

Feb. 4, 1930.

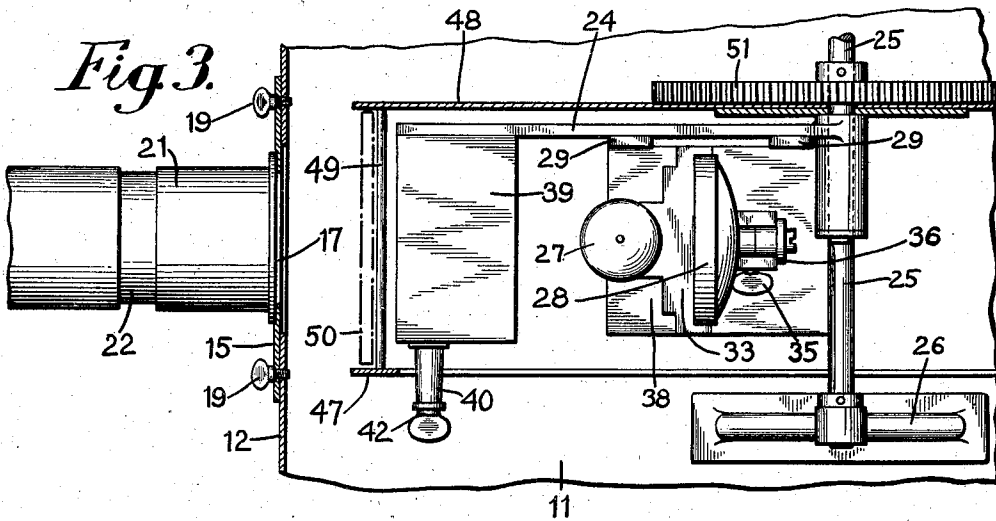
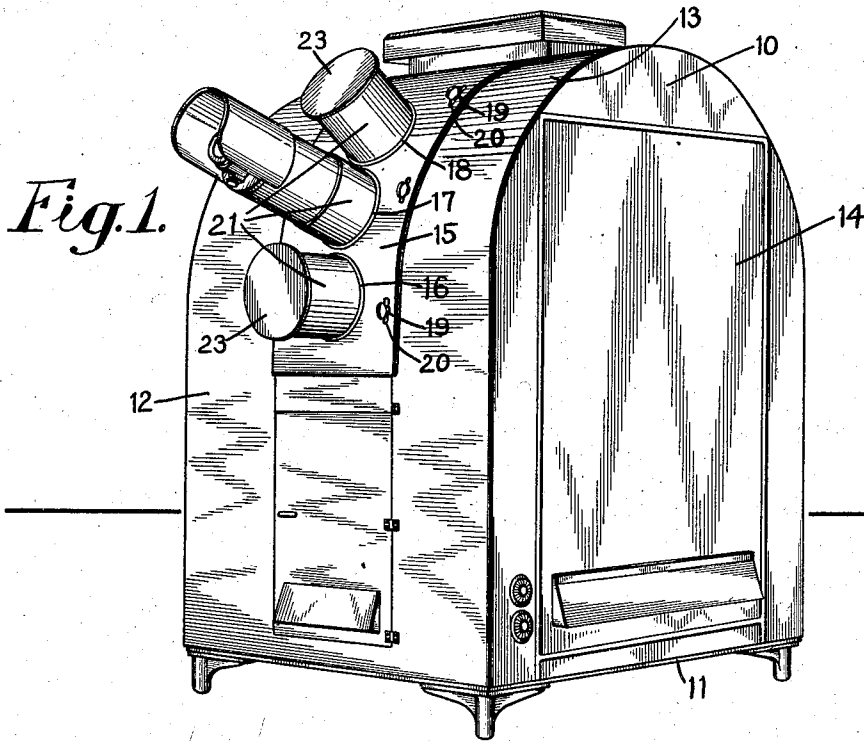
W. E. SCHWANHAUSSER

1,746,014

PROJECTION APPARATUS

Filed March 14, 1928

2 Sheets-Sheet 1



Inventor
WALTER E. SCHWANHAUSSER

By his Attorneys
Cooper, Kerr & Dunham

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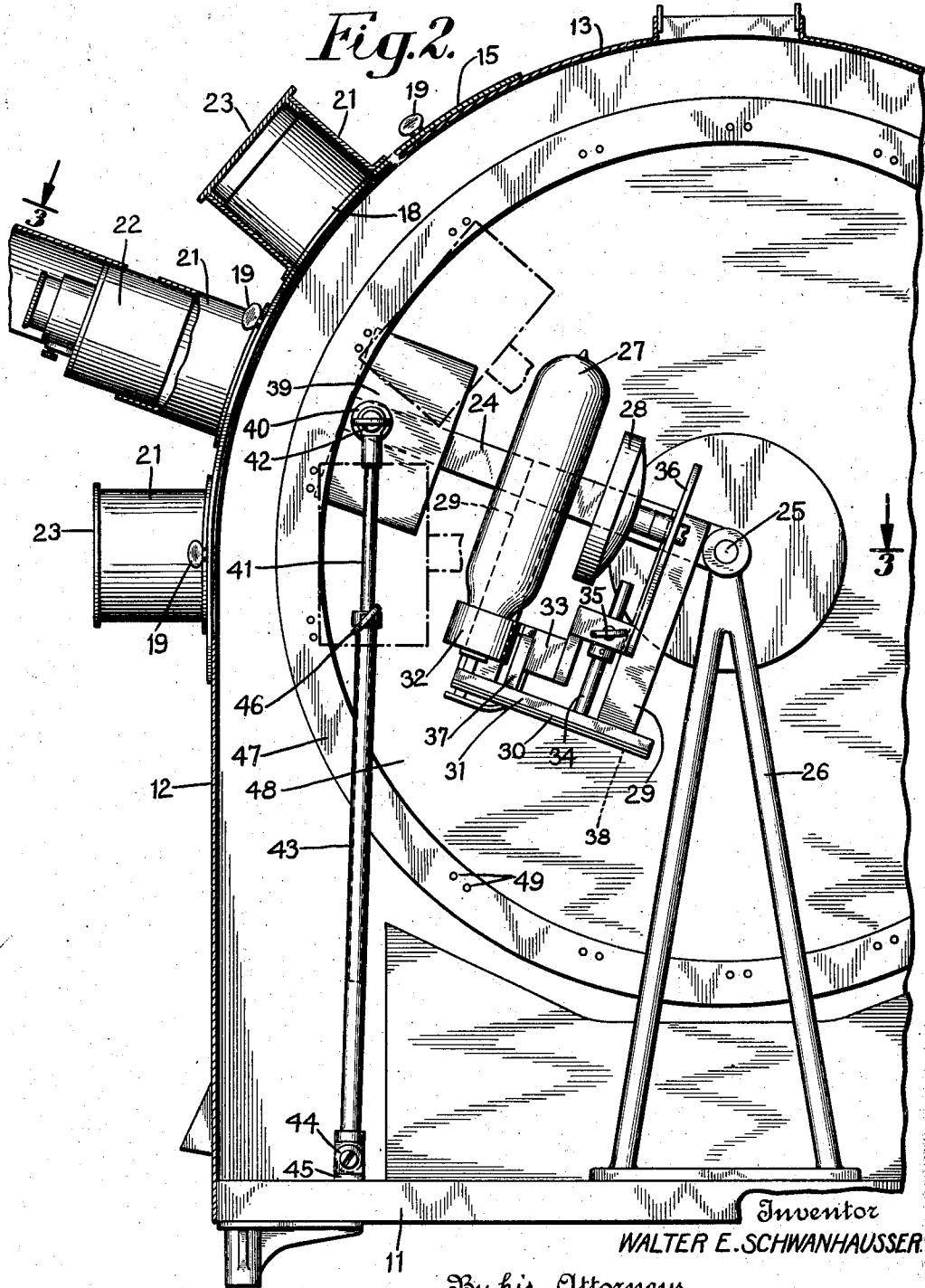
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UNITED STATES PATENT OFFICE

WALTER E. SCHWANHAUSSER, OF MAPLEWOOD, NEW JERSEY, ASSIGNOR TO CHARLES BESELER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY

PROJECTION APPARATUS

Application filed March 14, 1928, Serial No. 261,455, and in France February 1, 1928.

This invention relates to projection apparatus and more particularly to one designed to throw an image at various heights upon a screen.

5 Among the objects of my invention is to provide a projection apparatus which may be adjusted as the result of simple manipulation so that the position of an image upon a screen may be changed in a vertical direction
10 without necessitating tilting of the entire apparatus or of moving it toward or away from the screen. As ancillary to and embodied with the attainment of the stated object there is a further object residing in
15 certain simple features of construction which render it possible to shift the line of collimation and the source of light with one adjustment.

Another object resides in providing a housing or cover for projection apparatus which
20 is provided with means for enabling the selection of the opening and adjustment of the opening through which projection is to be had from the inner side of the housing or cover.

25 In the drawings:

Fig. 1 is a perspective view of the projection apparatus;

Fig. 2 is an elevation of the projection chamber of the apparatus; and

30 Fig. 3 is a view on line 3—3 of Fig. 2.

My invention is illustrated as being embodied in a simple form of projection apparatus which is particularly designed for advertising purposes. The housing 10 has
35 a rectangular base 11 and vertically extending walls, the forward wall 12 and the rear wall merging into one another in the form of a curved roof 13. The housing 10 has a door 14 in a side wall for the purpose of obtaining
40 access into the interior of the housing for making the adjustments which will be hereinafter described. Mounted upon the forward wall 12 is a plate 15 formed to fit the curved surface of the wall and to constitute
45 a part thereof. Plate 15 has a plurality of openings at 16, 17 and 18. This plate is adapted to be secured to the front wall 12 by means of shouldered screws 19 which engage within threaded holes in wall 12. Slots 20
50 are provided in plate 15 so that the plate may

be moved and placed in any desired position within the limits of the length of the slots.

Secured to the plate 15 and opposite each of the openings 16, 17, and 18, there is a sleeve member 21 which is adapted to receive a
55 projection lens system 22. As shown in Fig. 2, the projection lens system 22 is supported by the intermediate one of the three sleeves 21. The other two sleeves, which are not
60 being utilized, have their open ends closed by means of similar covers 23.

In a machine of the character illustrated, it is convenient that the roof of the machine be rounded. One end of member 24 is loosely
65 mounted upon shaft 25 which is disposed at the upper extremity of standard 26.

Member 24 carries a light source in the form of a lamp 27 and a reflector 28. Bars
70 29 which extend from member 24 have affixed thereto a platform 30 having guide rails 31 at opposite edges thereof which enable the lamp 27 and the reflector 28 to be adjustably
75 positioned in respect to shaft 25. 32 is a lamp socket which is carried by a member 33 which is supported upon rod 34 by means of frictional engagement therewith caused by the
80 tightened condition of screw 35. Member 33 also carries a bar 36 to which the reflector 28 is secured. Guiding pins 37 and bar 34 serve to guide the light source in a direction
85 perpendicular to the platform 30. Both the guiding bar 37 and the bar 34 are mounted upon a plate 38, Fig. 3, which may slide forward and backward upon platform 30 as
90 guided by rails 31.

The forward end of member 24 carries the condensing lens system 39. Since I have
95 chosen to mount the source of light in a manner which permits of variation in the spaced relation of the condensing lens system and the source of light I have shown the condensing lens system as being rigidly mounted to member 24.

Extending from the casing of the condensing lens system 39 there is a projection
100 Fig. 3, which pivotally supports one end of rod 41. The pivot pin 42 which engages rod 41 is threaded so that when the position of member 24, and hence of the condensing lens system 39, is obtained the threaded pin 42

may be tightened so as to rigidly maintain the adjusted position. Rod 41 is one member of a telescoping rod connection of which hollow rod 43 is the other member. Hollow rod 43 is pivoted at 44, a pivot which is supported by a bracket 45 on the floor 11 of the apparatus. As the angular position of member 24 is varied for the purpose of placing the line of collimation of the condensing lens system in the direction of any one of the three openings 16, 17 and 18, the telescoping relation of rods 41 and 43 will be varied. When the desired angular position of member 24 is obtained screw 46 may be tightened so that rods 41 and 43 will serve as a supporting member for the forward end of member 24.

With the apparatus just described horizontal projection may be obtained by lowering member 24, Fig. 2, to a horizontal position in which the line of collimation of the condensing lens is in alignment with the center of opening 16, the position of opening 16 having been previously obtained by the proper positioning of plate 15. The cover 23 on sleeve 21 which extends away from opening 16 may then be replaced by the projection lens system 22. The desired focus is obtained in the usual manner by adjusting the axial position of the projection lens system within sleeve 21. The cover 23 which has been replaced may be used to close one of the other of the two openings 17, 18. With member 24 in this position the projection apparatus may be used in a manner similar to the manner of use of ordinary projection apparatuses having but one direction of projection. If it is desired to increase the height of the position of the image upon a screen, instead of tilting the entire apparatus it is only necessary to vary the angular position of member 24 so that the line of collimation of the condensing lens system may coincide with a line passing through the center of illumination and either one of the two openings 17, 18. One such position is illustrated in Fig. 2.

The apparatus is particularly useful for advertising purposes where space is limited and where it is desired to throw an image upon a screen without necessitating the tilting of the projection apparatus. The machine which I have disclosed is a successive view machine having a rotating frame 47, and disk 48 mounted for rotation upon and by shaft 25. Bars 49 serve to pick up successive slides 50, of a chain of slides, not shown, so that there may be always one slide in front of the condensing lens system. The frame is rotated in a clockwise direction, Fig. 2, by means of a step-by-step actuating unit, not shown, which is connected with gear 51 mounted upon shaft 25.

The mechanism relating to the step-by-step mechanism and the slide chain forms no part of the present invention, but reference may be had to the United States Patent No. 1,650,507

for a detailed description of similar mechanism which is adapted to be utilized with the projection apparatus disclosed herein.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects previously stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What I claim is:

1. The combination with a housing, a light source and condensing lens system, of means for pivotally supporting the light source and condensing lens system, said means comprising a member pivotally supported within the housing, and a plurality of openings in the wall of the housing, said openings being so placed as to coincide with the line of collimation of the condensing lens system for different angular positions of said member.

2. The combination with a housing, a light source and condensing lens system, of means for pivotally supporting the light source and condensing lens system, said means comprising a member pivotally supported within the housing, a plate forming a part of a wall of the housing, said plate being adapted to be positioned relative to the housing, means for removably clamping said plate in a desired position, and openings in said plate for permitting the projection from within the housing at a plurality of points through the wall of the housing.

In testimony whereof I hereto affix my signature.

WALTER E. SCHWANHAUSSER.