

Jan. 6, 1925.

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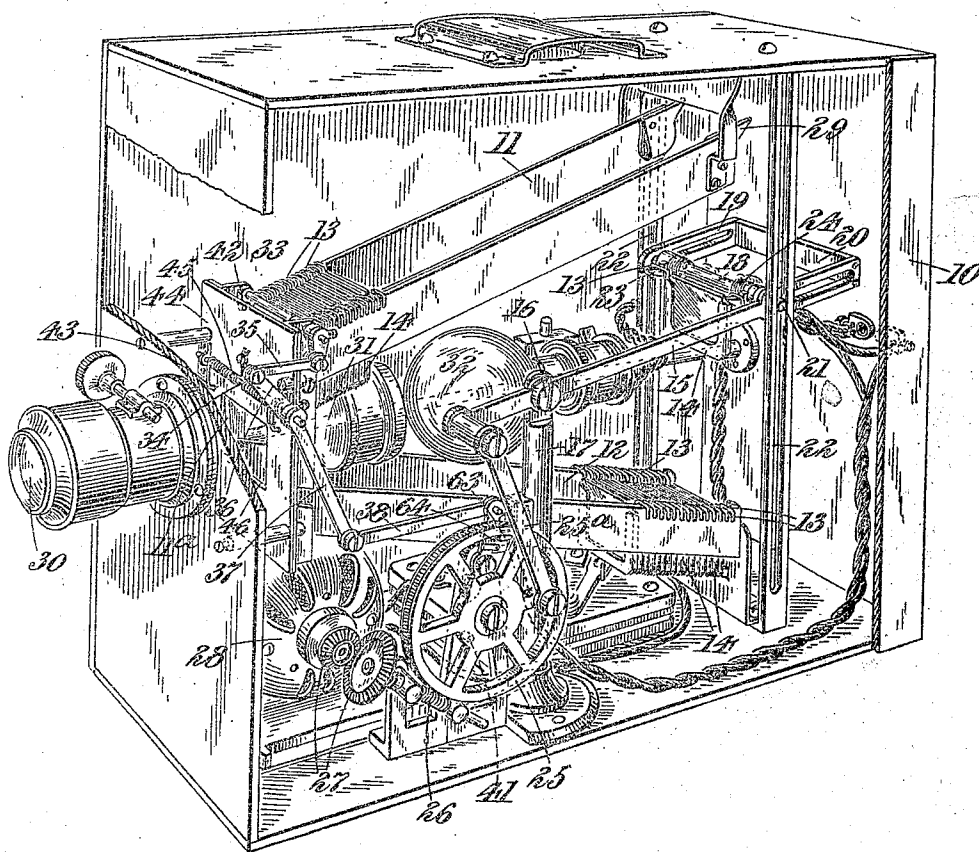
W. C. CHAMBERLAIN

MECHANICAL TRANSPORTING DEVICE

Filed Aug. 2, 1922

2 Sheets-Sheet 1

Fig. 1.



William C. Chamberlain
Inventor

Inventor

per *Wm Wallace White*
Atty.

Atty.

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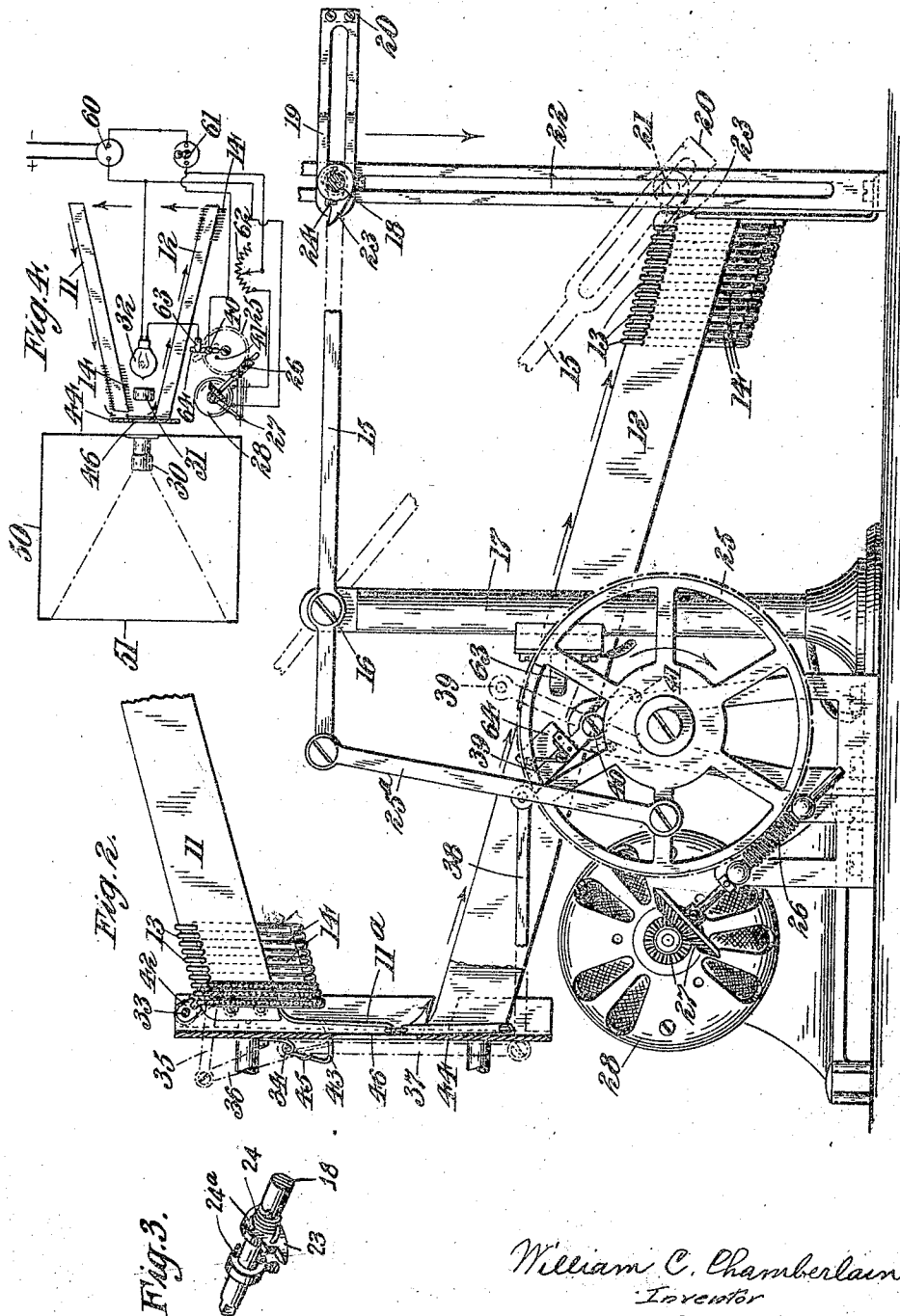
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William C. Chamberlain
Inventor
Per *Wallace White*
Att'y

UNITED STATES PATENT OFFICE.

WILLIAM CHARLES CHAMBERLAIN, OF LONDON, ENGLAND.

MECHANICAL TRANSPORTING DEVICE.

Application filed August 2, 1922. Serial No. 579,132.

To all whom it may concern:

Be it known that I, WILLIAM CHARLES CHAMBERLAIN, subject of George V, King of Great Britain and Ireland, residing at 18 Berwyn Road, Herne Hill, London, S. E. 24, England, have invented certain new and useful Improvements in or Relating to Mechanical Transporting Devices, of which the following is a specification.

10 This invention consists in improvements in or relating to devices for mechanically transporting articles from one point to another, and is particularly adapted to, although not limited to, transporting devices in which the articles travel for a part of the distance under the action of gravity.

According to the present invention a transporting device for this purpose comprises in combination two runways (an upper and a lower one) spaced apart and each inclined lengthwise, in a vertical plane, towards the other, one or more carriers constructed to travel along said runways, and means to lift a carrier from the lower runway and to deposit it on to the upper runway at or near the upper end thereof so that the carrier can thereafter travel down said upper runway (for example by gravity) towards the lower end thereof.

30 In a preferred construction the lengths of the runways are convergent and are both contained substantially between the same pair of vertical planes and the means to lift a carrier from the lower runway operates from the lower end thereof.

The invention is applied, in the preferred form, to a device for bringing automatically a series of separate pictures continuously in rotation one after the other before a projecting or viewing device, for advertising, educational, entertainment or other purpose, and a feature of the invention consists in a handy and compact structure for enabling this to be done.

45 The foregoing and other features of the invention will be more clearly understood from the following description, which is that of one preferred construction illustrated in the accompanying drawings, in which—

50 Figure 1 is a perspective view of an apparatus with a portion of the case removed to show the interior mechanism;

55 Figure 2 is a side elevation of a part of the mechanism illustrated in Figure 1;

Figure 3 is a perspective view of a detail of the mechanism showing the parts separated for the sake of clearness; and

Figure 4 is a diagram of the electrical connections embodied in the apparatus.

Like reference numerals indicate like parts in the several figures of the drawings.

In the construction illustrated, the parts are shown in a box-like case 10. Secured by brackets on the walls of the case are two convergent runways 11 and 12 each of which comprises two parallel spaced bars whereon overhanging hook projections 13 from carrier-frames 14 can slide.

At the rear end, that is to say the right-hand end as viewed in Figures 1 and 2, the frames are lifted from the lower runway 12 and deposited at the upper end of the upper runway 11. For this purpose a pivoted arm 15 rocking about a pin 16 at the upper end of a standard 17 carries a spindle 18 between it and an opposing bar 19 supported from it by a bracket 20. Pins 21, one at each end of the spindle 18, slide in vertical guides 22 and also in slots formed lengthwise in the extremity of the arm 15 and the bar 19.

As shown more clearly in Figure 3, there is at each end of the spindle 18 a detent 23 mounted to rotate on the spindle and normally held by a spring 24 in the position illustrated in Figures 1 and 2. A pin-and-slot connection 24^a between the spindle 18 and the detent 23 prevents rotation of the latter by the spring beyond the position shown in an anti-clockwise direction.

The arm 15 is rocked about its pivot-pin 16 by means of a crank-rod 25^a pivotally mounted near the periphery of a worm-wheel 25 driven by a worm 26 which itself is rotated by bevel-gearing 27 by an electric motor 28. Thus, as the arm 15 is rocked to carry the spindle 18 downwardly, the detents 23 snap past the hook-like projections 13 on the end carrier 14 on the lower runway so that on the return upward movement of the arm 15 the detents engage beneath the hooks 13, as indicated in chain lines in Figure 2, and elevate the end carrier. One carrier is shown in a partially elevated position in Figure 1. Near the upper limit of its travel its hooks 13 slide along the sloping under surfaces of, and thereby lift, and then snap past, spring-controlled end projections 29 hinged on the runway members 11 so that as the spindle 18 is again lowered the

hooks will be caught by the projections 29 and the carrier will then slide down the upper runway towards the lower extremity thereof.

5 At the lower extremity of the runway 11 is an escapement permitting one at a time from the number of carriers which may be collected at the front extremity of the runway 11, as illustrated, to be dropped behind
10 a projecting lens 30 and between it and a condenser 31 behind which is an incandescent electric lamp 32 carried in a holder the position of which can be adjusted along a rod fixed to the case 10.

15 The escapement comprises two rocking spindles 33 and 34 which are rocked by the link-connections 35, 36, 37 and 38 from a rocking lever 39 rocking about a pin 40. The end of the rocking lever 39 is adapted to be engaged once in every revolution of the worm-wheel 25 by means of a laterally-projecting pin 41 in the path of which the end of the lever 39 is disposed.

When the rocking lever 39 is in its normal
25 position (shown in chain-lines in Figure 2) the rocking spindles and their operating links are in the positions illustrated in Figure 1. In this condition jaw-like members 42, which comprise the main escapement
30 members, one at each end of the shaft 33, present their jaws vertically downwards so as to hold back the carriers on the runway 11, and hooks 43 on the spindle 34 are inserted through orifices in an apertured plate
35 44 between the lens 30 and condenser 31.

When the rocking lever 39 is moved to the full-line position shown in Figure 2 by engagement with the pin 41, the links 35, 36 and 37 are moved to the dotted line positions shown in Figure 2 and the members 42 and 43 are in the full-line positions. In this position, the members 42 are ready to receive the hooks of the adjacent carrier. When the pin 41 disengages from the end of the rocking lever 39 springs 45 surrounding the spindle 34 return the parts to the position illustrated in Figure 1 which releases the end carrier 14 so that it slides beyond and drops from the extremities of the runway-members 11. Before it thus drops the hooks 43 have been re-inserted to extend beyond the back of the plate 44 and catch in the hooks 13 of the carrier which has thus dropped and suspend it so that a picture held in the carrier is exposed at the orifice 46 in the plate 44. At the next engagement of the pin 41 that carrier will be dropped on to the lower runway 12 its fall being checked by leaf-springs 11^a as indicated in Figure 2, when the hooks 43 are withdrawn before the next succeeding carrier is dropped on to the hooks after they are moved back again into the dotted-line position illustrated in Figure 2.

65 To operate in conjunction with such a de-

vice an attachment may be provided comprising a case, conveniently of bellows form, 50, having means to pass it over the lens 30 and a ground-glass or other translucent screen 51 on to which the pictures may be
70 projected.

The electrical connections are as shown in Figure 4. A plug connector at 60 has one pole connected to a switch 61, conveniently carried outside the case 10, and the other
75 pole connected in parallel with one terminal of the lamp 32 and one terminal of the motor 28. The other terminal of the motor is connected through a starting rheostat 62 with the other pole of the main switch 61,
80 whereas the other terminal of the lamp 32 is connected in series with a cut-out or knife-switch 63 itself in series with the main switch 61. As shown more clearly in Figure 2 the leaves of the knife-switch 63 are
85 mounted on the standard or pillar 17 and the blade 64 of the switch is carried on the rocking lever 39. Thus, during the changing of a picture the light is cut out.

The invention is not limited to the use of
90 the apparatus for the purposes of picture-projection although this is its chief application, but it may have a wider application in the transportation of loads from a low level to a higher level from which they are to pass
95 to a distant point whereafter the carriers for the loads are returned to the starting or initial position.

I claim:

Picture projection apparatus comprising
100 convergent runways disposed one above the other, carriers adapted to contain pictures and provided with hooks to enable them to gravitate along said runways, rotary driving means, a pivoted arm adapted to be rocked
105 by said driving means, a spindle carried by said arm and provided with spring detents to lift the carriers, guides for said spindle, means for transferring the carriers from said detents to the upper end of said upper
110 runway, escapement mechanism to release the carriers successively from the upper runway, optical projection means, means to hold successive carriers stationary across the optical axis of said optical projection means
115 subsequently to their release by the escapement mechanism, means whereby the source of light for the optical projection means is operative only during the time that a picture is in position for projection, and means
120 to subsequently release the carriers successively and allow them to fall on to and slide along the lower runway.

In testimony whereof, I affix my signature in the presence of two witnesses.

WILLIAM CHARLES CHAMBERLAIN.

Witnesses:

H. T. P. GEE,
E. S. WICKENDIN.