

R. W. IDE.
ILLUMINATING SYSTEM.
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1,370,747.

Patented Mar. 8, 1921.

Fig. 1.

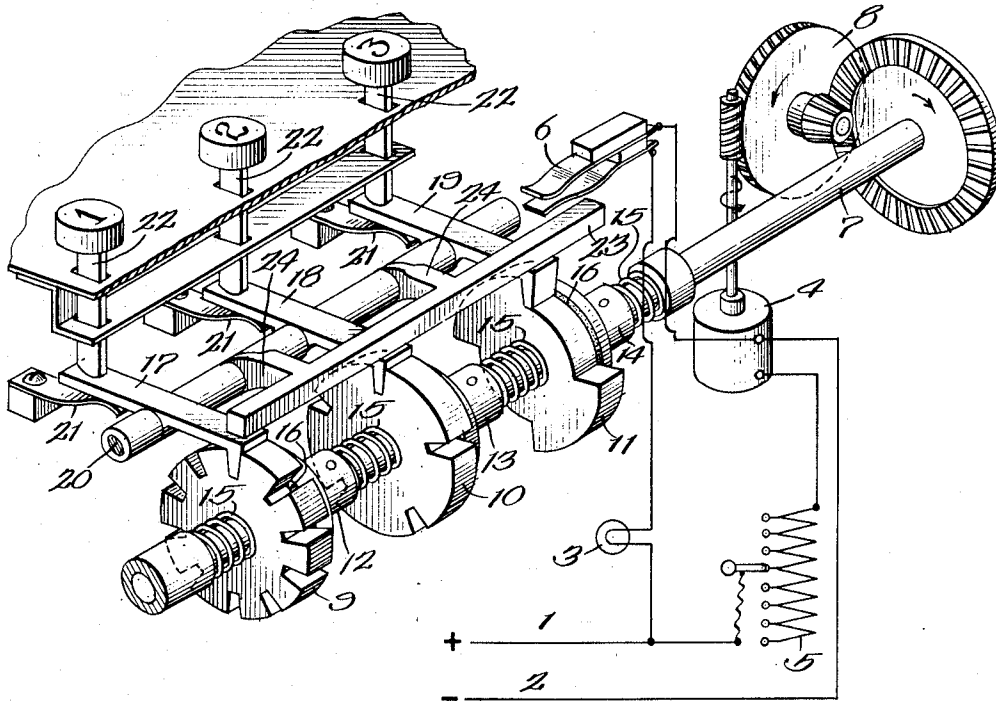


Fig. 2.

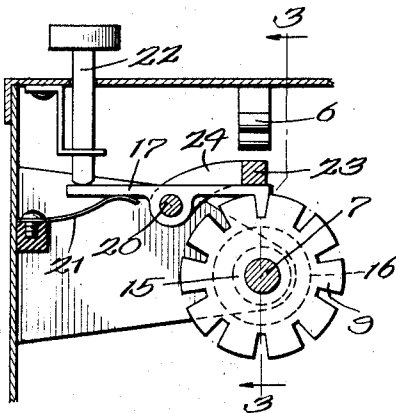
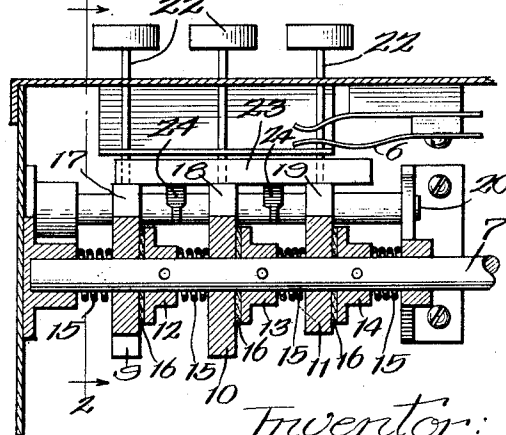


Fig. 3.



Inventor:
Roy W. Ide.
By *[Signature]*

UNITED STATES PATENT OFFICE.

ROY W. IDE, OF SPRINGFIELD, ILLINOIS.

ILLUMINATING SYSTEM.

1,370,747.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ROY W. IDE, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented a certain new and useful Improvement in Illuminating Systems, of which the following is a full, clear, concise, and exact description.

My invention relates to motion transmitting apparatus in some of its aspects and to an illuminating system employing such apparatus in other aspects of the invention.

The invention has for its broad purpose the provision of mechanism whereby a motor may be selectively coupled with wheels which are provided with controlling agencies limiting them to rotations which differ in extent. That is, the motor is enabled to operate one wheel throughout one range and another wheel throughout a different range, by the apparatus of the invention. Such apparatus may have different employments, the important one being to vary the time that a lamp may be lighted. The invention, when thus employed, is of particular service in photographic development, although the invention is not to be limited to such use.

I will explain my invention fully by reference to the accompanying drawing in which Figure 1 is a perspective view of so much thereof as is necessary to an understanding of the invention, some circuit connections being diagrammatically indicated in this figure; Fig. 2 is a sectional view on line 2—2 of Fig. 3; and Fig. 3 is a sectional view on line 3—3 of Fig. 2.

Like parts are indicated by similar characters of reference throughout the different figures.

The drawing exhibits an illuminating system which includes a circuit 1, 2 for conveying current to an electric lamp 3 which is bridged across the sides of the circuit. The motor 4 which I employ is also preferably electrically operated. It is connected between the sides 1 and 2 of the circuit in order to be supplied with operating current from said circuit. A rheostat 5 is included in one of the motor connections whereby the speed of the motor may be varied. A switch 6 is serially included in the lamp circuit, the switch being self-opening so that the lamp will not furnish illumination unless the switch is actuated.

The motor 4 drives a shaft 7 either directly

or through the intermediation of suitable speed reducing gearing 8 if the motor happens to be an electric motor. A plurality of toothed wheels 9, 10, 11 are loose upon the shaft. The teeth upon each wheel are spaced farther apart or closer together than the teeth upon each of the other wheels. Collars 12, 13, 14 are fixed upon the shaft to turn therewith. Springs 15 serve to press the wheels toward the collars, there being one collar individual to each wheel. Friction washers or collars 16 are disposed between the aforesaid collars and the wheels. The springs press the wheels against the collars so that when the wheels are released from the detaining mechanism hereinafter to be described they will rotate with the shaft. Individually operable detents 17, 18 and 19 are respectively individual to the wheels 9, 10 and 11. These detents are preferably mounted to turn at their intermediate portions upon a rod 20 common to the detents. The forward ends of the detents are receivable in the notches between the teeth upon the wheels and the rear ends of the detents are upwardly pressed by leaf springs 21 so that when the forward ends of the detents are in registry with the spaces between the teeth of the wheels they will enter such spaces. Manually operable keys 22 rest upon the rear ends of the detents. By depressing these keys the forward ends of the detents will be raised in opposition to the pressure of the springs 21. A switch actuating member is provided for operating the switch 6, such member being preferably in the nature of a bar 23 having arms 24 which swing upon the rod 20 and serve to maintain the bar 23 in parallelism with the shaft 7. When any button 1, 2 or 3 is depressed the detent corresponding thereto is raised at its forward end whereupon the wheel normally restrained by this detent is permitted to turn a space corresponding to the width of the wheel tooth that rides over the detent, the forward end of the selected detent dropping into the ensuing notch in the wheel. The wheel 9 is limited to turn through a shorter arc than the wheel 10 which, in its turn, moves through a shorter distance than the wheel 11. The wheel 11 has longer slots between its teeth than do other wheels so that this wheel will continue to turn even after the forward end of its detent drops into a space between the teeth. Thus the shaft 7 may be effective

throughout one angle or another or the third, etc., depending upon the toothed wheel which has been released to permit it to turn with the shaft 7.

5 When any detent has been released by the pressure of its button 1, 2 or 3 the bar 23 will bring one contact of the switch 6 into engagement with its companion contact to close circuit through the lamp 3, the lamp
10 remaining in circuit only as long as the forward end of the selected detent rides upon the crown of the ensuing tooth of the wheel having such detent. The crowns of the teeth of each wheel are of different
15 lengths from the crowns of the teeth of the other wheels wherefore the duration of engagement of the bar 23 with the switch 6 varies according to the toothed wheel which has been released to cause corresponding variation in the duration of the illumination
20 of the lamp.

If the equipment is employed in photography the wheels 9, 10 and 11 may, for example, respectively turn for one second, two
25 seconds, and three seconds to cause the lamp to glow one second, two seconds or three seconds. If the fluid employed in the photographic operation becomes weaker, I reduce the speed of the motor, as for example with
30 the aid of the rheostat, to compensate for the reduced strength of the fluid.

While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as
35 changes may readily be made without departing from the spirit of my invention, but having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

40 1. An illuminating system including a circuit for conveying current; an electric motor supplied with operating current from said circuit; an electric lamp supplied with
45 current from said circuit; a switch for cutting the lamp in and out of circuit; a shaft driven by the motor; toothed wheels loose upon the shaft, the teeth upon one wheel being spaced farther apart than the teeth
50 upon the other wheel; collars turning with said shaft; springs for pressing said wheels into driving connection with said collars; individually operable detents individual to said wheels for engaging their teeth to prevent
55 their rotation; a member for operating said switch and actuatable by each detent when withdrawn from an inoperative position into lamp circuit closing engagement with the switch; and means for regulating
60 the speed of the motor.

2. An illuminating system including a circuit for conveying current; an electric motor supplied with operating current from
65 said circuit; an electric lamp supplied with current from said circuit; a switch for cut-

ting the lamp in and out of circuit; a shaft driven by the motor; toothed wheels loose upon the shaft, the teeth upon one wheel being spaced farther apart than the teeth upon the other wheel; collars turning with said shaft; springs for pressing said wheels into driving connection with said collars; individually operable detents individual to said wheels for engaging their teeth to prevent their rotation; and a member for operating
75 said switch and actuatable by each detent when withdrawn from an inoperative position into lamp circuit closing engagement with the switch.

3. An illuminating system including a circuit for conveying current; an electric lamp
80 supplied with current from said circuit; a switch for cutting the lamp in and out of circuit; a motor; a shaft driven by the motor; toothed wheels loose upon the shaft, the teeth upon one wheel being spaced farther apart than the teeth upon the other wheel; collars turning with said shaft; springs for pressing said wheels into driving connection with said collars; individually operable detents individual to said
90 wheels for engaging their teeth to prevent their rotation; a member for operating said switch and actuatable by each detent when withdrawn from an inoperative position into lamp circuit closing engagement with the switch; and means for regulating the
95 speed of the motor.

4. An illuminating system including a circuit for conveying current; an electric lamp
100 supplied with current from said circuit; a switch for cutting the lamp in and out of circuit; a motor; a shaft driven by the motor; toothed wheels loose upon the shaft, the teeth upon one wheel being spaced farther apart than the teeth upon the other wheel; collars turning with said shaft; springs for pressing said wheels into driving connection with said collars; individually operable detents individual to said wheels for
110 engaging their teeth to prevent their rotation; and a member for operating said switch and actuatable by each detent when withdrawn from an inoperative position into lamp circuit closing engagement with the switch.

5. An illuminating system including a circuit for conveying current; an electric motor supplied with operating current from said circuit; an electric lamp supplied with
120 current from said circuit; a switch for cutting the lamp in and out of circuit; toothed wheels rotatable by said motor, the teeth upon one wheel being spaced farther apart than the teeth upon the other wheel; individually operable detents individual to said
125 wheels for engaging their teeth to prevent their rotation; a member for operating said switch and actuatable by each detent when withdrawn from an inoperative position into lamp circuit closing engagement with the switch.

lamp circuit closing engagement with the switch; and means for regulating the speed of the motor.

6. An illuminating system including a circuit for conveying current; an electric motor supplied with operating current from said circuit; an electric lamp supplied with current from said circuit; a switch for cutting the lamp in and out of circuit; toothed wheels rotatable by said motor, the teeth upon one wheel being spaced farther apart than the teeth upon the other wheel; individually operable detents individual to said wheels for engaging their teeth to prevent their rotation; and a member for operating said switch and actuatable by each detent when withdrawn from an inoperative position into lamp circuit closing engagement with the switch.

7. An illuminating system including a circuit for conveying current; an electric lamp supplied with current from said circuit; a switch for cutting the lamp in and out of circuit; a motor; toothed wheels rotatable by said motor, the teeth upon one wheel being spaced farther apart than the teeth upon the other wheel; individually operable detents individual to said wheels for engaging their teeth to prevent their rotation; a member for operating said switch and actuatable by each detent when withdrawn from an inoperative position into lamp circuit closing engagement with the switch; and means for regulating the speed of the motor.

8. An illuminating system including a circuit for conveying current; an electric lamp supplied with current from said circuit; a switch for cutting the lamp in and out of circuit; a motor; toothed wheels rotatable by said motor, the teeth upon one

wheel being spaced farther apart than the teeth upon the other wheel; individually operable detents individual to said wheels for engaging their teeth to prevent their rotation; and a member for operating said switch and actuatable by each detent when withdrawn from an inoperative position into lamp circuit closing engagement with the switch.

9. Motion transmitting apparatus including a motor; a shaft driven by the motor; toothed wheels loose upon the shaft, the teeth upon one wheel being spaced farther apart than the teeth upon the other wheel; collars turning with said shaft; springs for pressing said wheels into driving connection with said collars; and individually operable detents individual to said wheels for engaging their teeth to prevent their rotation.

10. Motion transmitting apparatus including a motor; toothed wheels rotatable by said motor, the teeth upon one wheel being spaced farther apart than the teeth upon the other wheel; and individually operable detents individual to said wheels for engaging their teeth to prevent their rotation.

11. In a printing device, motion transmitting mechanism including a motor, timing elements actuatable by said motor, means for varying the whole scale of the timing elements, and means for selecting any one of the timing elements to give a predetermined period of time.

In witness whereof, I hereunto subscribe my name this 27th day of January A. D., 1920.

ROY W. IDE.