

(No Model.)

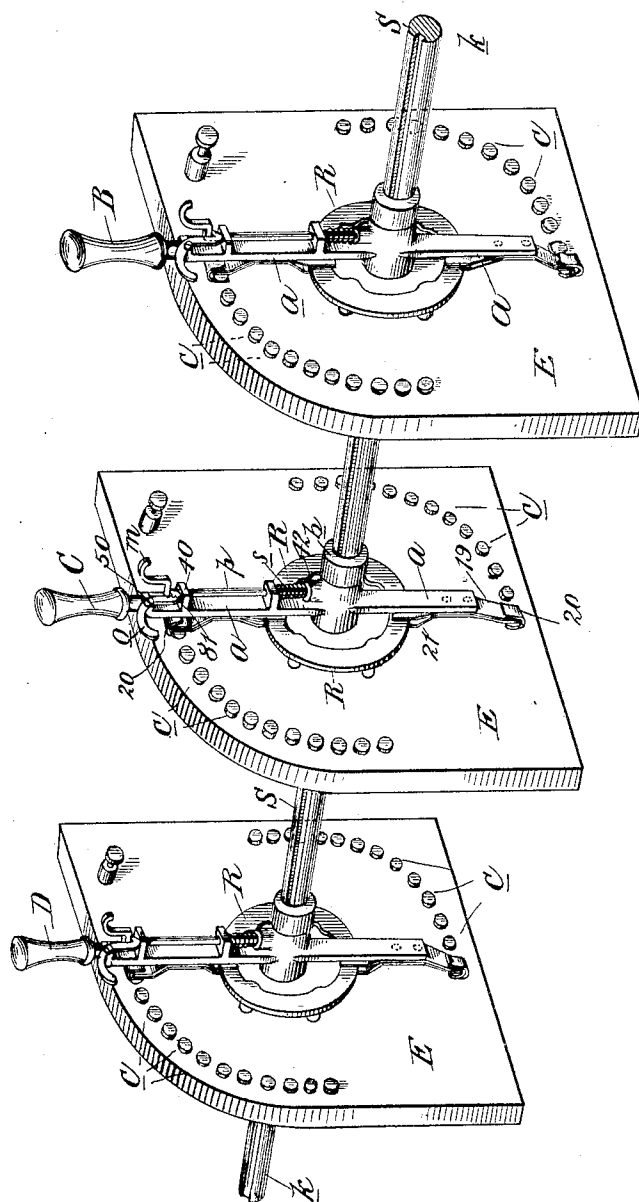
3 Sheets—Sheet 1.

G. L. COLGATE.
INTERLOCKING SWITCH FOR THEATER DIMMERS.

No. 580,929.

Patented Apr. 20, 1897.

Fig. 1.



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(No Model.)

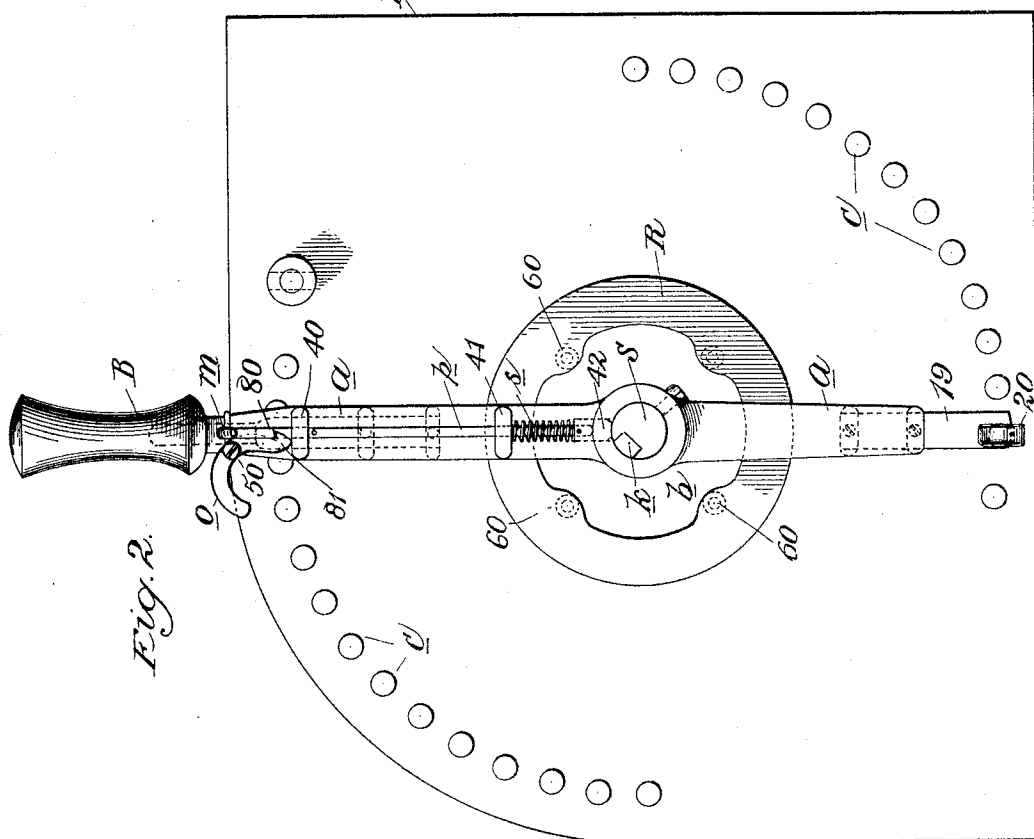
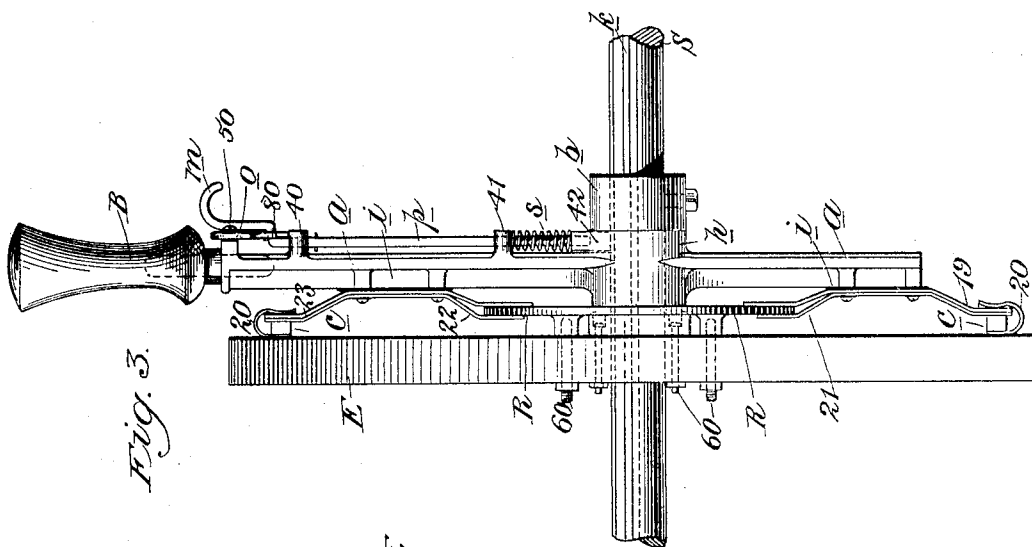
3 Sheets—Sheet 2.

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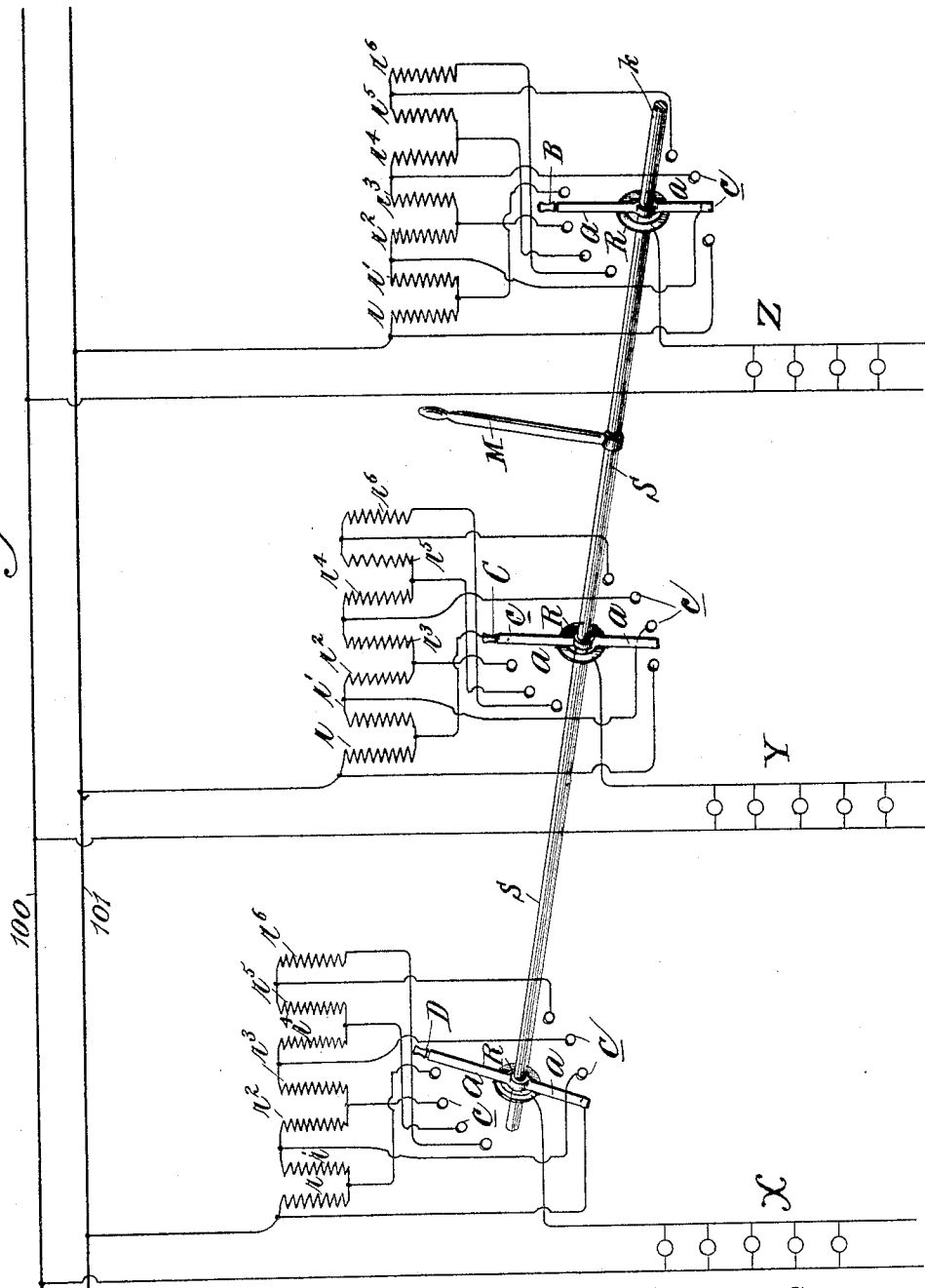
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Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE L. COLGATE, OF WESTFIELD, NEW JERSEY.

INTERLOCKING SWITCH FOR THEATER-DIMMERS.

SPECIFICATION forming part of Letters Patent No. 580,929, dated April 20, 1897.

Application filed November 16, 1896. Serial No. 612,201. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. COLGATE, a citizen of the United States, and a resident of Westfield, in the county of Union and State of New Jersey, have made certain new and useful Improvements in Interlocking Switches for Theater-Dimmers, of which the following is a specification.

My invention is an improvement in switches for controlling the lights in theaters where a variation in the amount of light is required to be made simultaneously and occasionally to a varying extent at different and separated localities or departments.

The object of my invention is to provide means for dimming the footlights to a certain extent, dimming the auditorium-lights to a different extent, retaining the lobby-lights at full power, and extinguishing other lights completely, and then suddenly and at one operation changing all lights to either a predetermined extent or to the starting-point.

I provide a series of variable resistances or rheostats, each having a series of fixed contact-points and an arm carrying a movable insulated contact-point traveling over the surface of the fixed contact-points. It is of importance that this movable contact, forming a circuit-terminal, should be insulated and inaccessible, as such switch-arms are necessarily placed in the wings, where they are subject to contact with numerous uninformed employees. There is such a rheostat and operating-arm for each bank or class of lights desired to be separately controlled, and there is a shaft having a unison-point upon which the entire series of rheostat-arms are journaled. The shaft has a keyway extending its entire length, and each arm has a plunger controlled by a spring which forces the terminal of the plunger against the surface of the shaft, and when in the rotation of the shaft this keyway arrives at the end of a plunger the accompanying arm is locked to the shaft and rotates with it for the remainder of its rotary movement. A latch is provided, however, by which any of the series of arms may have its plunger locked and held against the action of its spring so that the arm may be held out of engagement with the shaft, this action depending upon whether or not a change is to be made

at that time in the circuit or lights controlled by the particular switch-arm in question.

The accompanying drawings illustrate my invention.

Figure 1 is a perspective view of a series of interconnected theater-dimmer arms with means for connecting and disconnecting each arm with the rotary shaft upon which it is journaled. Figs. 2 and 3 show the details of construction and arrangement of such an arm, and Fig. 4 is a diagrammatic plan view of the entire arrangement.

Referring to Fig. 4, the main circuit 100 101 supplies three working circuits containing banks of lamps, as X, Y, and Z, located at separated points in the theater. In the circuit of each such bank of lamps there is a dimmer, consisting of an adjustable resistance combined with fixed and movable contact-points for the purpose of introducing and withdrawing sections of resistance with respect to such circuit. The shaft S is suitably supported free to rotate, and may be rotated by means of the master-arm M. Freely journaled upon shaft S and capable of independent movement are three movable contacts B, C, and D, each of which may be caused to engage with the shaft S at a predetermined point in its rotation and be moved by it to any extent in either direction, or one or more of the arms may be maintained in a stationary or inactive position while the other arms are caused to change their position.

The specific apparatus devised by me to accomplish this useful object is most clearly exhibited in Figs. 2 and 3. The arm *a* is fixed to a hub *h*, journaled upon the shaft S and free to turn thereon. The arm *a* carries projections 40 and 41, and a reciprocating plunger *p* slides in these projections and is normally pressed toward the shaft S by the spring *s*. The plunger *p* terminates in a hook or handle *m*, having a projection 80. A hook or latch *o* is pivoted at 50 to the arm *a*. Upon one end the latch *o* bears a hooked projection 81. The opposite end of *o* is so weighted and proportioned that it has a tendency to cause the hook 81 to engage the projection 80. It results from this that when the plunger *p* is pulled upwardly the hook 81 will engage and hold it in an elevated position against the ac-

tion of the spring *s*, and when the hook *S*1 is disengaged the projection 80 drops below the engaging point of the hook *S*1 and the opposite end of the plunger *p* rides upon the periphery of the shaft *S*. If at this time the shaft *S* be rotated, the groove or keyway *k* in the shaft *S* will engage the end of the plunger 42, and as the shaft is rotated the arm *a* will move with it. The switch-arms *B*, *C*, 10 and *D* are similarly constructed.

For the purpose of insulating each circuit from its arm each arm carries two insulated double contact-points connecting a fixed ring *R* with the arc-shaped arrangement of terminal contacts fixed to the base *E*, of insulating material. This ring *R* is of metal, preferably brass, and is supported upon projections 60, which bolt it to the base *E*. The contact-point 19 engages the lower arrangement of fixed contacts *c*. Its opposite bifurcated terminal 21 engages opposite sides of the fixed ring *R*. At the upper end of the arm *a* the bifurcated terminal 22 engages opposite surfaces of the fixed ring *R*, and the other end or terminal of this contact 23 travels over the upper series of fixed contacts *c*. Both the movable contacts described are firmly fixed to but are insulated from the arm *a* by sheets of insulating material *i*. Such material may be either hard rubber or mica or any suitable insulating material. The ring *R* and the two movable terminals designated by the numerals 19 21 and 22 23 form one terminal of the circuit, and the fixed contacts 35 *c* form terminals of resistance-coil sections, respectively. Upon each fixed contact *c* I prefer to employ a U-shaped spring, such as 20, (shown in Fig. 3,) for the purpose of increasing the pressure of the movable contacts upon the fixed contacts. I may adjust the position of the arm *a* upon the shaft *S*, as regards its latitudinal movement, by rings *b*, having set-screws to engage the surface of the shaft *S*.

The operation of the apparatus is most clearly shown in Fig. 4. The terminal arm *D*, as shown, includes no resistance in the circuit of lamps *X*. The terminal arm *C*, as shown, includes one coil of resistance *r* in the circuit of lamps *Y*. The terminal arm *B* includes two sections of resistance *r* and *r'* in the circuit of lamps *Z*. Under the conditions described the lamps *X* are at full candle-power, the lamps *Y* about half candle-power, and the lamps *Z* show a red glow and but little light. We will assume that the arm *D* has its plunger *p* locked out of engagement with respect to the shaft *S* by reason of the fact that the latch *o* and its projection 81 have been caused to engage with the projection 80 upon the plunger *p* and that the plungers of the arms *C* and *B* are riding upon the periphery of the shaft *S*. An operator now seizes the master-arm *M* and by a continuous ro-

tary movement of the shaft *S* causes both arms *B* and *C* to become engaged with the shaft *S*, the plunger-contact 42 in both cases dropping into the keyway *k* as the shaft is rotated. By this means the arm *C* may be carried into the position occupied by the arm *B*, or *B* may be carried into the position occupied by the arm *C*, or both arms *B* and *C* may be carried into the position occupied by the arm *D*. The object accomplished is the simultaneous production of the same lighting effect at each and every separated point or the production of a distinctly different and independent effect simultaneously at two or more points.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a series of variable artificial resistances, a series of contact-points for each resistance, a series of independently-movable switch-arms, one for each resistance, a rotatable shaft upon which said series of switch-arms are mounted and means at each switch-arm for locking and unlocking it with respect to said shaft, substantially as described.

2. The combination of a series of variable artificial resistances having the terminals of their coil-sections connected, respectively, to a series of insulated fixed contact-points, a series of independently-movable switch-arms, one for each series of contact-points, movable contact-points carried by said arms, but insulated therefrom, and trailing over said fixed contacts, a rotatable shaft upon which said series of switch-arms are journaled, and a locking device for each such arm to connect and disconnect it with a fixed or unison point on said shaft, substantially as described.

3. The combination of a series of independent rheostats each having a series of fixed contacts and a switch-arm, a metal ring or disk surrounding the center of movement of each arm, each ring forming one terminal of a circuit, a movable double contact carried by each arm, but insulated therefrom, operating to connect its accompanying ring-terminal with any fixed contact-point located adjacent thereto, a rotatable shaft, having a unison point or position, upon which the series of switch-arms are journaled, and means for locking and unlocking said arms with the unison-point of said shaft consisting of a spring-actuated plunger and a latch therefor engaging said plunger and holding it against the influence of said spring whereby one or more of said arms may be caused to move with said shaft as it is rotated while the others retain a fixed position, substantially as described.

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Witnesses:

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