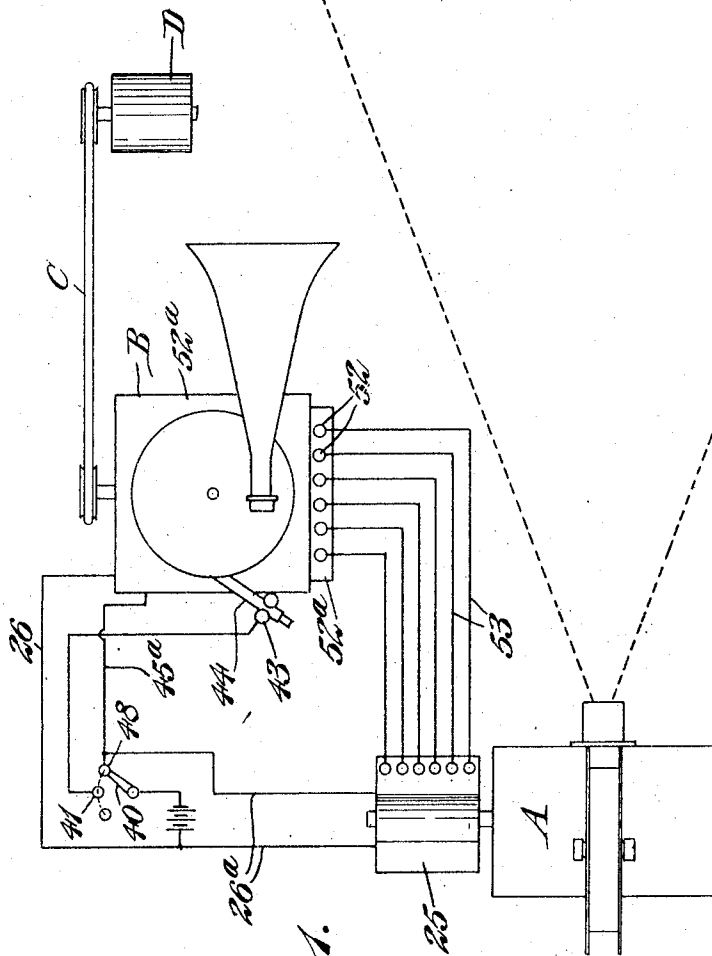


L. GAUMONT.
 SYNCHRONIZING DEVICE.
 APPLICATION FILED FEB. 17, 1909.

1,053,946.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 1.



WITNESSES:

J. W. Wisman

W. C. Lawson

Fig. 1.

INVENTOR

Léon Gaumont

BY

[Signature]
 Attorney

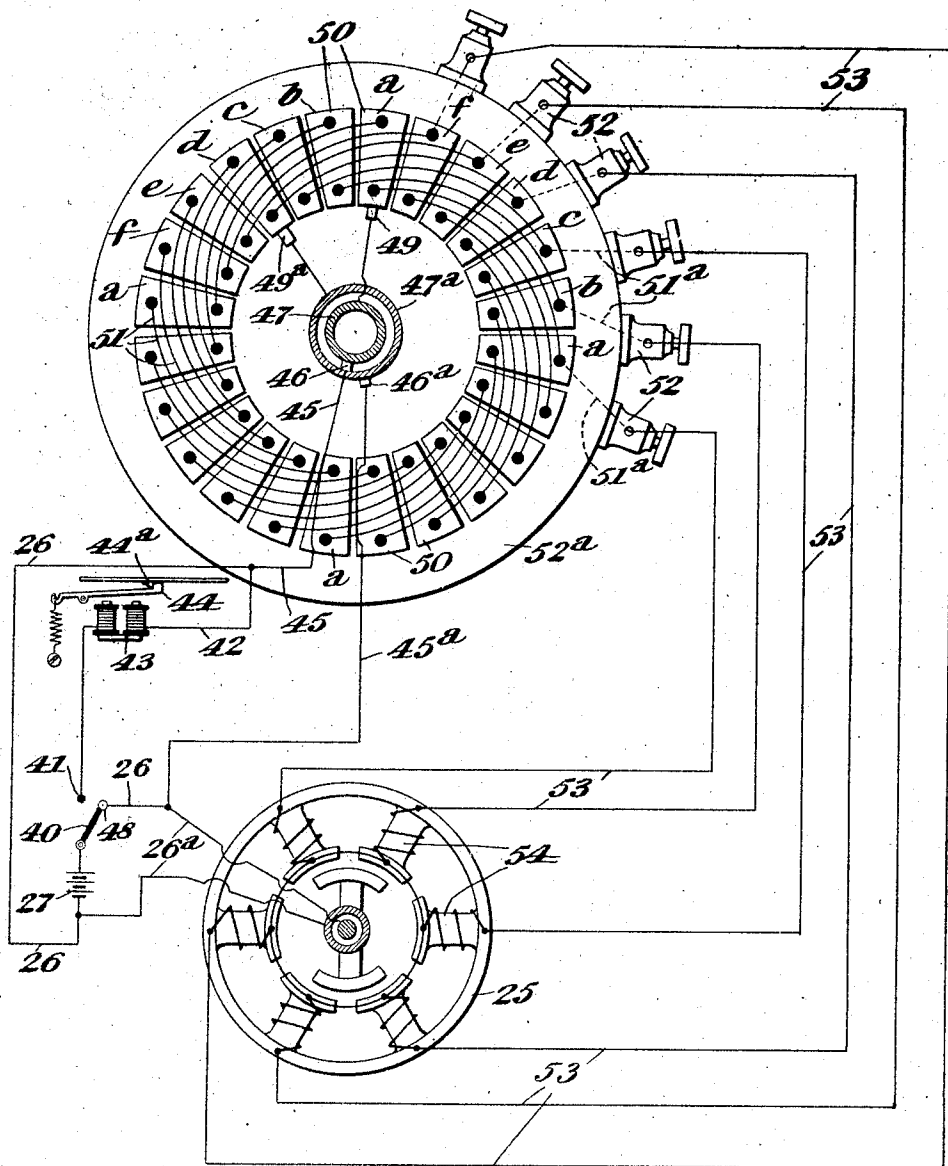
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2 SHEETS—SHEET 2.

Fig. 2.



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SYNCHRONIZING DEVICE.

1,053,946.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Original application filed December 2, 1907, Serial No. 404,712. Divided and this application filed February 17, 1909. Serial No. 478,453.

To all whom it may concern:

Be it known that I, LÉON GAUMONT, a citizen of the French Republic, and a resident of Paris, France, have invented certain Improvements in Synchronizing Devices, of which the following is a specification.

This invention relates to certain improvements in synchronizing devices, and being a division of my application Serial No. 404,712, filed Dec. 2, 1907, which in turn is a division of my application filed Jan. 4, 1907, Serial No. 350,857, and the object of the invention is to provide a device of this general character of a simple and comparatively inexpensive nature, which shall permit of maintaining a substantially synchronous or timed relation between a phonograph and a cinematograph, so that the same may be synchronously operated in a substantially automatic manner permitting music, singing, speaking, or other sounds to be reproduced from the phonograph in accurate relation to a moving picture exhibition given from the cinematograph, without requiring any particular care or attention upon the part of the attendant.

The invention consists in certain novel features of the construction, and combinations and arrangements of the several parts of the improved synchronizing device, whereby certain important advantages are attained, and the device is rendered simpler, less expensive, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In order that my improvements may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein—

Figure 1 is a somewhat diagrammatic view illustrating one embodiment of the improved synchronizing device, and Fig. 2 is a diagram illustrating certain of the circuit connections which are not clearly shown in Fig. 1.

In these drawings I have illustrated diagrammatically an arrangement of the synchronizing device comprised in my present invention and particularly adapted for maintaining a synchronous relation between a cinematograph A and a phonograph B,

and wherein the cinematograph motor is adapted to be controlled directly from the movement of the phonograph motor, or from the phonograph actuated therefrom. In this formation of the device, the cinematograph motor 25 is arranged to operate at four times the speed of the phonograph motor, and is provided with six poles 54, the coils of which are connected by means of conductors 53, with binding posts 52, carried upon a circular part 52^a adjacent either to a rotative part of the phonograph, or to some member turning in unison therewith. The part 52^a carries an annular series of contact plates 50, arranged in four groups, each group comprising six such plates lettered *a, b, c, d, e* and *f*, upon the drawing, the corresponding plates *a, a, b, b*, etc., of the several groups being electrically connected with each other by means of conductors 51 and being also connected with the binding posts 52 by means of conductors 51^a, as shown in dotted lines upon the drawing, whereby it will be seen that the corresponding plates *a, a, b, b*, etc., of the several groups are in electrical communication with the several field coils of the cinematograph motor 25.

49 and 49^a represent brushes carried by contact rings 47 and 47^a, which are arranged to turn with the phonograph or other part moving in unison therewith, said brushes being thus adapted to traverse the successive contact plates 50, 50, of the annular series. 46 and 46^a are other brushes, whereby the contact rings 47 and 47^a are maintained in electrical communication with conductors 45 and 45^a which are included in the field circuit 26 of the cinematograph motor 25.

40 represents a controlling switch having its lever adapted, when moved in one position, for communication with a contact 41, from which is extended a conductor 42, which includes the windings of an electromagnet 43, and is so connected in the field circuit 26 of motor 25 as to short circuit the conductors 45 and 45^a, together with the field coils of said motor and the intercommunicating parts when the switch is adjusted to include said conductor 42 in said field circuit.

44 represents a detent lever having a spring, the tension of which is normally ex-

erted to move said lever in the path of a projection 44^a carried by a moving part of the phonograph in such a way as normally to prevent the operation of the phonograph.

5 The lever 44 is arranged as the armature lever of the electro-magnet 43, whereby it will be seen that when the switch 40 is moved to connect the windings of said magnet in the motor field circuit 26, and thereby to energize said magnet, the lever 44 is moved

10 against the tension of its spring and is thereby disengaged from the projection 44^a upon the moving part of the phonograph.

It being presumed that the phonograph is driven by a band C or the like frictional driving connection from a motor D, which may thus be operated irrespective of the engagement of the detent lever 44 with the projection 44^a of the moving part of the phonograph, since the band or other frictional driving connection will slip at such times as said detent lever is thrown by its spring into position to hold the phonograph out of operation, it will be seen that when

20 the switch lever is thrown into communication with the contact 41 to energize the magnet 43, the detent lever 44 being thereby disengaged from the projection 44^a the phonograph motor will be permitted to operate the phonograph whereby the projection 44^a will be immediately removed out of position for engagement with the said detent lever 44 when the same is again thrown by the tension of its spring upon the deenergization

35 of the electro-magnet 43. After the phonograph is thus set in operation, the switch lever 40 is further moved by the attendant to the position shown in the drawing, whereby communication with contact 41 is interrupted and magnet 43 is deenergized, and communication with conductor 45^a is established through contact 48, the circuits of the kinematograph motor 25 being thereby completed, so that operation of the kinematograph driven from said motor thereupon commences. The armature circuit of said kinematograph motor is represented at 26^a, and the field circuit 26 thereof comprises conductor 45, ring 47, brush 49, contact devices 50 and 51, and conductor 53 leading to the field windings 54 and thence returning by another conductor 53 and contact devices 51 and 50 to brush 49^a, ring 47^a and conductor 45^a, and it will be seen that since the brushes 49 and 49^a, which control the several field windings of the kinematograph motor 25 after the fashion of commutator brushes are arranged to travel in unison with the phonograph, a direct control is

60 thereby exerted to insure synchronous operation of the kinematograph motor.

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

65 1. A device of the character described

comprising mechanisms adapted to be simultaneously actuated, one of said mechanisms being a phonograph and the other mechanism being a kinematograph motor, and means controlled by one of said mechanisms and controlling the speed of actuation of the other mechanism and including parallel circuit connections each having a plurality of contacts connected in multiple with a field winding of said motor.

2. A device of the character described comprising mechanisms adapted to be simultaneously actuated, one of said mechanisms being a phonograph and the other mechanism being a kinematograph motor, and electrical means controlled by one of said mechanisms and controlling the speed of actuation of the other mechanism and including a circular series of contacts and parallel circuit connections each affording connection of a plurality of said contacts in multiple with a field winding of said motor.

3. A device of the character described comprising two mechanisms adapted to be simultaneously actuated, one of said mechanisms being a phonograph and the other mechanism being an electric motor, and means actuated from said phonograph and including parallel circuit connections each having a plurality of contacts connected in multiple and controlling the field windings of said electric motor.

4. A device of the character described comprising two mechanisms adapted to be simultaneously actuated, one of said mechanisms being a phonograph and the other mechanism being an electric motor, circuit connections for the field windings of the motor and comprising grouped contacts and another contact in circuit with a source of electric supply, and actuated from the movement of said phonograph and adapted, when so actuated, to traverse the contacts for including the field windings of the motor successively in circuit with said source of supply.

5. A device of the character described comprising two mechanisms adapted to be simultaneously actuated, one of said mechanisms being a phonograph and the other mechanism being an electric motor and a commutator driven from the phonograph and controlling the field windings of the motor and comprising a series of contact plates the number of which is a multiple of the number of field windings comprised in the motor.

6. A device of the character described comprising two mechanisms adapted to be simultaneously actuated, a detent device for holding one of said mechanisms out of operation, and means adapted for operation to first release the detent device to permit actuation of the mechanism held thereby and then to actuate the other mechanism.

7. A device of the character described comprising two mechanisms adapted to be simultaneously actuated, a detent device for holding one of said mechanisms out of operation, the other mechanism being an electric motor, and electrical means adapted for operation to first release the detent device to permit actuation of the mechanism held thereby and then to actuate the electric motor.

8. A device of the character described comprising two mechanisms adapted to be simultaneously actuated, one of such mechanisms being a phonograph and the other mechanism being adapted for connection with a kinematograph, a releasable detent device for restraining one of said mechanisms from operation, means controlled by one of said mechanisms and controlling the speed of actuation of the other mechanism, and means in controlling relation to said detent device and operable to control the actuation of one of said mechanisms.

9. A device of the character described comprising two mechanisms adapted to be simultaneously actuated; one of such mechanisms being a phonograph and the other

mechanism being adapted for connection with a kinematograph, a releasable detent device for restraining one of said mechanisms from operation, means in controlling relation to the detent device and operable to control the actuation of one of said mechanisms, and means controlled by the restrained mechanism and controlling the speed of actuation of the other mechanism.

10. A device of the character described having two mechanisms adapted to be simultaneously operated, one of said mechanisms being an electric motor and the other mechanism being a commutator driven from a phonograph and controlling the field windings of said motor and comprising contacts in a plurality of groups, the contacts of each such group being connected in multiple with one of said field windings of said motor.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LÉON GAUMONT.

Witnesses:

ELLWOOD AUSTIN WELDER,
GABRIEL BELLARDS.