

July 10, 1934.

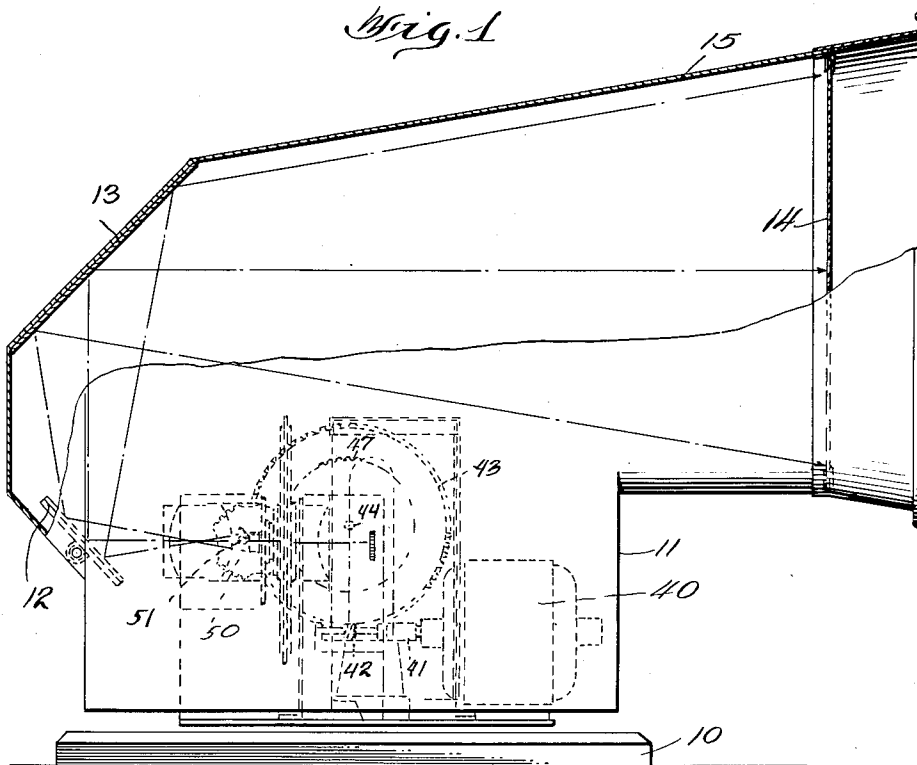
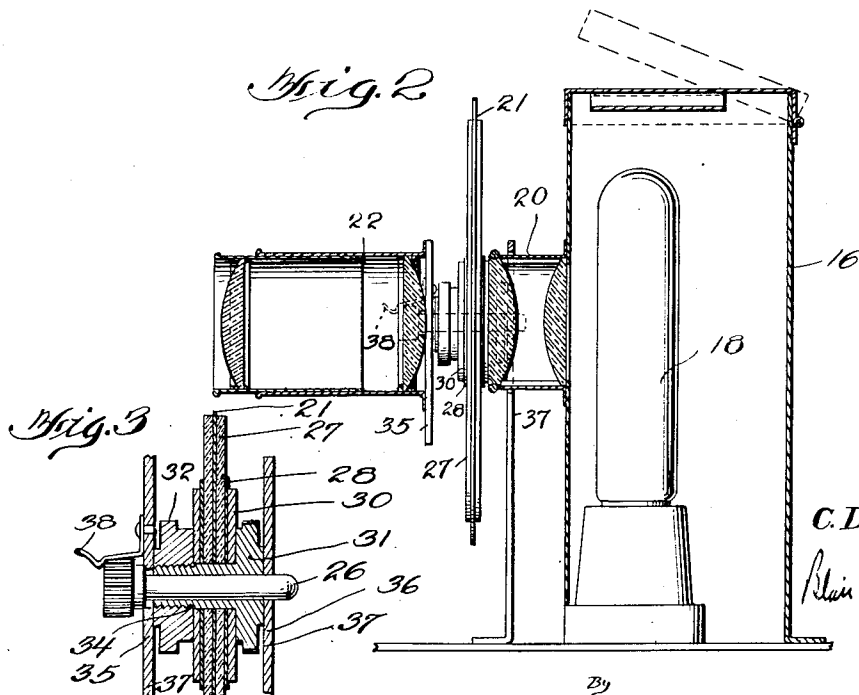
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1,965,688

PROJECTING APPARATUS

Filed Nov. 23, 1931

2 Sheets-Sheet 1



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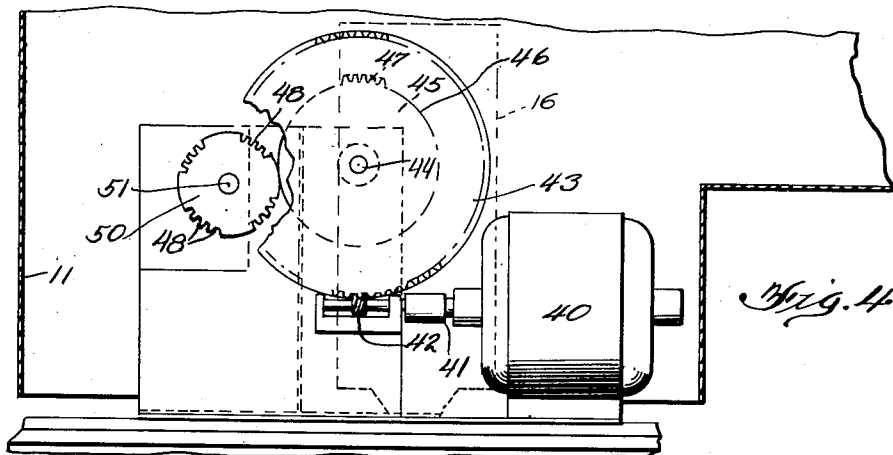
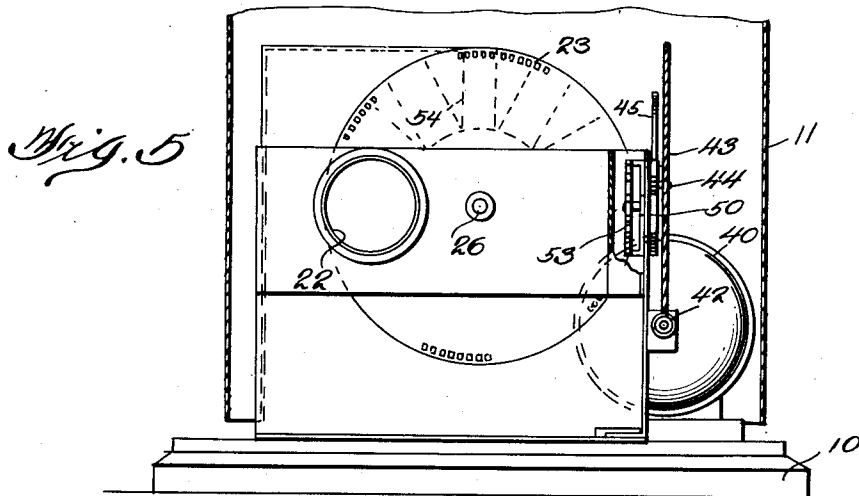
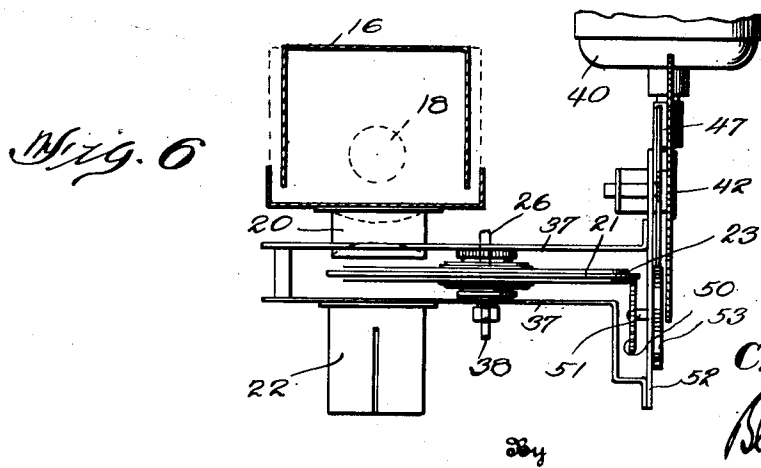
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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PROJECTING APPARATUS

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7 Claims. (Cl. 88—27)

This invention relates to improvements in projectors and more particularly to a compact self-contained apparatus for exhibiting views and advertising matter in store windows, for example.

While the invention is, of course, susceptible to various modifications and other uses it will be hereinafter described with relation to the particular use above stated.

One of the objects of the present invention is to provide a simple and practical projector with associated operating means which may be conveniently set up in a store window and when connected with a suitable source of electrical energy will continuously display one view after another.

A further object is to provide a device of the above general character which may be inexpensively manufactured and assembled.

A further object is to provide a device of the above character requiring little or no attention during its operation other than starting or stopping, and the changing of films exhibited when desired.

A further object is to provide an improved holder for films or transparencies adapted to be used with a projecting apparatus such as herein disclosed.

A further object of the present invention is to provide a complete self-contained projector film, holding means and screen, which, when assembled, occupies relatively small space and may be installed in any store window or other convenient place for calling attention to the goods on sale.

Other objects will be in part obvious from the annexed drawings and in part hereinafter indicated in connection therewith by the following analysis of this invention.

This invention accordingly consists in the features of construction, combination of parts, and in the unique relation of the members and in the relative proportioning and disposition thereof, all as more completely outlined herein.

To enable others skilled in the art to fully comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, drawings depicting a preferred embodiment of the invention have been annexed, as part of this disclosure, and in such drawings like characters of reference denote corresponding parts throughout all of the views, of which—

Fig. 1 is an elevational view of the complete apparatus, certain parts being shown in section or broken away for the sake of clearness, and

certain operating parts being shown in dotted lines;

Fig. 2 is an enlarged detail sectional view of the projecting mechanism itself;

Fig. 3 is an enlarged detailed sectional view of the film carrier and associated parts;

Fig. 4 is a detail side elevational view of a portion of the drive mechanism;

Fig. 5 is a similar view taken at right angles to Fig. 4; and

Fig. 6 is a detail similar view looking down upon the parts shown in Fig. 5.

Referring now to the drawings in detail and more particularly to Fig. 1, 10 indicates a base of any suitable material having a housing 11 containing the drive mechanism and projector mechanism. This housing is open at one side and is provided with a mirror or reflector 12 adapted to direct the light rays on to a second and larger mirror 13 which, in turn, transmits the light rays to a ground glass surface or screen 14 mounted in a suitable rectangular frame member 15. This entire mechanism, so far described, is of exceedingly compact arrangement requiring a floor space approximately three feet square.

Referring to Fig. 2, there is positioned within the housing 11 a second housing 16 containing a suitable source of light 18 for illuminating the film or transparency used in the exhibiting of the various views. This light is, of course, connected with any suitable source of current, not shown, and the light rays from the light are adapted to pass through a condenser 20 at one side, thence through a film 21 and lens projecting mechanism 22 prior to reaching the reflectors 12 and 13 and the screen 14. These parts, broadly speaking, are of old and well known construction and form no part of the present invention, except of course in so far as they enter into the complete combination. For this reason detailed explanation of the various parts of this projecting mechanism are deemed unnecessary.

The film 21, however, is preferably of the disc type, that is, one having a central opening for mounting purposes and peripherally driving openings as shown at 23 in Fig. 5, whereby it is rotated about a holding pin 26. As shown in Fig. 3, it is preferable that this film be permanently mounted as, for example, between two glass plates 27 adapted to prevent a buckling or warping of the film and also to permit the same to be more conveniently handled and placed within the machine. The glass discs 27 are perforated at their central part and about the perforation on the outer side of each of the glasses

is a felt washer 28 compressed tightly against the glass by means of discs or washers 30 which are clamped between bushings 31 and 32. It will be noted that the bushing 31 is provided with a central hub portion 34 threaded at 35 to receive the correspondingly threaded interior opening of the member 32.

Thus, in assembling the parts the washer 30 is first placed upon the hub 34; then the two glass discs 27 with the film therebetween are placed upon the hub and the final felt and disc members 28 and 30 slipped into place prior to applying the threaded nut 32. The parts 31 and 32 are preferably provided with milled peripheral surfaces so as to permit the same to be screwed home, thus holding the various parts in tightly assembled relation.

The two parts 31 and 32 are provided with raised bosses 36 on their outer surfaces where they coact with supporting members 37, thus to reduce the frictional effort of turning the same between the supports and about the pin 26. In assembling the film holder in its supporting frame, it is of course to be understood that the pin 26 is removed by simply releasing the catch 38 and then the film holder with its unitary associated parts is dropped down between the two parts 37 until the opening through the center of the film is in registry with the corresponding openings in the supporting frame 37, whereupon the pin 26 is snapped into holding relation.

Referring now to the drive mechanism, there is preferably employed a small size motor, 40 adapted to be connected in any desired manner with any suitable source of electric current. The motor is provided with a drive shaft 41 near the outer end of which is a worm gear 42 as shown more clearly in Figs. 4 and 5. This worm gear meshes with a disc gear 43 having teeth extending all around the periphery whereby the same is driven continuously and at a substantially uniform speed about a central shaft 44. Mounted upon the same shaft is a second gear 45, the major part of which is smooth as indicated at 46, but about a one-tenth of its circumference is provided with teeth as shown at 47. These teeth are adapted to mesh periodically or once at each revolution, for example, with a similar number of teeth 48 upon an intermittent gear 50 mounted upon shaft 51. As here shown, this intermediate gear 50 has four sections of teeth, as indicated at 48. This construction is such as to cause the disc or gear 50 to make one-fourth of a revolution on each complete revolution of the gear 45. The shaft 51 is mounted in suitable framework 52 and carries on its inner end a sprocket gear 53 which is adapted to mesh with the peripheral perforations 23 in the film 21.

As shown in Fig. 5, this film is preferably provided with a plurality of radially disposed exposures as indicated at 54, being so positioned and arranged on the film as to be moved periodically, that is, once every five or ten seconds into registry with the projecting mechanism 22, each time the disc gear 50 is given a one-quarter turn.

A brief statement of the operation of the present device is substantially as follows: Assuming that the complete apparatus has been installed in a store window, for example, and it is desired to advertise products for sale, the motor 40 and light 18 are, of course, connected with either respective or the same source of electricity and then the desired film and holder are introduced into the mechanism. As above explained, the

film holder is as a unit positioned between the two frames 37, as shown in Fig. 6, and the pin 26 secured in place. Care, of course, should be exercised in positioning the picture with relation to the projector mechanism in accordance with the relative position of the two segmental gears 47 and 48. As long as these gears are out of mesh when the positioning of the film is made, one will realize that the film is then in line with the lens mechanism and condenser and will thereafter remain in line as each successive film is moved into position. As soon as this film is positioned and secured in its supporting mechanism, then the motor may be started and at each complete revolution of the gear 45 a new picture will be flashed upon the screens 14. From experience it has been found that every third or fourth picture should be in the nature of a news picture, thereby more perfectly to hold the attention of the observers.

Inasmuch as the source of electricity and switches for both the motor and light are common and well known expedients, the illustration of these parts has been omitted. Obviously, the switches may be placed upon the supporting table 10 itself, or possibly more conveniently located within the store, thus avoiding the necessity of employees or operators entering the display window.

From the above, it will be seen that the present invention comprehends a small and practical projecting apparatus particularly adapted for use as an advertising mechanism in store windows. The apparatus is of compact and durable construction and may be easily set up or installed in any place desired or moved from place to place as circumstances require. Inasmuch as there are relatively few parts which may be inexpensively manufactured and assembled, there is a relatively small likelihood of the parts getting out of order in use. The films, with their associated holder, may be changed easily and quickly as desired and the holders themselves may be disassembled for putting in new disc films showing more recent news features, for example, when desired. In short, the invention is well adapted to accomplish, among others, all of the objects and advantages herein set forth.

Without further analysis the foregoing will so fully reveal the gist of this invention that others can by applying current knowledge readily adapt it for various applications without omitting certain features that, from the standpoint of the prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and therefore such adaptations should and are intended to be comprehended within the meaning and range of equivalency of the following claims.

I claim:

1. In projecting apparatus of the character described, including a light source and projecting mechanism, spaced supports operatively related to the light source and projecting mechanism and having registering apertures, a rotatable disc film assembly having a central mounting aperture, said assembly being bodily movable between said supports to a position in which its mounting aperture is in registry with the apertures of said supports, a pivot pin extending through said apertures, and means for rotating the film assembly on the axis of said pin.

2. In projecting apparatus of the character described, including a light source and projecting mechanism, spaced supports operatively re-

- lated to the light source and projecting mechanism and having registering apertures, a rotatable disc film assembly having a central mounting aperture, said assembly being bodily movable
 5 between said supports to a position in which its mounting aperture is in registry with the apertures of said supports, a removable pivot pin extending through said apertures, detachable holding means for the pin, and means for rotating the film assembly on the axis of said pin.
 10 3. In projecting apparatus of the character described, including a light source and projecting mechanism, spaced supports operatively related to the light source and projecting mechanism and having registering apertures, a rotatable disc film assembly including a disc film, rigid holding discs between which the disc film is disposed, clamping means for holding the disc film and holding discs in fixed relation, said clamping means being provided with a through aperture, said film assembly being bodily movable between said supports to a position in which said through aperture is in registry with the aperture of said supports, a pivot pin extending through said apertures, and means for rotating the film assembly on the axis of said pin.
 25 4. In projecting apparatus of the character described, including a light source and projecting mechanism, spaced supports operatively related to the light source and projecting mechanism and having registering apertures, a rotatable disc film assembly including a disc film, rigid holding discs between which the disc film is disposed, clamping means for holding the disc film and holding discs in fixed relation, said clamping means being provided with a through aperture, said film assembly being bodily movable between said supports to a position in which said through aperture is in registry with the apertures of said supports, a removable pivot pin extending through said apertures, detachable holding means for said pin, and means for rotating the film assembly on the axis of said pin.
 40 5. In projecting apparatus of the character described, including a light source and projecting mechanism, spaced supports operatively related to the light source and projecting mechanism and having registering apertures, a rotatable disc film assembly, said assembly including a disc film, circular transparent plates between which the disc film is disposed, clamping means for holding said disc film and transparent plates in fixed relation, said clamping means being provided with a through aperture, said assembly being bodily movable between said supports to a position in which the through aperture is in registry with the apertures of said supports, a pin adapted to be inserted through said apertures, and means for rotating the film assembly on the axis of said pin.
 6. A disc film assembly comprising a disc film having a central aperture, rigid discs between which the film is disposed, said discs being provided with apertures in registry with the film aperture, compression washers directly associated with said holding discs and about the apertures thereof, a clamping bushing extending through said apertures and having a threaded extension, and a second clamping bushing adapted to be threaded on said extension, said bushings adapted to engage said washers and being operative to clamp the disc members against the face of the disc film.
 7. A disc film assembly comprising a disc film having a central aperture, two circular transparent holding discs between which the disc film is disposed, said holding discs being provided with central apertures in registry with the film aperture, compression washers directly associated with said transparent discs about the central apertures, a clamping bushing extending through said apertures and having a threaded extension, and a second clamping bushing adapted to be threaded on to said extension, said bushings engaging the compression washers and being operative to clamp the film between the transparent discs.
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