Jan. 15, 1924.

1,480,918

C. M. SZIRMAY

ELECTRIC SCREEN CURTAIN CONTROL

Filed July 12, 1922

2 Sheets-Sheet 1

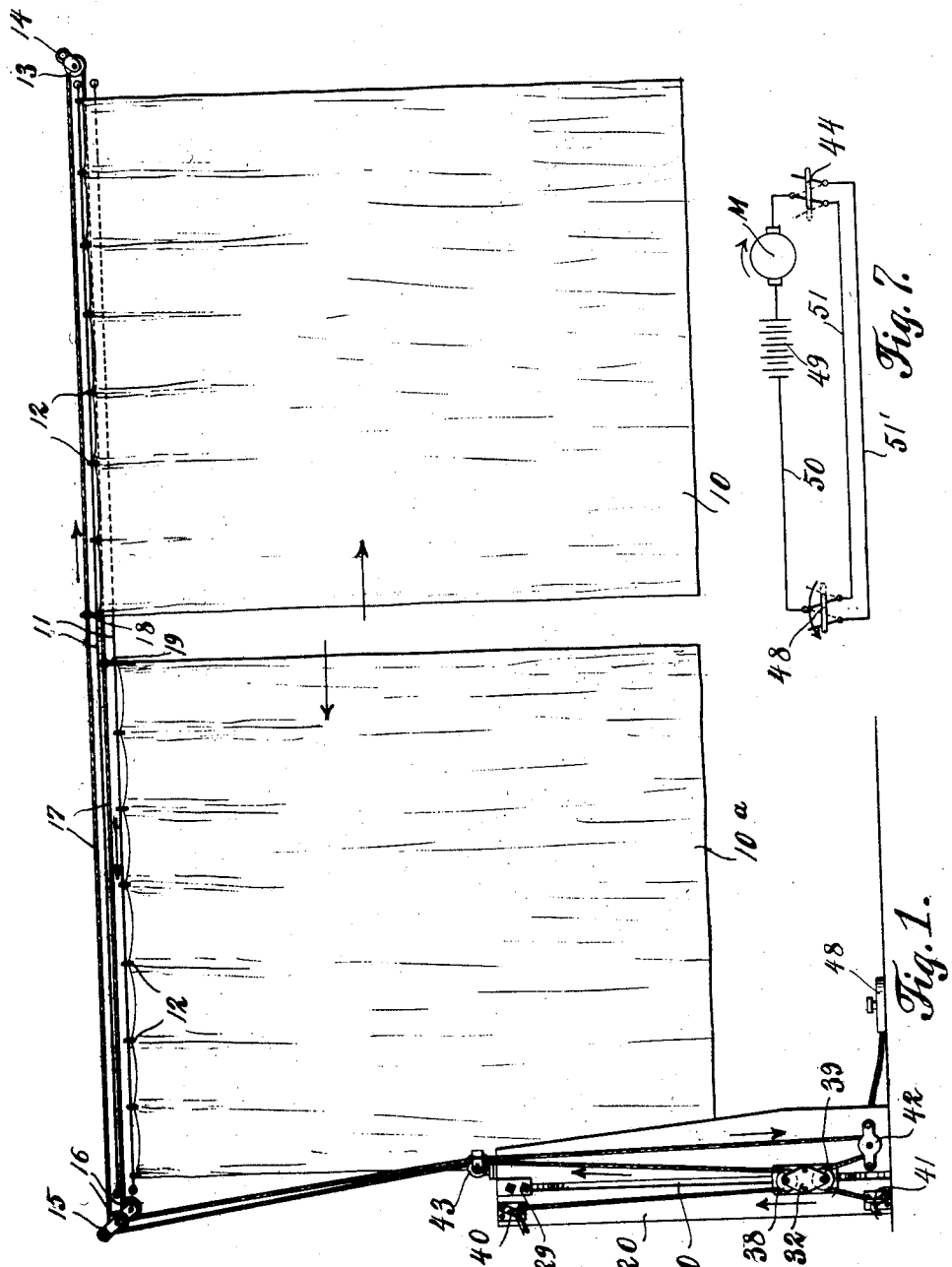



Fig. 1.

Fig. 2.

Inventor

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By his Attorney

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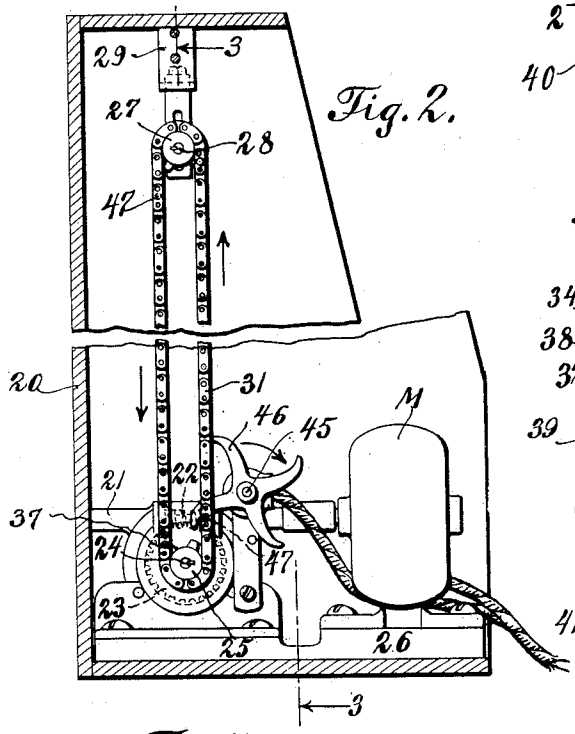



Fig. 2.

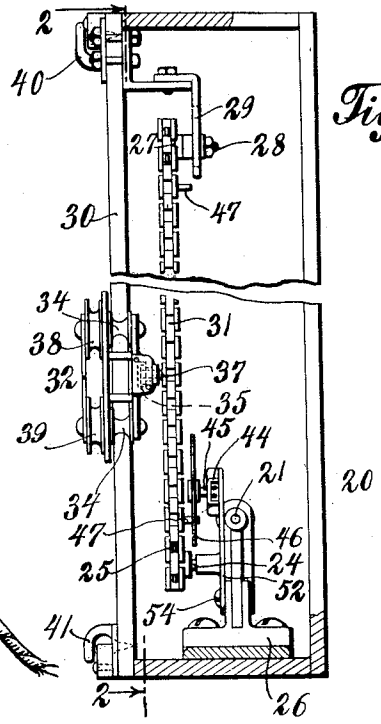



Fig. 3.

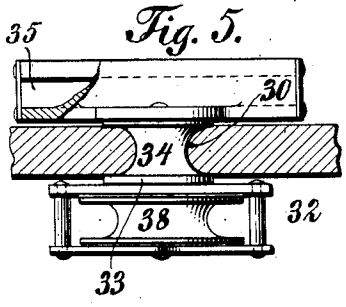



Fig. 5.

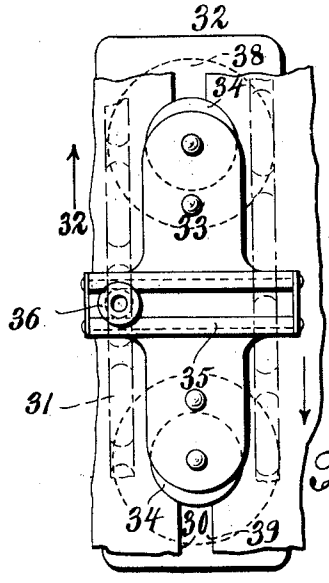



Fig. 4.




Fig. 8.

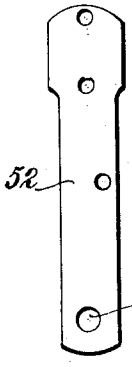



Fig. 6.

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Patented Jan. 15, 1924. 1,480,918

# UNITED STATES PATENT OFFICE.

CHARLES M. SZIRMAY, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ELECTRIC SCREEN CURTAIN CONTROLS, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## ELECTRIC SCREEN-CURTAIN CONTROL.

Application filed July 12, 1922. Serial No. 574,420.

*To all whom it may concern:*

Be it known that I, CHARLES M. SZIRMAY, a citizen of the United States, residing at the city of New York, borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Screen-Curtain Controls, of which the following is a specification.

This invention relates to theatrical appliances and has particular reference to automatic or mechanical means for operating theatre curtains.

Among the objects of the invention is to provide improved means for opening or closing theatre curtains or the like, irrespective of the position or direction of movement thereof or the number of parts comprising the curtains, means being provided for initiating the curtain in either direction manually from any desired point and for stopping the movement of the curtain at a predetermined place either automatically on manually.

Another object of the invention is to provide curtain operating mechanism which will occupy the least possible amount of stage space and which therefore may be utilized in connection with a stage of the smallest dimensions, leaving a screen space practically as large as the stage opening.

A still further object of the invention is to provide a screen curtain for its purpose not only to protect the screen from dust, dirt, or the like but also and primarily to seclude the screen at all times except when a picture or the titles or other descriptive matter are being displayed thereon, thereby overcoming the objectionable unsightly disclosure of the white screen before or after the running of the picture.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a diagrammatic elevation of a two part curtain indicating my improved operating means associated therewith.

Fig. 2 is a vertical section of the operating mechanism substantially on the line 2—2 of Fig. 3.

Fig. 3 is a vertical section on the broken line 3—3 of Fig. 2.

Fig. 4 is an enlarged side elevation of the pulley carrier.

Fig. 5 is a top plan view of the same.

Fig. 6 is a detail view of the switch supporting bracket at or near the motor.

Fig. 7 is a diagram of the wiring of the motor and switches.

Fig. 8 is a detail of the slide or block.

Referring now more specifically to the drawings I indicate a curtain comprising two parts 10 and $10^a$ suspended from any suitable overhead supporting means such as wires 11 so that the curtain sections may be moved freely therealong without interference even though they may overlap somewhat when closed, the means for suspending the curtain sections from the overhead supports being any suitable form of snaps or hooks 12 so that the curtain may be detached from the support at any time. The wires 11 or their equivalent may be of a length substantially equal to the entire stage space, whereby the curtain when opened may be masked close to the end walls of the stage, leaving the screen or rear wall space unobscured.

In one upper corner of the stage space is mounted a pulley 13 in a fixed bracket 14, and in the opposite corner is mounted another bracket 15 in which are journaled two pulleys 16 which preferably are mounted on the same axis although the diagram of Fig. 1 indicates them dispersed or on different axes. Operating over these three pulleys 15 and 16 is a flexible connection 17 such as a rope or cord having any suitable attachment means at 18 and 19 with the respective curtain sections 10 and $10^a$. These points of connections 18 and 19 are secured positively by any suitable means to the two

respective parallel runs of the connection, or cable as it will be referred to hereinafter irrespective of its specific construction. Hence when the cable is actuated with respect to the pulleys the two connections 18 and 19 will move in opposite directions toward or from the respective pulleys, thereby causing the curtain sections to both move simultaneously toward their open or closed position. In Fig. 1 the curtain sections may be presumed to be moving toward their open position, the other movable parts being in motion in accordance with the several arrows shown.

At any desired place either on the stage or remote therefrom is a casing 20 indicated as of upright nature and within which is housed a suitable power device such as a motor M adapted for repeated or successive rotation in the same direction and having a shaft 21 on which is secured or formed a worm 22. Meshing with this worm is a worm wheel 23 fixed upon a counter shaft 24 and upon which is secured a sprocket wheel 25. The gearing just described may be secured upon the base of the motor or upon a different base as may be preferred, but as shown the gearing is supported upon a base 26 which may be secured adjacent to the motor and on any suitable portion of the casing 20.

In the same plane of the sprocket gear 25 is another similar gear 27 journaled at 28 upon a bracket 29 adjustable toward or from the first mentioned sprocket gear, in the form shown this adjustment being vertical. The bracket 29 is adjusted up or down along a slot 30 formed along one side of the casing. It will be understood that the sprocket wheels just described are adapted for rotation around fixed axes except as to any necessary adjustment of the upper bracket. Operating over these sprocket wheels is an endless element such as a sprocket chain 31 having removable links for making the effective length of the chain greater or less according to the intended extent of movement of the curtain sections. In other words in each installation it will be presumed that the chain 31 will make one complete rotation around the wheels 25 and 27 for each complete opening movement and return of the curtain. Hence if the curtain space is smaller the length of the chain will be proportionately reduced and the adjustable bracket 29 will be lowered accordingly. Likewise if the curtain space is greater the bracket 29 will be elevated and the chain lengthened.

Operating up and down along the slot 30 is a pulley carrier 32, the same comprising a body 33 in which are journaled upper and lower anti-friction rollers 34 maintaining the carrier in proper upright position and adapted for practically free movement along the slot, a portion of the body projecting freely through the slot. On one side of the body is formed a rigid slide-way 35, the axis of which is transverse to the slot 30 or the direction of movement of the carrier, and in this slide-way is a roller or block 36 movable from one end of the slide-way to the other, and extending between this block 36 and any selected link of the chain is an anchor pin 37, one end of which may be swiveled or journaled in the block if desired or the pin may be journaled for rotation in the chain link. On the other side of the slotted wall the carrier is provided with upper and lower direction pulleys 38 and 39 respectively.

At the top and bottom of the casing 20 are shown hooks 40 and 41 to which the ends of the cable are secured with a proper degree of tension. The end portions of the cable are guided under and over the respective pulleys 38 and 39, and one of the cable ends is thence guided over a fixed pulley 42 shown at the bottom of the casing. The intermediate portions of the cable between the pulleys 16 and the pulleys above described at or on the casing or carrier may be guided over or around any suitable guide or direction pulleys 43 located anywhere according to the position of the motor casing and its relation to the pulleys 16. For example I show a pair of pulleys 43 swiveled or otherwise suitably fixed to the upper end of the casing 20. These pulleys 43 may operate around the same or different axes but will always roll in opposite directions. With the pulleys 13 and 16 suitably located above the supporting wires 11 it follows that the curtain sections may be actuated to collapse close against the end walls of the stage where they will occupy the least possible amount of space.

The mechanism is so constructed and arranged that when the curtain sections are in either extreme position the anchor pin 37 will be either at the top of the sprocket wheel 27 or at the bottom of the sprocket wheel 25, so that when the motor is subsequently started the anchor pin and the carrier actuated directly therefrom and thereby will be moved positively forward in a direction opposite from that in which it was last moved. When the carrier is thus moved up from its lowermost position or down from its uppermost position one bight of the cable will be lengthened and the other bight of the cable will be shortened to the same extent, the respective bights of the cable being thus the parts passing around the carrier pulleys 38 and 39. In the illustration it may be understood that the carrier is moving upward from just above its lowermost position and hence the lower bight of the cable is being lengthened causing the point of connection 19 between

the cable and the curtain section $10^a$ to be operated toward the left at twice the speed of movement of the carrier. Supposing therefore that the effective run of the carrier is five feet, each curtain will be moved laterally ten feet, providing for a stage opening of twenty feet. The cable paying out at the upper bight will provide for the movement of the curtain section 10 toward the right in this illustration.

Any suitable means may be provided for actuating the carrier. To this end I provide an electric motor M which is presumed to operate only in one direction, and any suitable means either manual or otherwise may be provided to start and stop the motor. For this purpose I prefer to use an automatic three point switch 44 adjacent to the motor, this switch having an axle 45 upon which is fixed as by screw threads a four armed star wheel 46, which likewise is adapted for successive step by step rotations in the same direction and hence a similar rotation of the axle 45. As shown in Fig. 2 each arm or point of the star wheel 46 is adapted to extend across or adjacent to the chain 31 so as to lie in the path of the trip pin 47 connected to any desired link of the chain. I show two of these trip pins located at opposite links of the chain. The location of the automatic switch and its star wheel is so designed with respect to the normal idle position of the anchor pin, as above described, that either pin 47 will have impinged against the adjacent arm 46 and turned the same far enough to actuate the switch to stop the motor and moving the next succeeding arm of the star wheel into the path of the next succeeding trip pin of the chain when the chain is given another half rotation around the sprocket wheels.

Located at any desired place, such for example as in the manager's office, within reach of the operator of the projecting apparatus, or at the console of the organ within reach of the organist, I provide a manual three point switch 48 in circuit not only with the motor and source of energy 49 through a main line 50 but also any multiple circuit with the automatic switch 44. In the diagram of Fig. 7 it may be assumed that the manual switch has just been moved toward the left as per the arrow, thereby completing the circuit through the main line 50 on the one side of the motor and the line 51 on the other side of the motor, this presumption coinciding with the illustration of Fig. 1. When the carrier 32 approaches its highest position with the anchor pin 37 at the top of the sprocket wheel 27 the trip pin 47 next approaching the star wheel will actuate the star wheel and shift the automatic switch 44 to the dotted line position of Fig. 7, thereby stopping the motor, and the curtain sections will of course be open or spaced from each other. When the curtain is to be closed subsequently any authorized person by shifting the switch 48 from the dotted line position of Fig. 7 will again start the motor, the current being completed through the main line and the branch line 51′, and so the motor will actuate the carrier to its lowermost position and be stopped as before by the actuation of the star wheel. It will be understood that any number of manual switches may be provided with suitable wiring so that more than one official may control the operation of the motor. Moreover one or more of the manual switches may be depended upon for starting as well as stopping the motor if the automatic switch be not employed.

The automatic switch as shown is secured in any suitable manner to the upper end of a bracket 52 whose lower end is attached as through a hole 53 to any suitable fixed part of the structure such as the base 26, the bracket being clamped as by means of a binding screw 54. Thereby the automatic switch may be suitably located with respect to the chain and trip pins. Again, the star wheel 46 being shown with curved arms or points may be attached to the axle 45 so that the points of the arms may extend either toward or away from the direction of movement of the trip pins.

It will be noted that the anchor pin 37 will follow the direction of the chain link to which it is attached and hence it will move upward on the uprun of the chain and downward with the down run of the chain in two different parallel lines and on opposite sides of the median plane of the slot 30. See Fig. 4. Hence the sliding block or roller 36 is provided in the slide-way 35 for the the lateral shifting of the block and anchor pin from one side of a sprocket wheel to the other as the anchor pin passes over or around the same. As suggested by the arrows on Fig. 2 the anchor pin is about to pass beneath the lower wheel 25 and come to rest at the lowest point, and in so doing the slide will move toward the right until it reaches the median plane of the slot. On the next movement of the motor the anchor pin will be moved around the next quarter of the sprocket wheel 25 and the block 36 will complete its movement toward the right and then will follow the uprun of the chain until the sprocket wheel 27 is reached. It will be observed also in this connection that the starting and stopping movements of the pulley carrier 32 will be gentle or slow and consequently the curtain sections will be started and stopped gently, due to the harmonic motion of the anchor pin at about the time of stopping or starting from either position of rest. This is a matter of considerable importance not only for the benefit

of the stage fittings but also from the fact that a motor of smaller power may be utilized than if the curtain sections were to be given a sudden start from their position of rest.

*I claim:*

1. In mechanism of the class set forth, the combination with a curtain comprising two independent parts movable toward each other for closing and away from each other for opening, of a single flexible connection fixed to both curtain sections for simultaneous movement thereof, and a rotary power device movable successively in the same direction for both the opening and closing of the curtain.

2. In a device of the class set forth, the combination with a curtain movable in succession in opposite directions to its open or closed positions respectively, and a motor, of a pulley carrier having a pair of independent pulleys thereon, a cable attached to the curtain and guided over said pulleys, means to anchor the ends of the cable, and means to reciprocate the pulley carrier from the motor.

3. In mechanism of the class set forth, the combination with a curtain adapted to move in opposite directions to closed and open positions respectively, a cable connected to the curtain for moving it, and a power member adapted for repeated rotation in the same direction, of a reciprocating member for actuating the cable in opposite directions in alternation, and connections between the power member and the reciprocating member.

4. A device as set forth in claim 3 in which the extent of movement of the curtain is greater than the extent of movement of the reciprocating member.

5. Mechanism as set forth in claim 3 in which the power member is a rotary motor and the connections between the motor and the reciprocating member include an endless sprocket chain having one link thereof anchored to the reciprocating member.

6. Mechanism as set forth in claim 3 in which the power member is a rotary motor and the connections between it and the reciprocating member include an endless sprocket chain having one link anchored to the reciprocating member and operating over a sprocket wheel having reduced speed connection with the motor shaft.

7. Mechanism as set forth in claim 3 in which switch means is provided to control the rotation of the power member.

8. Mechanism as set forth in claim 3 in which a plurality of switches are provided to control the starting and stopping of the power member.

9. Mechanism as set forth in claim 3 in which a plurality of three point switches are provided for stopping and starting the power device, the stopping switch being automatic.

10. Mechanism as set forth in claim 3 in which a plurality of three point switches are provided to control the operation of the power member, the starting switch being manually controlled.

11. Mechanism as set forth in claim 3 in which an automatic stopping switch is provided for the power device and the connections between the power device and the reciprocating member include a trip pin for acting upon the automatic switch at a predetermined time.

In testimony whereof I affix my signature.

CHARLES M. SZIRMAY.