H. L. FREEMAN.

ADVERTISING PROJECTION APPARATUS.

APPLICATION FILED APR. 26, 1917.

1,263,053.

Patented Apr. 16, 1918.

2 SHEETS—SHEET 1.

Fig. 2.

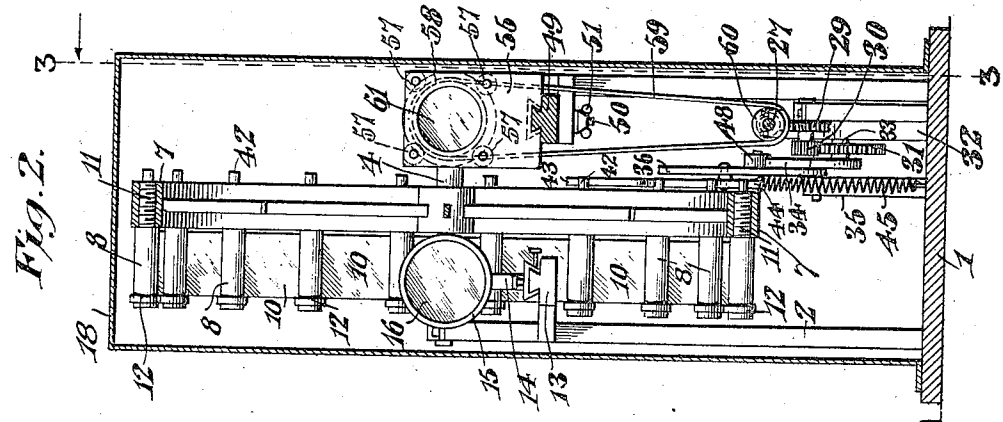
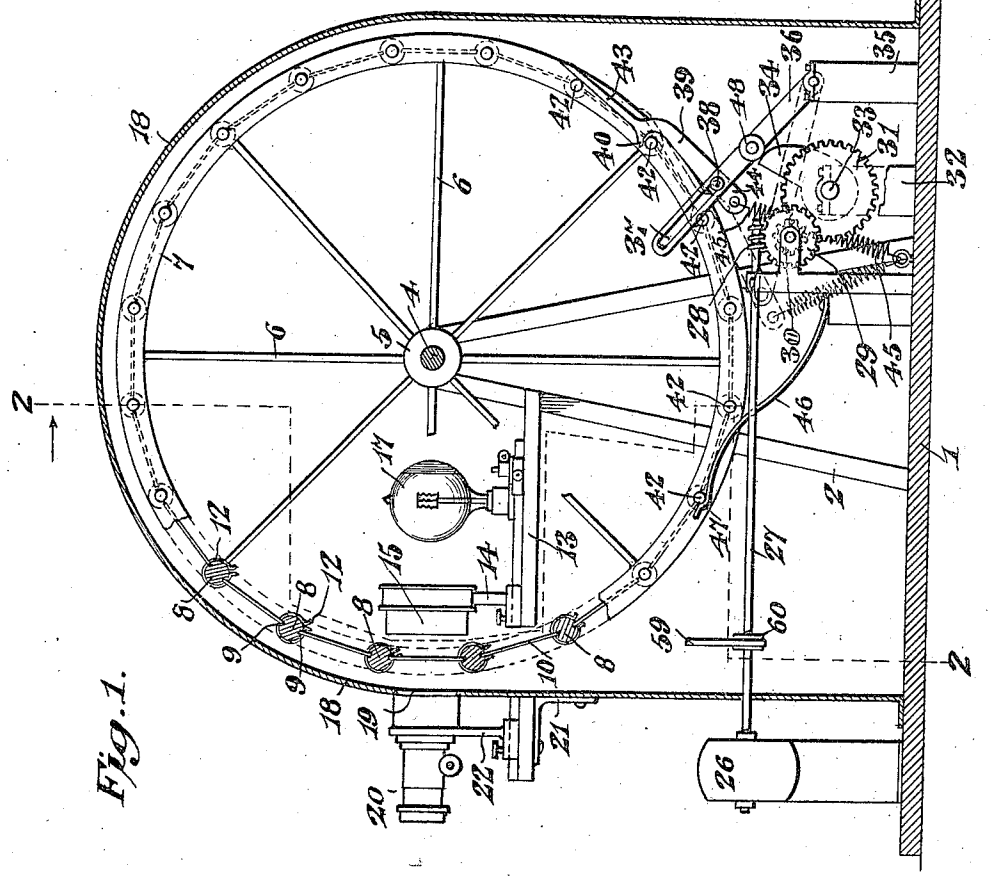


Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

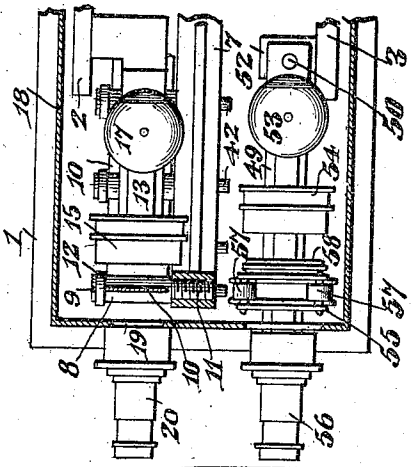


Fig. 5.

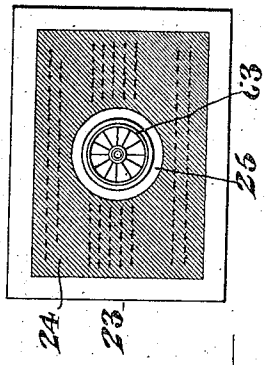
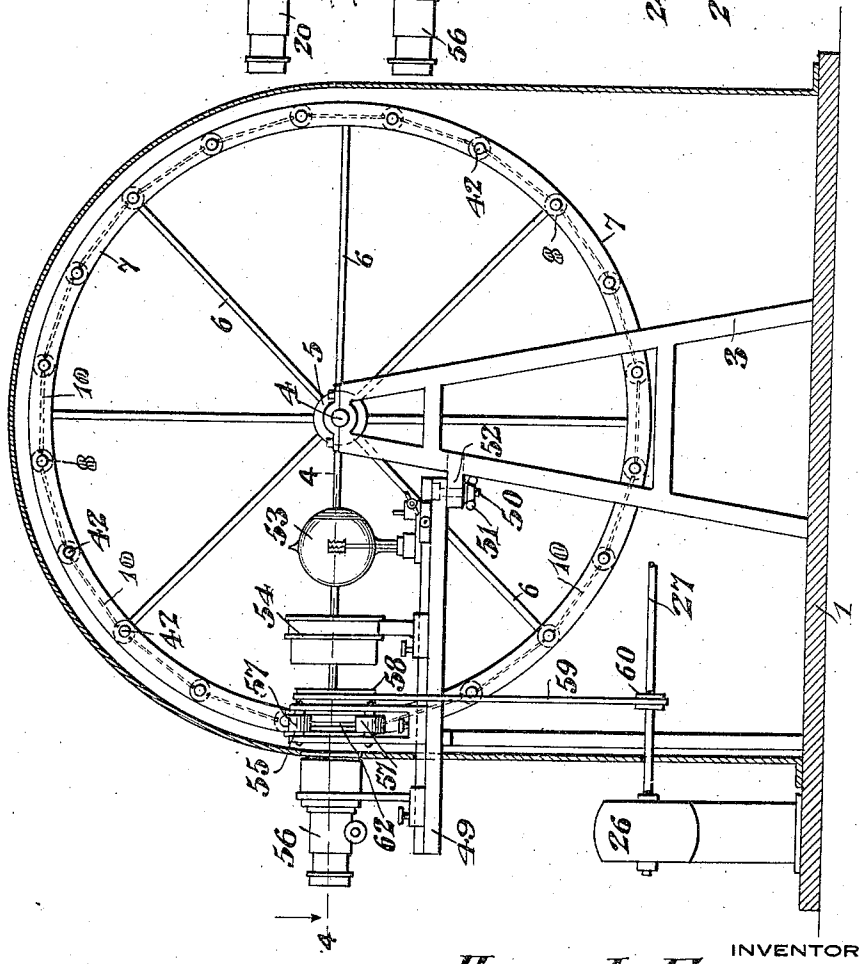


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ADVERTISING PROJECTION APPARATUS.

1,263,053. Specification of Letters Patent. Patented Apr. 16, 1918.

Application filed April 26, 1917. Serial No. 164,653.

To all whom it may concern:

Be it known that I, HORACE L. FREEMAN, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Advertising Projection Apparatus, of which the following is a specification.

This invention has reference to advertising projection apparatus, and its object is to provide means whereby advertising matter may be intermittently projected upon a screen by automatically operating means with each successive display of advertising matter differing from that of the preceding display, and at the same time other advertising matter, and more especially moving advertising matter, may be projected upon the screen within the outlines of the first-mentioned projected matter on the screen, the arrangement being such that the moving advertising matter may be changed from time to time and be at all times properly related in subject-matter to the advertisements shown by the first-named projecting means.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming part of this specification, with the further understanding that while the drawings show a practical form of the invention, the latter is not confined to any strict conformity with the showing of the drawings, but may be changed and modified so long as such changes and modifications come within the scope of the appended claims.

In the drawings:—

Figure 1 is an upright section through the projecting machine with some parts cut back of the section.

Fig. 2 is a section on the line 2—2 of Fig. 1, with certain parts omitted.

Fig. 3 is a section on the line 3—3 of Fig. 2 omitting some distant parts.

Fig. 4 is a section on the line 4—4 of Fig. 3 omitting some distant parts.

Fig. 5 is a more or less schematic view of a screen showing the relative location of the images produced by the projection apparatus.

Referring to the drawings there is shown a base 1 on which are erected pedestals 2, 3, respectively, carrying a shaft 4 at their upper ends, which shaft is substantially horizontal in the installed position of the machine.

Mounted on the shaft 4 is a hub 5 with spokes 6 radiating to a rim 7 of appropriate diameter. Projecting from one side of the rim are longitudinally grooved studs 8 arranged in circular series and having grooves 9 so disposed that transparencies or slides 10 may be mounted between adjacent studs 8. A convenient means of securing the studs in the rim 7 is by screw-threading one end of each stud, as indicated at 11, and screwing it into an appropriate part of the rim. Each stud at the end remote from the rim is provided with a cap or clip 12 whereby the slides 10 may be held between the studs from accidental escape therefrom, and which on the removal of the caps may in turn be removed and replaced by other slides.

Projecting from one of the standards, say, the standard 2, is an arm 13 on which is erected a post 14 carrying a condenser 15 in which it may be assumed suitable condensing lenses are mounted. Since the apparatus in this respect follows the usual custom in projection instruments, it is deemed unnecessary to show the condenser lenses, although a face view of one condenser lens 16 appears in Fig. 2.

Mounted on the arm 13 is an adjustable support for an electric lamp 17 which may be of the incandescent gas filled type of electric lamps.

Inclosing the wheel made up of the hub 5, spokes 6 and rim 7, and other parts of the apparatus, is a casing 18 having an opening 19 therethrough in front of which there is mounted a projection lens 20 of suitable type, the lens being carried by a bracket device 21 on the casing and provided with a support 22 rising from the bracket 21, so as to hold the lens 20 in proper position.

The arrangement is such that whenever the slide 10 is brought into line with the lamp 17, condensers 16 and lens 20, with the parts properly adjusted and focused, an image of what is contained on the lantern slide is projected upon a suitable screen represented on a very small scale at 23 in Fig. 5. The lantern slides are so arranged

that the image, simply indicated at 24 in Fig. 5 without detail, is displayed on the screen, and this image is so arranged as to leave a blank portion 25 thereon, say, in the middle. The image 24 may be that of printed matter, or pictorial matter, or whatever is desired for use in advertisements.

To display the slides 10 in succession at suitable time intervals, and to have this operation automatic, there is provided a motor 26 which may be an electric motor of any suitable type, and is therefore merely indicated in outline in Figs. 1 and 3. The motor is provided with an elongated shaft 27 continued to a suitable point and there provided with a worm 28 in mesh with the worm wheel 29 suitably mounted and driving a pinion 30 in turn meshing with a gear wheel 31 supported by a mounting 32 rising from the base 1. The gear wheel 31 is carried by a shaft 33 also carrying a cam 34, the drive means and gearing being properly proportioned to impart a slow rotative movement to the cam 34.

Carried by a support 35 is one end of a rock arm 36, the other end of which is provided with a longitudinal slot 37 traversed by a pivot pin 38 near one end of a lever 39 constituting a latch lever. The long arm of the lever 39 terminates in a hook 40 arranged to engage any one of a series of pins 42 projecting from the threaded portions 11 of the studs 8 and beyond that side of the rim 7 remote from the portions of the studs 8 designed to carry the lantern slides 10. Extending beyond the hook 40 is a finger 43 long enough to engage the next pin 42 in order away from the rock arm 36. The lever 39 has a short arm 44 projecting beyond the pivot pin 38, and to this arm there is secured one end of a spring 45, the other end of which is made fast to some fixed point such as the base 1. There is also provided a yieldable catch 46 having one end secured to a fixed part of the machine, and the other end 47 shaped to engage one of the pins 42.

With the motor 26 running continuously the worm 28 imparts a slow progressive movement to the worm wheel 29 and the pinion 30 and gear wheel 31 cause the rotation of the shaft 33 and cam 34 at a still slower rate. On the rock arm 36 is a roller 48 in the path of the cam 34. There is an abrupt shoulder formed on the cam 34, so that as the cam rotates and engages the roller 48 the arm 36 is rocked against the action of the spring 45 until the hook or nose 40 snaps behind a pin 42, being held in engaging relation to the pin by the spring 45. When the roller 48 runs off the cam on reaching the abrupt shoulder thereon, the spring 45 then acts to propel the arm 36 in a direction to rotate the slide carrier a distance equal to the height of a slide, at which point the roller 48 reaches the hub end of the cam and the catch 47 engages the next pin in order, thus stopping the movement of the slide carrier when the next slide in order is in the optical axis of the projection lens 20. The motor 26, however, continues to rotate, whereupon the cam 34 slowly progresses and the arm 36 is ultimately moved to engage the next pin 42 in order for a repetition of the feeding of the slides. In this manner the slides are projected one at a time at suitable intervals upon the screen 23.

In addition to the projection apparatus made up of the optical parts 15, 17 and 20, there is another optical portion shown in Figs. 2, 3 and 4, comprising a supporting arm 49 which may be pivotally mounted as by a bolt 50 and thumb nut 51 upon a lug 52 on the standard 3. The arm 49 carries a lamp 53 which may be similar to the lamp 17, both lamps being indicative of any suitable source of light. The arm 49 also carries a condenser cell 54, a support 55 and a projection lens 56. The support 55 is provided with rollers 57 or other suitable carrying means for a rotatable member 58 driven by a belt 59 extending about a pulley 60 on the shaft 27. The rotatable member 58 is for the purpose of carrying a slide 61, and this member 58 may have a slot 62 whereby the slide 61 may be introduced therein or removed therefrom.

With the arrangement described, the slides 10 are adjusted and focused upon the screen 23, and each slide is so made that there is a blank space in its center portion corresponding to the space 25 in Fig. 5. Because of the capability of adjustment of the arm 49 the optical axis of the projection apparatus, consisting of the lamp 53, condenser system 54, slide carrier 58 and projection lens 56, may be shifted to one side or the other, so that the image projected from the slide 61 may be centered and included in the space 25 on the screen.

Now, while the advertising matter of the slides 10 is being displayed, the object on the slide 61, represented in Fig. 5 as a wheel 63, may be caused to rotate, so that the image on the screen within the space 25 may appear to rotate. This results in attracting attention to the display on the screen, since moving displays are always more attractive than still displays, and consequently the object of the display which is to attract attention is accomplished.

While the invention is not limited to any one special object to be advertised, it is especially adapted for advertising automobile wheels and the like, which may be shown in motion so far as the representation on the screen is concerned.

By means of the apparatus described the changing slides may contain text descriptive

of characteristics and advantages of some make of automobile wheel or tire, and while the changing slides are appearing on the screen the wheel is shown in motion in the midst of the advertising matter, so that the observer by being interested in watching the rotating wheel is at the same time constrained to notice the advertising matter.

When it is desired to change the advertisement it is a simple matter to replace the slides 10 by other slides and to replace the slide 61 by the representation of some other make of automobile wheel or tire, or the like.

In order that the display may be attractive all imperfections in the display should be avoided. It is necessary that the advertising matter and the moving part of the display should be sharply defined, especially as an indistinct display is very trying to the eyes. For this purpose two complete projection apparatus are employed, one for the projection of the slides containing the advertising matter, and the other for the projection of the slide to which rotary motion is imparted. This permits both displays to be accurately combined on the screen and at the same time to be accurately focused, thus avoiding any indistinctness of either display and obtaining sharp and clear cut pictures on the screen.

What is claimed is:—

1. An optical projection apparatus for advertising and other purposes, comprising an optical projection unit including light-giving means, condensing means and projection means in association, means for automatically presenting projection slides at predetermined intervals into the optical axis of the optical unit, and another optical unit including light-giving means, condensing means and projecting means with a support adjustable for causing coincidence of the optical axes of both projection units upon the screen, means for permitting rotating a lantern slide in the optical axis of the second optical unit, and means common to both optical units for driving the slide presenting means of the first optical unit and rotating the slide of the second optical unit simultaneously.

2. An optical projection apparatus for advertising and other purposes comprising two associated projection apparatus, each including light-giving means and a projection lens individual thereto, with one projection apparatus adjustable with relation to the other to cause coincidence of their optical axes upon a screen, a rotatable carrier for a plurality of lantern slides for moving the slides one at a time into the optical axis of one of the projection apparatus, a rotatable carrier for a lantern slide located in the optical axis of the other projection apparatus, and means common to both apparatus for driving the first-named carrier to present the plurality of lantern slides one at a time in the optical axis of the corresponding projection apparatus and for continuously rotating a lantern slide in the carrier of the second-named projection apparatus.

3. An optical projection apparatus for advertising and other purposes, comprising two distinct associated projection apparatus, a rotatable carrier for a circular series of lantern slides movable to carry the slides through the optical axis of one of the projection apparatus, means for imparting a step by step progressive movement to the carrier with the steps corresponding to the spacing of the lantern slides in the carrier, a rotatable carrier concentric with the optical axis of the second projection apparatus, and a common driving means for the two carriers and having connections with the second carrier to cause a continuous rotation of the latter.

4. An optical projection apparatus for advertising and other purposes, comprising two distinct associated projection apparatus, a rotatable carrier for a circular series of lantern slides movable to carry the slides through the optical axis of one of the projection apparatus, means for imparting a step by step progressive movement to the carrier with the steps corresponding to the spacing of the lantern slides in the carrier, a rotatable carrier concentric with the optical axis of the second projection apparatus, and a common driving means for the two carriers and having connections with the second carrier to cause a continuous rotation of the latter, said connections being timed with relation to the second carrier to impart a high speed of rotation thereto as compared with the movements of the first carrier.

5. An optical projection apparatus for advertising and other purposes, comprising a suitable casing, a rotatable carrier therein with peripherally located means for supporting a circular series of lantern slides, a projection apparatus in part in the casing and located for the movement of the slides in the carrier through the optical axis of said projection apparatus, another projection apparatus in part in the casing and provided with a rotatable carrier for a single lantern slide and concentric with the optical axis of the second-named projection apparatus, said second-named projection apparatus having a support adjustable with relation to the first-named apparatus for causing coincidence of the optical axes of both apparatus upon a screen, and driving means common to the slide carriers of both projection apparatus for imparting a step by step movement to the first carrier, and

a continuous rotative movement to the second carrier, with the rate of movement of the two carriers timed to impart to the second carrier a high speed of movement as compared to the rate of movement of the first carrier.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HORACE L. FREEMAN.

Witnesses:
MARY FREEMAN,
SAMUEL J. NOLL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."