

Nov. 19, 1940.

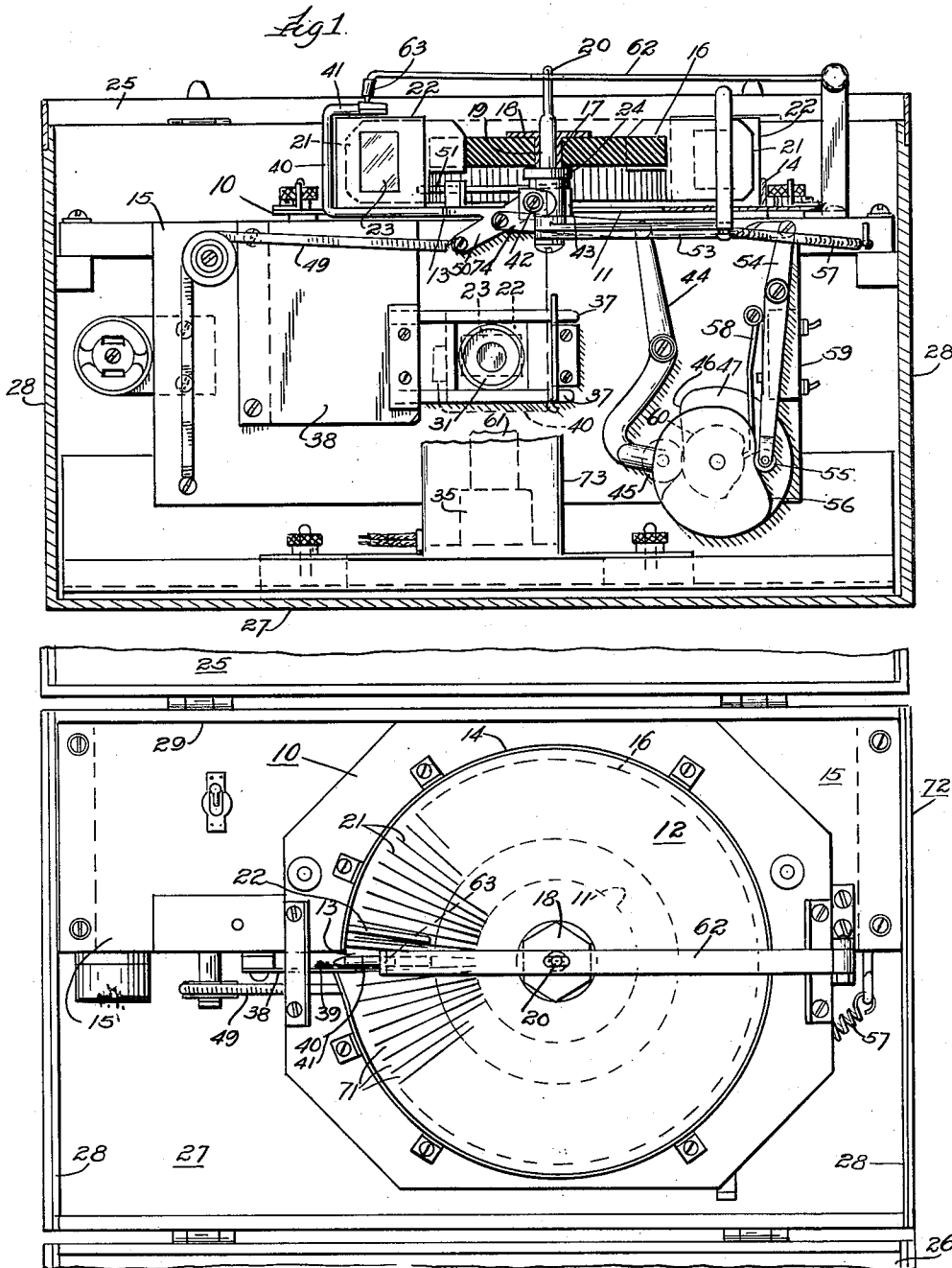
O. W. BODIE

2,221,753

PROJECTOR

Filed March 20, 1940

2 Sheets-Sheet 1



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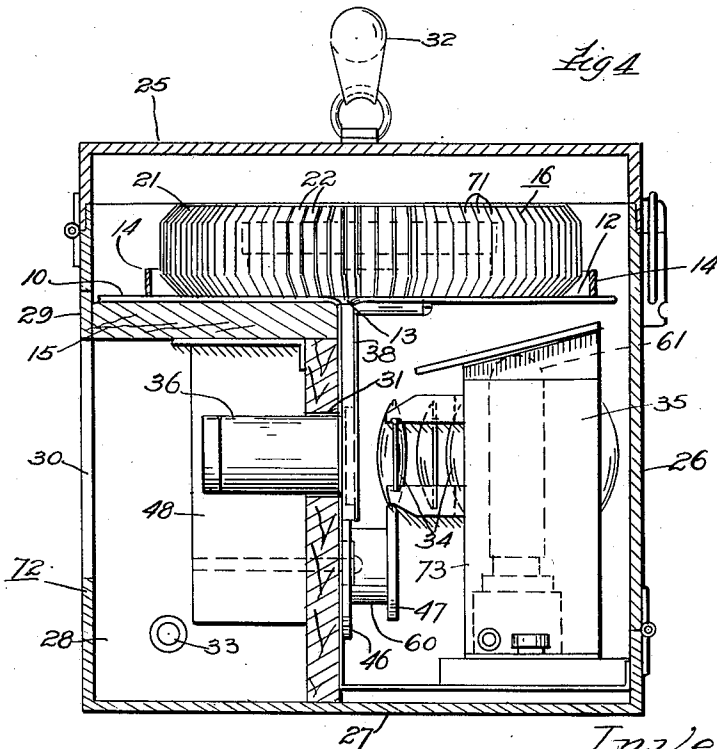
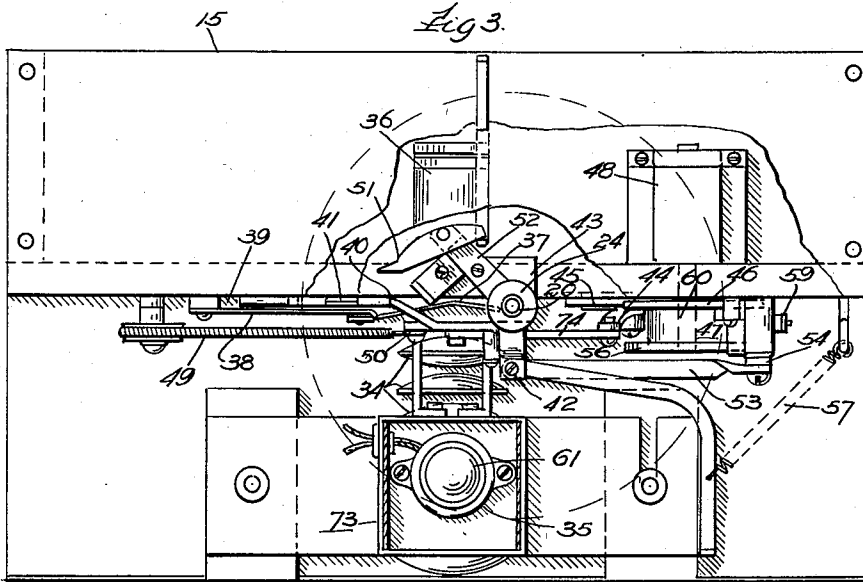
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2 Sheets-Sheet 2



Inventor:
Oliver W. Bodie.
by James R. McKnight.
his Attorney.

UNITED STATES PATENT OFFICE

2,221,753

PROJECTOR

Oliver W. Bodie, Hammond, Ind.

Application March 20, 1940, Serial No. 325,033

4 Claims. (Cl. 88—27)

My invention relates to a portable device for holding and automatically projecting a large number of standard transparencies without the need of extraneous additions to the transparencies.

Among the objects of my invention is to provide a device having a construction adapted to hold and automatically rotate for projection an extensive series of transparencies, said device adapted to hold transparencies of standard size and form without the need of adding ears, extensions, projections of peculiarly shaped frames or holders to the transparencies. My device is also constructed so that the transparencies are swung and not slid to projection position, thus eliminating friction and wear and providing a substantially silent operation. My device is compact and conveniently portable in its own casing. My invention also contemplates such other objects, advantages, and capabilities as will later more fully appear and which are inherently possessed by my invention.

While I have shown in the accompanying drawings a preferred form of my invention, yet I desire it understood that the same is susceptible of modification and change without departing from the spirit of my invention.

Referring to the drawings, Fig. 1 is a vertical sectional view of a projector embodying my invention; Fig. 2 is a top plan view of the same with the top portion of the casing in open position; Fig. 3 is a detail top plan view of the housing structure; Fig. 4 is a vertical sectional view through my projector.

The embodiment selected to illustrate my invention comprises a stationary tray 10 having a central aperture 11, a flat top surface or floor 12 surrounding said aperture 11 and a slot 13 extending from the aperture 10 through the floor 12. A retaining rail 14 is attached to the floor 12 and extends circularly from one edge of slot 13 around the floor 12 to the other edge of slot 13. The tray 10 is supported on top of housing 15 and is removably attached thereto by suitable means such as studs and thumb nuts or the like.

A rotary member 16 has a core 17 with a centrally located bushing 18 having an aperture 19 to receive stud 20. A plurality of spaced fins 21 extend outwardly and slightly diagonally from the core 17. Each of the spaces 71 between adjacent fins 21 is adapted to receive a standard frame 22 having a transparency 23 showing a desired subject. The bushing 18 rests on fiber shoulder 24 at the lower end of stud 20, so that

rotary member 16 is spaced above tray 10. When a frame 22 is inserted in one of the spaces 71 the frame rests on flat top surface 12 of tray 10 and is retained in position by retaining rail 14.

The housing 15 is attached to a casing 72 having a hinged top 25, a hinged back 26, a bottom 27, side walls 28, and a front 29 with an opening 30 registering with an aperture 31 in the housing 15. By closing top and back hinged portions 25 and 26 the casing provides a portable construction for hand transportation by means of handle 32 on top 25. Apertures 33 in one of the side walls 28 permit passage therethrough of electrical connections to a desired source of supply.

In the rear of aperture 31 in housing 15, projection means 73 containing the usual lens 34 and lighting means 35 is provided. A front lens 36 is provided in the aperture 31. At the rear of aperture 31 spaced resilient frame retaining members 37 are attached on one side to the housing 15 and on the other side to a guide plate 38 attached to and spaced from the housing 15 leaving a guide way 39.

An arm 40 has a frame retaining portion 41 at its outer end. Its inner end is pivotally attached to a stud 42 which is attached to a base block 43 attached to the housing 15.

The arm 40 is adapted to swing upwardly so that its frame retaining portion 41 extends through slot 13 in tray 10 into one of the spaces 71 in rotary member 16.

As illustrative of a preferred construction by which arm 40 may be swung I provide the following construction. Adjacent its inner end the arm 40 is pivotally attached to a linkage 74. At the other end the linkage 74 is attached to a cam lever 44. The cam lever 44 is pivotally attached at its fulcrum point to the housing 15. A cam roller 45 is attached to the lower end of said cam lever and is positioned to contact a cam surface 46 on rotating member 47. Said rotating member is attached to a motor 48 by suitable gear reductions. The cam 46 on roller 45 acts to move the cam lever 44 and linkage 74 to swing arm 40 downwardly. A spring 49 is attached to the housing 15 on one end and on its other end to an extension 50 on arm 40 to lift arm 40 upwardly upon cam lever 44 being in such a position that it does not act upon roller 45.

In order to intermittently turn or move rotating member 16 I provide a ratchet pawl member 51 pivotally attached to a lever 52 which is pivotally mounted on base block 43. Pivotally at-

tached to lever 52 is linkage 53 which is pivotally attached to a cam lever 54 having a cam roller 55. The cam roller 55 is positioned to contact a second cam surface 56 on rotatable member 47.

5 A spring 57 is attached on one end to the housing 15, and on the other end to an extension 58 of lever 52. The spring 57 acts to move the lever 52 and ratchet pawl 51. The pawl engages the inner edge of a fin 21 of rotary member 16 to impart a short movement of the space on one fin or more, as desired, to the rotary member 16. Upon completion of said movement cam 56 moves roller 55 and through linkage 53 lever 52 returns ratchet pawl 51 to idle position.

15 A light switch 59 is positioned to contact a third cam surface 60 of rotating member 47 so as to light electrical bulb 61 during a projection operation.

20 A gravity lever 62 is attached to the housing 15 and has a finger 63 adapted to enter in turn each space and serves to keep the rotating member in register with the cycle of operation.

In use, let us assume that the transparencies to be projected have been placed in spaces 71 and rest on floor 12 of tray 10. Arm 40 is within one of the spaces 71 and frame retaining portion 41 receives a transparency 23. The arm moves downwardly until the transparency is in register with aperture 31 and the projection means 73 and stops for the projection of the transparency on a screen or other suitable surface. The arm then moves upwardly and places the transparency within empty space 71. The rotary member 16 moves the extent of a space and arm 40 enters this space to repeat the above described operation.

Having thus described my invention, I claim:

1. In a device of the class described a housing, a tray attached to said housing, said tray having a central opening and a slot, a rotatable hub extending upwardly through the opening in said tray, a rotating member attached to said rotatable hub and positioned above said tray, said rotating member having a plurality of spaced fins forming with said tray a plurality of compartments, each compartment adapted to receive a standard transparency, said housing having an aperture, projection means including lens and lighting means positioned to register with said aperture, an arm pivotally attached to said housing, said arm having a transparency holding portion, said arm of such length and so positioned as to swing in one direction with its transparency holding portion extending through the slot in the tray into a compartment of the rotating member and to swing in the opposite direction with its transparency holding portion registering with the aperture in the housing, and means for swinging said arm.

60 2. In combination with projection means including lens and lighting elements, a housing, a stationary tray having a slot attached to said housing, a rotatable hub extending above said tray, a rotary member attached to said rotatable hub, said rotary member having a plurality of spaced fins forming with said tray a plurality of compartments to receive a plurality of standard transparencies, a ratchet pawl positioned to

contact said rotary member, an arm swingably attached to said housing, a motor operated rotating member having three cam surfaces, connections between the pawl and one of the cam surfaces, connections between the arm and another of the cam surfaces and connections between the lighting element and the third of the cam surfaces, resilient members extending between the housing and the lighting element, the housing and the pawl and the housing and the arm respectively, one of said resilient members and one of said cam surfaces acting to intermittently move the pawl to impart movement to the rotary member, another of said resilient members and cam surfaces adapted to swing said arm to the rotary member to engage a transparency in one of the compartments and move said transparency in registry with the projection elements for projection and then return said transparency back to said rotary member, and another of said resilient members and cam surfaces actuating the lighting element only during the projection operation.

3. In combination with projection means, a housing a rotating magazine adapted to receive a plurality of transparencies, a swingable member pivotally attached to said housing, a spring attached to said housing and to said swingable member to swing said swingable member into said magazine to obtain a transparency, a cam construction attached to said housing adjacent said swingable member and a rotating member having a cam surface adapted to contact said cam construction and cause said cam construction to then swing said swingable member to place the transparency into position for projection by the projection means, said spring upon the swingable member being released by said cam construction adapted to finally swing said swingable member back again into said magazine to return the transparency thereto and obtain another transparency therefrom.

4. In combination with projection means, a housing, a stationary tray having a slot, and attached to said housing, a rotatable member positioned above said tray, said rotatable member having a plurality of spaced fins forming with said tray a plurality of compartments to receive a plurality of standard transparencies, a swingable member pivotally attached to said housing, a spring attached to said housing and to said swingable member to swing said swingable member upwardly through said slot in said tray into said rotatable member to obtain a transparency, a cam construction attached to said housing adjacent said swingable member and a rotating member having a cam surface adapted to contact said cam construction and cause said cam construction to then swing said swingable member downwardly to place the transparency into position for projection by the projection means, said spring upon the swingable member being released by said cam construction adapted to finally swing said swingable member upwardly again into said rotatable member to return the transparency thereto and obtain another transparency therefrom.

OLIVER W. BODIE.