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COMBINED KINETOSCOPIC AND PHONOGRAPHIC APPARATUS.

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1,275,227.

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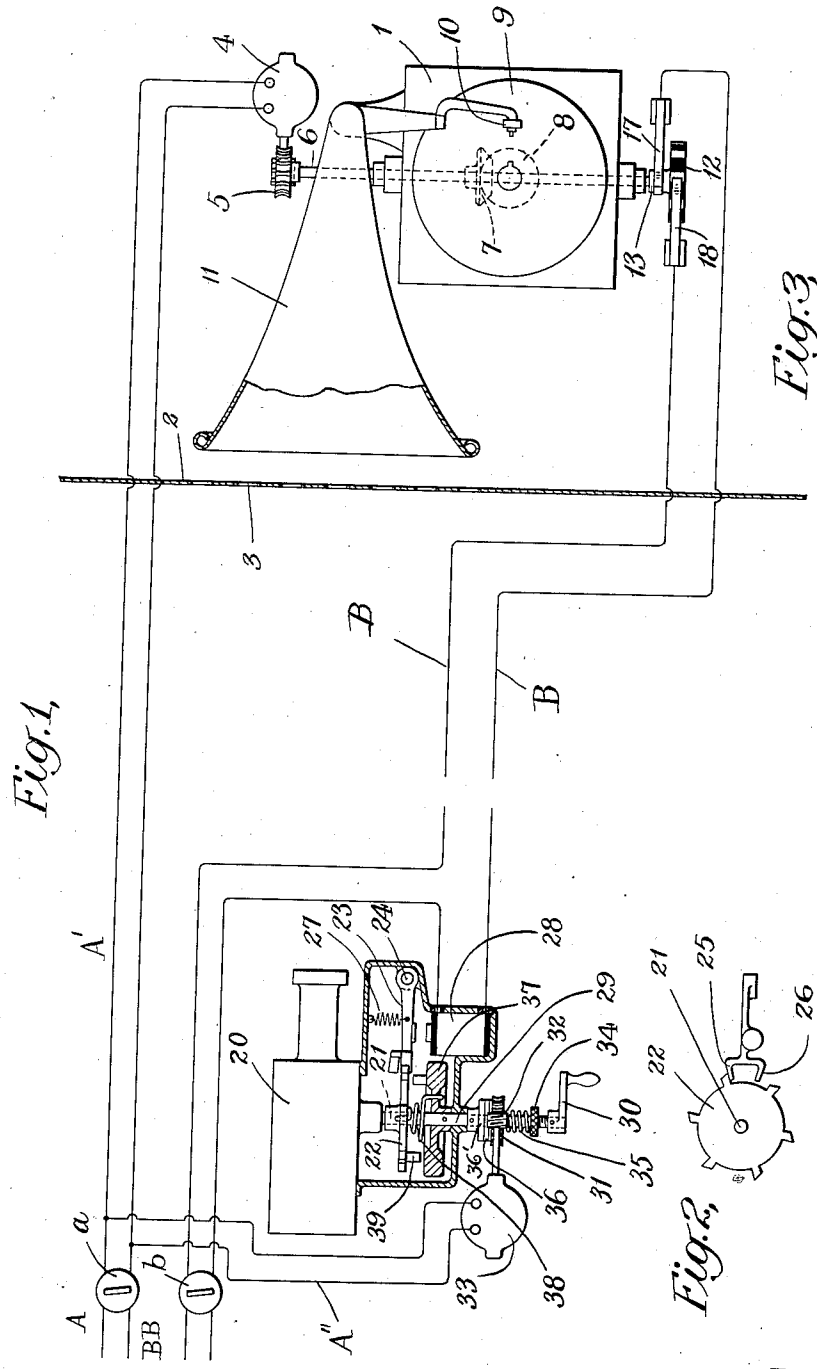



Fig. 1.

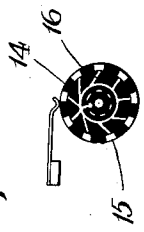



Fig. 3.

Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## COMBINED KINETOSCOPIC AND PHONOGRAPHIC APPARATUS.

1,275,227. Specification of Letters Patent. Patented Aug. 13, 1918.

Application filed August 21, 1915. Serial No. 46,628.

*To all whom it may concern:*

Be it known that I, CLYDE J. COLEMAN, a citizen of the United States, and a resident of New Rochelle, county of Westchester, and State of New York, have invented certain new and useful Improvements in Combined Kinetoscopic and Phonographic Apparatus, of which the following is a specification.

My invention relates to means for causing the operation of one machine to bear a certain relation to that of another machine, and especially to means for operating kinetoscopic machines in exact synchronism with phonographic machines.

One object is to provide means for synchronizing the operation of two devices.

Another object of my invention is to provide means for insuring the synchronous operation of a kinetoscope and a phonograph.

Another object is to provide means operated by one device for controlling the rate of operation of another device. This object is preferably attained by providing an escapement for one mechanism controlled by the driving element of another, each mechanism having a separate source of power.

Another object is to provide a continuing source of power for the operation of one device but to regulate the application of the power to that device so that it operates in synchronism with a second device. This object is preferably attained by providing an energy-storing mechanism for accumulating power to drive one device and providing an escapement mechanism to control the application of the power to that device, the operation of the escapement mechanism being governed by the operation of another device.

Other and further objects and advantages will appear from the following description taken in connection with the accompanying drawings forming a part of this specification and will be pointed out in the claims.

In the drawings, in which like reference characters indicate like parts,

Figure 1 is a diagrammatic view of a sound-reproducing machine and a kinetoscopic picture-projecting machine connected together by a preferred form of mechanism embodying my invention, said mechanism being designed to produce synchronous operation of the two machines;

Fig. 2 is a detail view of the escapement mechanism shown in Fig. 1; and

Fig. 3 is a detail view of the commutator or contact-making member shown in Fig. 1.

When kinetoscopic pictures are projected upon a screen it is desirable to reproduce all of the sounds which would ordinarily occur when the scene portrayed by the pictures is originally acted. Ordinarily the projecting machine is in front of the screen and the sound-reproducing machine is behind it, and my invention is disclosed in connection with the ordinary arrangement.

The sound-reproducing machine 1 is placed behind the screen 2 and the sound passes through the openings 3 in the screen above the point upon which the images are ordinarily projected. An electric motor 4 drives the worm wheel 5 which is connected to the phonograph-operating shaft 6. Upon this shaft 6 is a bevel gear 7 which coöperates with a similar bevel gear 8 which is directly connected to and rotates the record-carrying disk 9 of the machine. The ordinary sound box 10 is provided and the vibrations produced thereby are amplified by the ordinary horn 11. On the shaft 6 is mounted a commutator or contact maker 12. This commutator has a sleeve of electricity-conducting material 13 and upon this sleeve is formed a disk 14 of insulating material, which carries in its periphery contacts 15 of conducting material. These contacts are connected to the sleeve 13 by wires 16. On the sleeve 13 rests a brush 17 which is connected to one wire of the circuit, and upon the periphery of the disk 14 rests a brush 18 which is connected to the other wire of the circuit and which makes contact with the contact pieces 15 when the shaft 6 rotates. The circuit referred to is therefore intermittently made and broken as the phonograph-operating mechanism rotates. The picture projecting machine 20 is positioned in front of the screen and has an operating shaft 21. Connected to this operating shaft is an escapement wheel 22. A detent or locking lever 23 is pivoted on the frame of the projecting machine at 24 and has teeth 25 and 26 which are offset from

one another in a vertical plane and which alternately coöperate with the teeth of the escapement wheel as the lever is swung in a horizontal plane about the point 24. A spring 27 holds the detent member in position to maintain the tooth 25 thereof in engagement with one of the teeth of the escapement wheel. On the opposite side of the detent member from the spring 27 is positioned an electromagnet 28 which is in the circuit A heretofore referred to. It will be seen that each time the circuit B is energized the electromagnet will draw the detent 23 toward it and the escapement wheel will advance a distance equal to the distance between its teeth, if there is any force tending to rotate it.

A force tending to rotate the escapement wheel is applied to the said wheel in the following manner:

In the frame of the projecting machine is journaled a shaft 29 which may be rotated by a crank 30, or which may be rotated by a worm wheel 31 driven by a worm 32 on the shaft of the motor 33. The worm wheel 31 is loosely mounted on the shaft 29. The clutch member 36 is loosely mounted on the shaft 29 and is attached to the wheel 31 in such manner that the wheel 31 and the clutch member 36 must rotate together, while the clutch member 36 is movable longitudinally along the shaft 29. Normally the clutch member 36 is held in engagement with the clutch member 36′ by the spring 35. The clutch member 36′ is keyed to the shaft 29. When it is desired to operate the picture machine by hand the nut 34 is rotated to relieve the tension of the spring 35, which spring then ceases to hold the clutch member 36 in engagement with the clutch member 36′. Mounted upon the shaft 29 is a fly-wheel 37 to which is secured one end of a spring 38 which is coiled about the shaft 29 and has its other end secured to the escapement wheel 22. It will now be seen that when the shaft 29 is rotated either by the crank 30 or the motor 33, a tension is placed upon spring 38 and energy is stored in it which tends to rotate with the escapement wheel 22. When the phonograph operates, the commutator 12 rotates and intermittently makes and breaks the circuit B, thereby intermittently energizing the magnet 28 which causes the detent to oscillate upon its pivot 24, thereby permitting the intermittent rotation of the escapement wheel 22 and a like intermittent operation of the projecting machine 20.

The circuit A provides energy through the switch *a* to the circuit A′ which operates the motor 4, and to the circuit A″ which operates the motor 33. The circuit B receives its power through the switch *b* from the source BB. In order that too great a tension may not be put upon the spring 38, a lug 39 is provided upon the escapement wheel 22 which is in the path of a lug 40 placed upon the fly-wheel 37. It will be seen, therefore, that the fly-wheel may rotate relatively to the escapement wheel only half of one revolution from the position shown in the drawing.

While I have described specifically and with considerable detail mechanism whereby a picture-projecting machine is operated in synchronism with a sound-reproducing machine and in which the picture-projecting machine-operating mechanism may not be operated more rapidly than the operation of the sound-reproducing machine will permit, I do not intend that my invention shall be limited to the details described, or that it shall be limited to the kinds of machines in connection with which it is described, but intend that such modifications may be embodied in my device as occur to those skilled in the art, and that my invention shall be defined by the hereunto appended claims.

Other means for securing synchronous operation of phonographic and kinetoscopic machines are disclosed in applications for patent filed by me for improvements in synchronizing mechanism, Serial Number 46,630, filed August 21, 1915, and for improvements in combined kinetoscopic and phonographic apparatus, Serial Number 46,629, filed August 21, 1915.

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

1. In an apparatus of the class described, the combination of a first machine, a source of power for said first machine, a second machine, a source of power for said second machine, an energy-storing device receiving energy from one of said sources of power and delivering it to said first machine, the other source of power being connected to said second machine, and means governed by said second machine for controlling the delivery of power from said energy-storing device to said first machine.

2. In an apparatus of the class described, the combination of a first machine, a source of power for said first machine, delivering power to said first machine through an energy-storing device, a second machine, and means governed by said second machine for controlling the delivery of power from said energy-storing device to said first machine.

3. In an apparatus of the class described, the combination of a first machine, a source of power for said first machine, a second machine, an energy-storing device receiving energy from said source of power and delivering it to said first machine, means whereby power may be delivered to said energy-storing device independently of said source of power, and means governed by said second

machine for controlling the delivery of power from said energy-storing device to said first machine.

4. In an apparatus of the class described, the combination of a first machine, a source of power, a second machine, an energy-storing device, a transmission device comprising two members arranged for relative movement, the first of which receives energy from said source, and the second of which is connected to said energy-storing device, means for imparting energy to said second member independently of said first member, and means governed by said second machine for controlling the delivery of the power from said energy-storing device to said first machine.

5. In an apparatus of the class described, the combination of a machine, a source of power for said machine, a transmission device comprising two members arranged for relative movement, the first of which receives energy from said source of power, and the second of which is connected to said machine, and means for imparting energy to said second member independently of said first member.

6. In an apparatus of the class described, the combination of a first machine, a source of power, a second machine, an energy-storing device, a transmission device comprising two members arranged for relative movement, the first of which receives energy from said source, and the second of which is connected to said energy-storing device, and means for imparting energy to said second member independently of said first member.

7. In an apparatus of the class described, the combination of a first machine, a source of power, a second machine, an escapement wheel controlling the delivery of power from said source to said first machine, a detent coöperating with said wheel and having a plurality of positions, means normally tending to place said detent in one of said positions, and means controlled by said second machine for moving said detent to the other of said positions.

8. In an apparatus of the class described, the combination of a first machine, a source of power therefor, a second machine, an escapement wheel for controlling the delivery of power from said source to said first machine, a detent coöperating with said wheel and having a plurality of positions, a magnet for actuating said detent to one of its positions, the operation of said magnet being governed by the operation of said second machine, and automatic means for restoring said detent to another position.

In testimony whereof, I have signed my name to this specification.

CLYDE J. COLEMAN.