

PATENT SPECIFICATION

(11)

1 403 178 ✓

1 403 178 C

- (21) Application No. 16694/73 (22) Filed 6 April 1973
(31) Convention Application No. 2 228 603 (32) Filed 12 June 1972 in
(33) Germany (DT)
(44) Complete Specification published 20 Aug. 1975
(51) INT. CL.² G03B 23/06
(52) Index at acceptance
G2J 41L2C



(54) SLIDE PROJECTOR

1 (71) We, FRANKE & HEIDECKE
G.m.b.H. a German Body Corporate, trad-
ing as ROLLEI-WERKE FRANKE & HEIDECKE,
of 196 Salzdahlumerstrasse, Braunschweig,
5 Germany do hereby declare the invention,
for which we pray that a patent may be
granted to us, and the method by which it
is to be performed, to be particularly de-
scribed in and by the following
10 statement:—

The present invention relates to a
magazine-type still projector for
horizontally placed circular magazines.
Such circular magazines have a number of
15 slide compartments which are arranged in
circular form and the initial compartment
of which bears the number "1".

The present invention may facilitate the
circular magazine in the inserted condition.
20 finding of the initial compartment of the
Magazine-type still projectors have already
become known which co-operate with cir-
cular magazines the magazine bottom of
which is rotatable in relation to the
25 magazine compartments. In the case of these
magazine-type still projectors, several oper-
ations are necessary to ascertain the initial
compartment. Before the entire circular
magazine is inserted into the still projector
30 it is necessary here to check whether the
magazine bottom lies in the correct posi-
tion in relation to the compartments. If
this is not the case, the magazine bottom
of the circular magazine is rotated until
35 the bottom opening is aligned with the in-
itial compartment. Then a slider which is
secured to the body of the compartment
snaps into a groove on the edge of the
magazine bottom beside the slide passage
40 opening. When the slide passage opening in
the magazine bottom and the compartment
1 of the compartment body coincide, the
entire circular magazine is placed upon the
magazine-type still projector and rotated
45 into engagement, that is until the initial

compartment stands above the picture win-
dow. Engagement is effected by a groove
lying on the inner edge of the compartment
body, in which a resilient feeler pin on the
magazine-type still projector engages. At
50 the same time or after the second en-
gagement operation the first engagement,
that is the positioning between the
magazine body and the magazine bottom,
must be released. 55

Automatic, that is motor-driven, rotation
of the circular magazine, fitted in random
position, into the initial position is not pos-
sible with the known magazine-type still
projectors. 60

The present invention preferably
provides a positioning apparatus for the in-
itial position of a circular magazine either
for manual or for automatic operation.

According to the present invention there
65 is provided a slide projector for use with a
slide magazine movable relative to the
projector to bring successive slides to a
position to be transferred from the
magazine to a projection position within
70 the projector, said projector com-
prising a magazine support, a passage
along which a magazine is movable, a
locking member having a projection, spring
means for moving the locking member into
75 a first position so that its projection is
moved into said passage and slide transfer
means for transferring a slide from and to
a magazine on said support, a portion of
the slide transfer means being engageable
80 with the locking member to move its
projection out of said passage, whereby
when a magazine having an opening is
mounted on said support, the projection
moves into said passage and engages said
85 opening to locate the magazine when the
magazine is moved to a position in which
the first slide is to be shown and whereby
when the slide transfer means moves the
first slide the projection is moved into a 90

[Price 33p]

second position out of said passage and thus out of the opening to allow further movement of the magazine.

Constructional embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, wherein:—

Figures 1a-c show plan views of a circular magazine with a locking member lying therebeneath and a slide change push member;

Figure 2 shows a lateral elevation of Figure 1a, in section with the exception of the locking member; and

Figure 3 shows a plan view of the gearing of a circular magazine which runs automatically into the initial position.

In Figure 1, 1 designates a horizontal circular magazine having a detent groove 3 on a guide path 2 lying on the lower edge of the circular magazine, represented in plan view. Close beneath this inner guide path 2 there is a locking member 4 which is articulated to a journal 5. The locking member 4 is pressed with the aid of a spring 6 against the stop 7. At the level of the picture window (not shown) it has an upwardly bent lug 8 which is designed so that it can slide easily into the detent groove 3. A second lever arm end of the locking member 4 extends with a control face 9 into the path of a pin 10 of a change push member 11.

The manner of operation of the locking apparatus of the magazine-type still projector for the initial compartment in the circular magazine is to be described below:—

In Figure 1a the locking member 4 is represented in the engaged condition. The initial compartment of the circular magazine stands beside the picture window (not shown) and the bent-up lug 8 has dropped into the detent groove 3. The stress of the spring 6 has the effect that the locking member 4 bears on the stop 7 lying beneath the circular magazine 1. Before the circular magazine 1 is transported further for the placing ready of the second slide, the locking member 4 must be lifted with its lug 8 out of the detent groove 3. This is achieved by the fact that immediately at the beginning of the operation of the change push member, which takes place to the left, the pin 10 of the change push member 11 runs against the control face 9 of the locking member 4.

As represented in Figure 1b during the transport step of the slide change push member, the pin 10 presses the control face 9 downwards and the lug 8 of the locking member 4 comes completely out of engagement with the detent groove 3 and the inner guide path 2 of the circular magazine 1. In this operation the locking member 4 lifts away from the stop 7 and

the spring 6 is stressed.

Figure 1c shows the apparatus after the further transport of the circular magazine 1 has taken place, with the slide change push member 11 moved out. The locking member 4 does not bear either on the stop 7 or with its control face 9 on the pin 10. The initially stressed spring 6 moves the lug 8 of the locking member 4 in the direction towards the detent groove again. However this groove, by reason of the advancing of the circular magazine, has already travelled one compartment further. Therefore the lug 8 places itself against the inner guide path 2 of the circular magazine 1 and thus is in a renewed readiness position for a reverse rotation of the circular magazine 1 which may have to be effected by hand, after this or further advancing steps.

Figure 2 shows the lateral elevation of Figure 1a, in section with the exception of the locking member. The position of the slide 12 with the change push member 11 moved out is represented in dot-and-dash lines. The lug 8 of the locking member 4 has snapped into the detent groove 3 of the circular magazine 1. On account of the ramp 13 indicated in dot-and-dash lines, the circular magazine 1 has only a narrow annular bottom.

In Figure 3 there is represented in plan view the gearing of a circular magazine which runs into the initial position with the aid of drive devices. The lug 8 dropping into the detent groove 3 is situated in this apparatus on a locking member 13 which is mounted on a journal 5. A second lever arm of the locking member 13 lies in the extension of the first lever arm formed by the journal 5 and the lug 8. The locking member 13 cooperates approximately at the end of the second lever arm through a pin-slot connection 14 with a push member 15 arranged perpendicularly to it. On the left end of the push member 15 there is a knob 16 protruding from the magazine-type still projector and a friction wheel gearing 17 arranged on the outer guide path of the circular magazine 1. The knob 16 is pressed against the inner wall of the magazine-type still projector by a strong tension spring 18 on the other end of the push member 15. Parallel with the strong tension spring 18, a weak tension spring 19 anchored with its upper end to the locking member 13 engages with this end of the push member 15. Approximately in the middle of the push member 15 there is a dog 20 which cooperates with a locking pawl 21 arranged above it. The angular locking pawl 21 is unlocked by means of a pin 22 lying on the outermost end of the locking member 13. On operation of the knob 16 and thus of the push member 15 moreover a contact 23 situated on the fric-

tion wheel gearing 17 is closed. The contact 23 sets the motor (not shown) for the friction wheel gearing 17 in motion.

Approximately in the middle of the first lever arm of the locking member 13 between the journal 5 and the lug 8 there is a rotatably mounted control extension piece 24 which co-operates with the slide change push mechanism 25.

The manner of operation of this second example of embodiment is as follows:—

With the projection room possibly darkened, the circular magazine 1 is inserted at random into the magazine-type still projector. In this operation the inner guide path 2 of the circular magazine 1 is not contacted by the lug 8 of the locking member 13, since the pin of the push member 15 on the left stop of the slot 14 prevents rotation of the locking member 13 to the right by the weak spring 19. Only on operation of the knob 16 and thus displacement of the push member 15 is the pin together with the slot 14 lifted to the right and the lug 8 places itself in the readiness position on the inner edge of the guide path 2. On further inward movement of the push member 15 the friction wheel gearing 17 is brought into engagement with the outer guide path of the circular magazine 1. Finally on further pressing in of the push member 15 and thus stressing of the strong spring 18 the contact 23 beside the friction wheel gearing 17 is closed and the rotating movement of the circular magazine commences. So that continuous pressing of the knob 16 until the picture window is reached by the initial compartment may be superfluous, the locking pawl 21 holds the push member 15 fast in the pressed-in position by means of the dog 20.

Now the circular magazine 1 is moved automatically forward in the direction of the arrow by the friction wheel gearing 17 until the lug 8 sliding on the inner guide path 2 drops into the detent groove 3. The first compartment is arranged at the level of the detent groove 3. Due to the complete pressing in of the push member 15 its pin has shifted to the right in the slot 14 of the locking member 13. However the locking member 13 was not able to follow this movement on account of the lug 8 abutting on the inner guide path 2. When the lug 8 drops into the detent groove 3 of the circular magazine, the following actions proceed approximately simultaneously:—

The locking member 13 rotates about the journal 5 by reason of the stress of the weak spring 19 until the left end of the slot 14 has almost reached the pin of the push member 15. In this rotating movement of the locking member 13 its pin 22 situated on the outermost end runs against the one

lever arm of the locking pawl 21 and lifts the latter away from the dog 20, against the force of its spring 26.

Simultaneously with the above-mentioned rotating movement of the locking member 13, the control extension piece 24 is moved to the right and triggers the slide change mechanism 25. Thus the control extension piece 24, after the dropping of the lug 8 into the detent groove 3, effects the introduction of the first slide into the projection ray path.

After the locking pawl 21 has liberated the push member 15 the latter snaps by the tension of the strong spring 18 into its initial position and with the aid of the pin-slot connection 14 and the locking member 13 brings the lug 8 out of engagement again with the detent groove 3 of the circular magazine 1. In the springing back of the push member 15 moreover the contact 23 is interrupted and the friction wheel gearing 17 is lifted away from the outer guide path of the circular magazine 1.

In a further form of development of the invention it is of course conceivable that the knob 16 can be placed directly in the guide path of the circular magazine 1 in the form of switches, sensors or the like. Then the force for the operation of the push member 15 is applied through appropriate deflecting gearings and pulling magnets. Moreover in the case of this form of development of the invention a delay member would have to be provided between the knob 16 and the friction wheel gearing 17 so that in the insertion of the circular magazine into the magazine-type still projector the circular magazine is not suddenly snatched out of the hands of the operator.

WHAT WE CLAIM IS:—

1. A slide projector for use with a slide magazine movable relative to the projector to bring successive slides to a position to be transferred from the magazine to a projection position within the projector, said projector comprising a magazine support, a passage along which a magazine is movable, a locking member having a projection, spring means for moving the locking member into a first position so that its projection is moved into said passage and slide transfer means for transferring a slide from and to a magazine on said support, a portion of the slide transfer means being engageable with the locking member to move its projection out of said passage, whereby when a magazine having an opening is mounted on said support, the projection moves into said passage and engages said opening to locate the magazine when the magazine is moved to a position in which the first slide is to be shown and whereby when the slide transfer means



tion wheel gearing 17 is closed. The contact 23 sets the motor (not shown) for the friction wheel gearing 17 in motion.

Approximately in the middle of the first lever arm of the locking member 13 between the journal 5 and the lug 8 there is a rotatably mounted control extension piece 24 which co-operates with the slide change push mechanism 25.

The manner of operation of this second example of embodiment is as follows:—

With the projection room possibly darkened, the circular magazine 1 is inserted at random into the magazine-type still projector. In this operation the inner guide path 2 of the circular magazine 1 is not contacted by the lug 8 of the locking member 13, since the pin of the push member 15 on the left stop of the slot 14 prevents rotation of the locking member 13 to the right by the weak spring 19. Only on operation of the knob 16 and thus displacement of the push member 15 is the pin together with the slot 14 lifted to the right and the lug 8 places itself in the readiness position on the inner edge of the guide path 2. On further inward movement of the push member 15 the friction wheel gearing 17 is brought into engagement with the outer guide path of the circular magazine 1. Finally on further pressing in of the push member 15 and thus stressing of the strong spring 18 the contact 23 beside the friction wheel gearing 17 is closed and the rotating movement of the circular magazine commences. So that continuous pressing of the knob 16 until the picture window is reached by the initial compartment may be superfluous, the locking pawl 21 holds the push member 15 fast in the pressed-in position by means of the dog 20.

Now the circular magazine 1 is moved automatically forward in the direction of the arrow by the friction wheel gearing 17 until the lug 8 sliding on the inner guide path 2 drops into the detent groove 3. The first compartment is arranged at the level of the detent groove 3. Due to the complete pressing in of the push member 15 its pin has shifted to the right in the slot 14 of the locking member 13. However the locking member 13 was not able to follow this movement on account of the lug 8 abutting on the inner guide path 2. When the lug 8 drops into the detent groove 3 of the circular magazine, the following actions proceed approximately simultaneously:—

The locking member 13 rotates about the journal 5 by reason of the stress of the weak spring 19 until the left end of the slot 14 has almost reached the pin of the push member 15. In this rotating movement of the locking member 13 its pin 22 situated on the outermost end runs against the one

lever arm of the locking pawl 21 and lifts the latter away from the dog 20, against the force of its spring 26.

Simultaneously with the above-mentioned rotating movement of the locking member 13, the control extension piece 24 is moved to the right and triggers the slide change mechanism 25. Thus the control extension piece 24, after the dropping of the lug 8 into the detent groove 3, effects the introduction of the first slide into the projection ray path.

After the locking pawl 21 has liberated the push member 15 the latter snaps by the tension of the strong spring 18 into its initial position and with the aid of the pin-slot connection 14 and the locking member 13 brings the lug 8 out of engagement again with the detent groove 3 of the circular magazine 1. In the springing back of the push member 15 moreover the contact 23 is interrupted and the friction wheel gearing 17 is lifted away from the outer guide path of the circular magazine 1.

In a further form of development of the invention it is of course conceivable that the knob 16 can be placed directly in the guide path of the circular magazine 1 in the form of switches, sensors or the like. Then the force for the operation of the push member 15 is applied through appropriate deflecting gearings and pulling magnets. Moreover in the case of this form of development of the invention a delay member would have to be provided between the knob 16 and the friction wheel gearing 17 so that in the insertion of the circular magazine into the magazine-type still projector the circular magazine is not suddenly snatched out of the hands of the operator.

WHAT WE CLAIM IS:—

1. A slide projector for use with a slide magazine movable relative to the projector to bring successive slides to a position to be transferred from the magazine to a projection position within the projector, said projector comprising a magazine support, a passage along which a magazine is movable, a locking member having a projection, spring means for moving the locking member into a first position so that its projection is moved into said passage and slide transfer means for transferring a slide from and to a magazine on said support, a portion of the slide transfer means being engageable with the locking member to move its projection out of said passage, whereby when a magazine having an opening is mounted on said support, the projection moves into said passage and engages said opening to locate the magazine when the magazine is moved to a position in which the first slide is to be shown and whereby when the slide transfer means



moves the first slide the projection is moved into a second position out of said passage and thus out of the opening to allow further movement of the magazine.

5 2. A projector as claimed in claim 1, wherein the locking member comprises a pivotable bell-crank lever, one arm of which carries said projection in the form of a lug and the other arm of which has a
10 cam surface, the slide transfer means comprising a slide pusher member having a pin so that when the slide transfer means is operated the pin engages the cam surface and pivots the lever into said second position.

15 3. A projector as claimed in claim 1, wherein the locking member comprises a pivoted lever which carries said projection in the form of a lug and wherein the
20 spring means comprises a first spring, the projector being provided with a stronger spring tending to overcome the force of said first spring and a manually operable member movable to a position overcoming
25 the force of said stronger spring on said first spring and thereby permitting said first spring to be able to move said lug into said first position.

4. A projector as claimed in claim 3, including latching means for latching said
30 manually operable member in its said overcoming position, and means operated by the locking member when the projection moves to said second position for dis-
engaging said latching means to restore the
35 overcoming effect of said stronger spring with respect to said first spring and thereby move said latching means to said second position.

5. A projector as claimed in claim 4, 40 including friction wheel gearing means controlled by said manually operable member for moving a magazine in the passage continuously so long as said manually operable member remains in its overcoming
45 position.

6. A slide projector substantially as described herein with reference to and as illustrated by Figures 1 and 2 or 3 of the accompanying drawings.

For the Applicants:
MATTHEWS, HADDAN & CO.,
Chartered Patent Agents,
33 Elmfield Road,
Bromely,
Kent.