary contacts.

2. In a power operated switch machine, a circuit controller having opposed stationary contacts extending inwardly toward each other from opposite sides of the machine, a slidable yoke, means for operating the yoke between said stationary contacts, a compression spring extending between each side of said yoke and the adjacent side of the machine, a tubular member for each spring and loosely fitted within the inner end of the spring, a head on each tubular member and projecting over the inner end of its spring and bearing on the side of the yoke, a stud extending longitudinally through the center of each tubular member and its spring and fixed at one end to the side of the machine, a head on the other end of the stud, a bore in each tubular member slidably receiving the head end of the stud, a shoulder preventing the tubular member from sliding past the stud head, and a contactor secured to the top of the yoke in position to make contact with the stationary contacts.

WINTHROP K. HOWE.