

(12) UK Patent Application (19) GB (11) 2 016 160 A

(21) Application No 7905797
 (22) Date of filing 19 Feb 1979
 (23) Claims filed 19 Feb 1979
 (30) Priority data
 (31) 20439
 25334
 (32) 21 Feb 1978
 5 Jul 1978
 (33) Italy (IT)
 (43) Application published
 19 Sep 1979
 (51) INT CL²
 G03B 21/00
 (52) Domestic classification
 G2E A12 A20A2 A20A4
 A20BX A20C7 A20CX
 (56) Documents cited
 None
 (58) Field of search
 G2E

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(54) Cine film projector

(57) A toy projector comprises a hand-operated crank 1 fixed to a pulley 3 which, by means of belts 4 and 8 and pulleys 5, 7 and 9, drives an alternator 11, the output of which is connected to a projection lamp 14. The crank 1 also drives a film advancing mechanism (not shown). Thus, operation of the crank, effects both film advance and illumination lamp.

As the projector requires neither batteries nor mains electricity, it is particularly suitable as a toy.

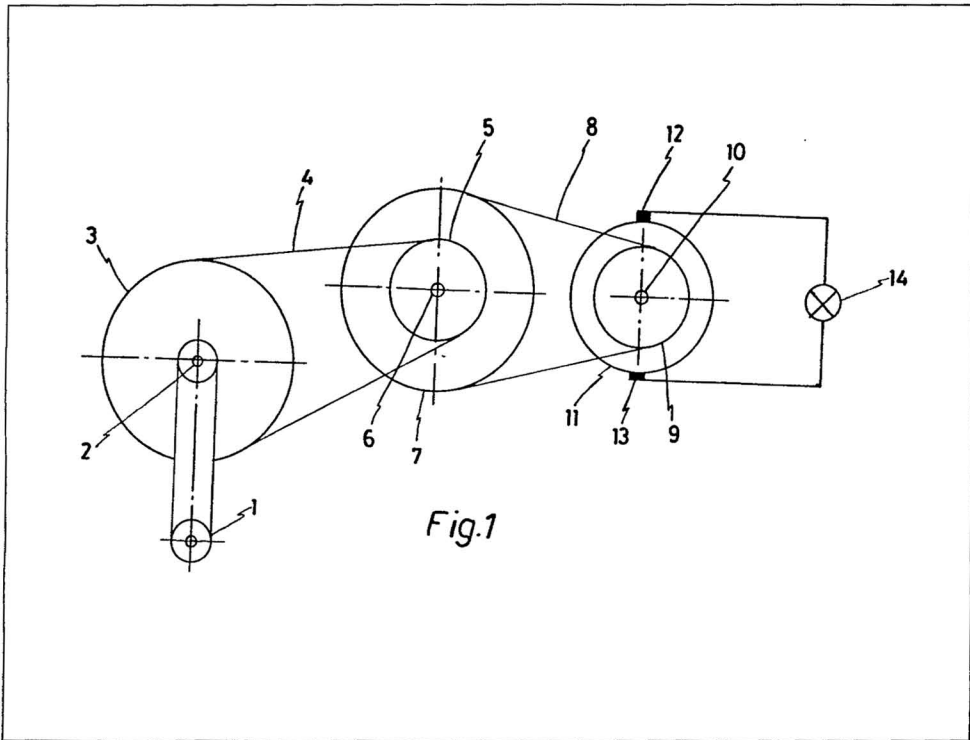


Fig.1

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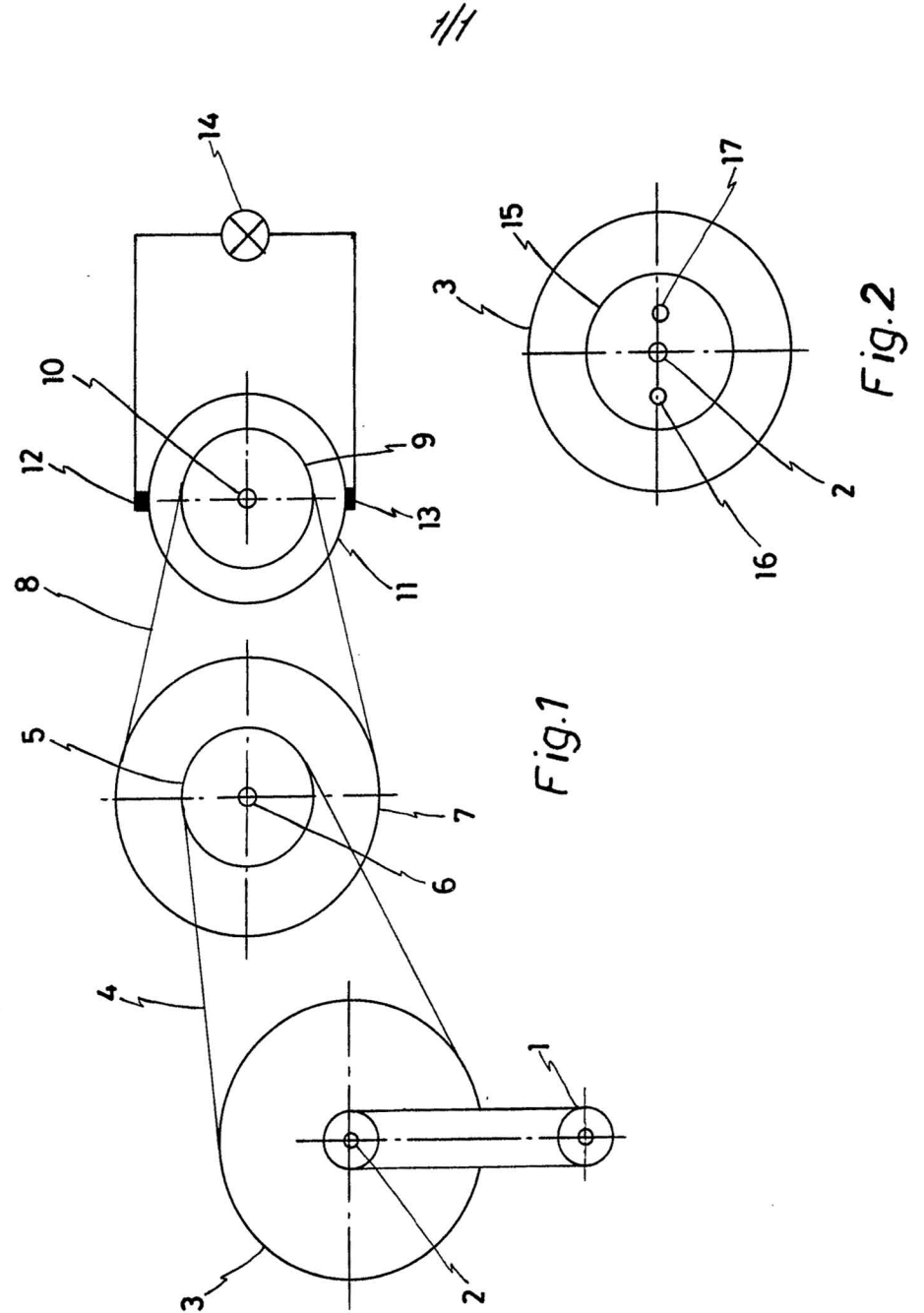


Fig.1

Fig.2

SPECIFICATION

Film projector

5 This invention relates to film projectors especially of the film cartridge type for projecting endless films and the spool type for projecting standard 8 mm films.

At present the projectors of the above-mentioned 10 types are supplied either from the mains or by means of batteries. In both cases the operation of the projector is subject to the availability of one of said supply sources. If either of them is not available at a given moment the projector becomes temporarily 15 inoperative.

According to the present invention there is provided a film projector having a film advance mechanism, an electrical generator having its output 20 lamp and a drive mechanism having a manually operable member operably connected to both the film advance mechanism and the generator input to advance the film and, at the same time, generate electricity to illuminate the projection lamp.

25 An advantage of the present invention is that the projector requires neither batteries nor a mains electricity supply.

The projector is particularly suitable as a toy.

The invention will be better understood from the 30 following description, given merely as an example and therefore in no limiting sense, of an embodiment thereof, referring to the accompanying drawing, in which:

Figure 1 is a diagrammatic view of the drive 35 mechanism of the generator and the supply circuit of the lamp according to the invention, and

Figure 2 is a diagrammatic view of a detail of the film advance mechanism.

Referring first to *Figure 1*, a crank 1 is keyed on a 40 shaft 2 of a pulley 3. The latter is connected by means of a belt 4 to a pulley 5 on whose shaft 6 also a further pulley 7 having a larger diameter is keyed. The pulley 7 is connected by means of a belt 8 to a pulley 9 on whose shaft 10 also a rotor of a generator 45 11 is keyed whose terminals 12, 13 supply a projection lamp 14. By the term generator any voltage generator is meant. Generally it will be an alternator with permanent magnet excitation of the kind of a cycle generator.

50 In *Figure 2* the side of the pulley 3 opposite to that seen in *Figure 1* is shown. It is noted that a disc 15 is keyed on the shaft 2 of the pulley, said disc carrying two pins 16, 17 projecting therefrom which engage a suitable element of the film advance drive, which 55 can be of a conventional type and therefore has not been shown for sake of simplicity.

The operation of the described arrangement is as follows:

By actuating the crank 1 the pulley 3 is rotated 60 which, through the drive comprising the belts 4 and 8 and the pulleys 5, 7 and 9, rotates the rotor of the generator 11 and generates at its terminals a voltage for lighting the projection lamp 14.

65 Simultaneously, the film of the endless film cartridge or the spool, according to the type of projec-

tor, is advanced through the pins 16 and 17 and the film advance drive, so that the frames of the film are projected by means of the lamp 14 on a suitable screen.

70 It is seen that the described projector will operate without the need of batteries or a mains electricity supply for illuminating the lamp, it being sufficient to manually operate the crank 1 to this purpose.

Obviously, the drive from the crank 1 to the rotor 75 of the generator 11 can also be different from that shown, for instance it can be a toothed gearing.

The invention can be applied, in addition to the conventional toy projectors which project the film on a screen outside the apparatus, also to toy movie 80 viewers which project the film on a screen embodied in the apparatus.

Generally, while but one embodiment of the invention has been described, it is obvious that a number of modifications and changes can be made 85 without departing from the scope of the invention.

CLAIMS

1. A film projector having a film advance 90 mechanism, an electrical generator having its output connected in a circuit for illuminating a projection lamp and a drive mechanism having a manually operable member operably connected to both the film advance mechanism and the generator input to 95 advance the film and, at the same time, generate electricity to illuminate the projection lamp.
2. A projector as claimed in claim 1, wherein the manually operable member is a crank.
3. A projector as claimed in claim 1 or 2, wherein 100 the generator is a self-exciting alternator.
4. A projector as claimed in any preceding claim, wherein the drive mechanism includes means to step up the speed ratio between the manually operable member and the generator.
5. A projector as claimed in any one of claims 1 105 to 3, wherein the drive mechanism comprises a pulley connected to the manually operable member, a further pulley of smaller diameter than the first-mentioned pulley mounted on an intermediate shaft and connected by a drive belt to the first-mentioned pulley, another pulley mounted on the intermediate shaft and connected to said further pulley, and a yet further pulley of smaller diameter than said other pulley mounted on the generator input shaft and 110 connected by a further drive belt to said other pulley.
6. A projector as claimed in any preceding claim having a lens system for projecting the film image onto a screen remote from the projector.
7. A projector as claimed in any one of claims 1 120 to 5 incorporating a screen and means for projecting the film image onto the screen.
8. A film projector substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.