PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in or relating to Cinematograph Apparatus.

We, JOHANNES MITTASCH, of Plöckstrasse 52/II, Heidelberg, Germany, a German citizen, and BING-WERKE, vorm. GEBRÜDER BING AKTIEN-GESELLSCHAFT of Blumenstrasse, 16, Nürnberg, Germany, a German company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to cinematograph apparatus adapted more particularly for use in private homes, schools and the like establishments. The apparatus is of the type comprising continuous-feed sprockets a feeding arm and a cylindrical shutter or drum.

The invention resides in an arrangement whereby the above chief elements are appropriately combined enabling the whole apparatus to be made of an extremely simple and compact construction.

The characteristic features of the invention consist in arranging both the means for actuating the feeding arm so as to effect the intermittent advance of the film, such means being preferably in the shape of two cams, and an intermediate gear wheel in the drive for the continuous feed sprockets on the shaft of the shutter drum or on the latter itself if desired.

This arrangement enables the shutter drum to be provided on one side with a fly-wheel as is desirable for a satisfactory manual drive and on the other side with the two cams above referred to for the actuation of the feeding arm and to combine all these parts to form a compact unit. This provision enables the feeding arm to be formed from a single piece of metal having the sliding members or guides requisite for its control produced from its body by bending or stamping, such guides being constituted by two pairs of lugs located at right angles one to the other.

According to this invention moreover openings in the shutter drum are not as hitherto rectangular, but have V-shaped extremities. The inclined closing edges of the opposite openings enable the central rays to be fully utilised as long as possible and during the darkening of the picture the outer or secondary rays to be cut out or throttled first. The dimming and brightening of the picture, therefore, on account of the crosswise intersection of the closing edges referred to does not take place suddenly but gradually, whereby the sharpness of the projected picture is maintained for a relatively long time and flickering effects are more or less avoided. It is, however, known to produce the desired effect with the aid of other means comprising as a rule two shutter discs provided with angular slots and rotated in opposite directions.

One form of construction of the apparatus according to the present invention is illustrated by way of example in the accompanying drawings in which:—

Fig. 1 is a vertical section of the apparatus.

Fig. 2 is sectional view on the line A—A of Fig. 1.

Fig. 3 shows the shutter drum at about the moment of interrupting the light.

Fig. 4 is a perspective view of the apparatus and

Fig. 5 shows the adjusting device for the feeding arm.

Journalled in a vertical supporting plate 1, formed in one piece with a base plate 2 and accommodated in a casing 3 secured to the plate 1 are the shutter drum 4 and the continuous feed sprockets 5 and 6 for the picture-film 7. The apparatus is operated by a hand crank 9 on the axle 8 of the upper sprocket 5.

[*Price* 1/-]

Mounted on the axle 8 is also a toothed wheel 10 for transmitting rotation by means of an intermediate wheel 11 to the shaft 12 of the drum 4 and also to a toothed wheel 13 mounted on the axle 14 of the lower feed sprocket 6.

The shutter drum 4 is provided at one end with a fly-wheel rim 15 and has its opposite side or face connected to two cams 16, 17 with which parts it is united to form an integral unit resulting in a simplified and compact construction.

The two cams 16 and 17 actuate a film feeding arm 18 by means of two guides arranged at right angles one to the other. The guide for the cam 16 is formed by two lugs 19 bent up from the sheet metal from which the feeding arm is made and the guide for the cam 17 is formed by two lugs 20 also bent up but at right angles to the former, from the material of the feeding arm, thus enabling the latter with its guide members to be made in a most economical manner in one piece by stamping and bending.

The opposite end 21 of the feeding arm 18 is fork shaped and engages a nipple 22 mounted on a disc 23, which is rotatable about a screw bolt secured in the plate 1 (Fig. 5) and is provided with shoulders 24 (Fig. 2) adapted to abut against a stop-pin 25. The rotation of the disc 23 with the nipple 22 is effected by means of a knurled knob 26. The knob 26 is screwed to the bolt of the disc 23 with the interposition of a spring 27 (Fig. 5) which is housed in a sleeve 28. The friction thus caused between the disc 23 and the plate 1 secures the nipple 22 in any adjusted position. Should the picture to be projected, be found to be out of register with the windows 29 in the casing 3, it is not necessary to displace the film for one or several perforations, but the operator need only turn the knob 26 until the picture has again the correct position on the screen. The extent of travel of the feeding pins 30 on the end of the feeding arm 18 along an approximately narrow rectangle is correspondingly adjusted in an up or downward direction.

The closing edges 31 of opposite openings 32 in the shutter drum 4 are V-shaped as shown, in the direction of the rotation of the drum. Fig. 3 illustrates how by the overlapping of these closing edges 31, the outer rays N are throttled or cut-out and the central rays K are utilised during the dimming or brightening-up of the projected image.

The apparatus may of course be driven also by means of a motor if desired the handle 9 being then replaced by a wheel driven from the motor or by a pulley.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In cinematograph apparatus of the type comprising continuous feed sprockets a shutter drum and a feeding arm the arrangement of both the means for actuating the feeding arm so as to effect the intermittent advance of the picture film, such as cams actuating the feeding arm, and an intermediate wheel in the drive for the continuous feed sprockets directly on the shutter drum or on the drum shaft.

2. In cinematograph apparatus as claimed in Claim 1 a shutter drum provided integrally at one end thereof with a fly-wheel rim, and connected at the other end to the cams for operating the feeding arm so as to form a compact unit.

3. In cinematograph apparatus as claimed in Claim 1 or 2 the construction of the actuating guides of the feeding arm in the form of two pairs of lugs, arranged at right angles one to the other, and produced from the body of the feeding arm, substantially as described.

4. In cinematograph apparatus as claimed in Claim 1 forming the openings in the shutter drum with sloping or V-shaped extremities.

5. The cinematograph apparatus constructed, arranged and operating substantially as described with reference to or as illustrated in the accompanying drawings.

Dated this 16th day of June, 1924.

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Agents for the Applicants.

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Fig. 3.

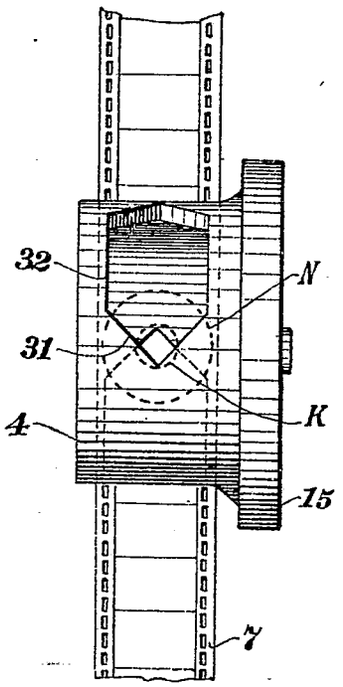
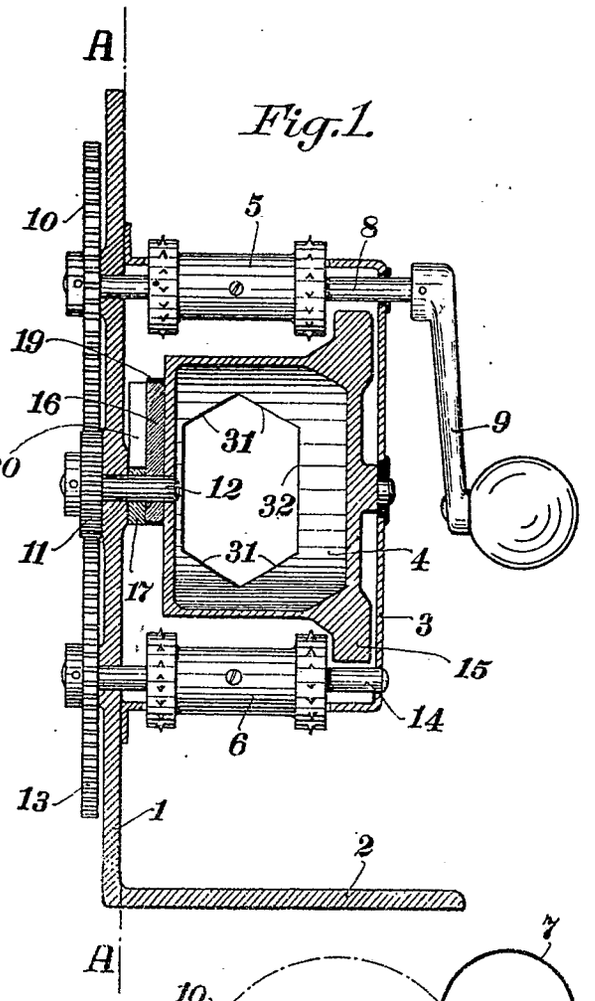


Fig. 1.



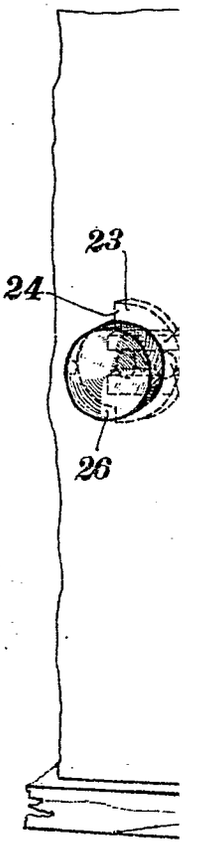


Fig. 2.

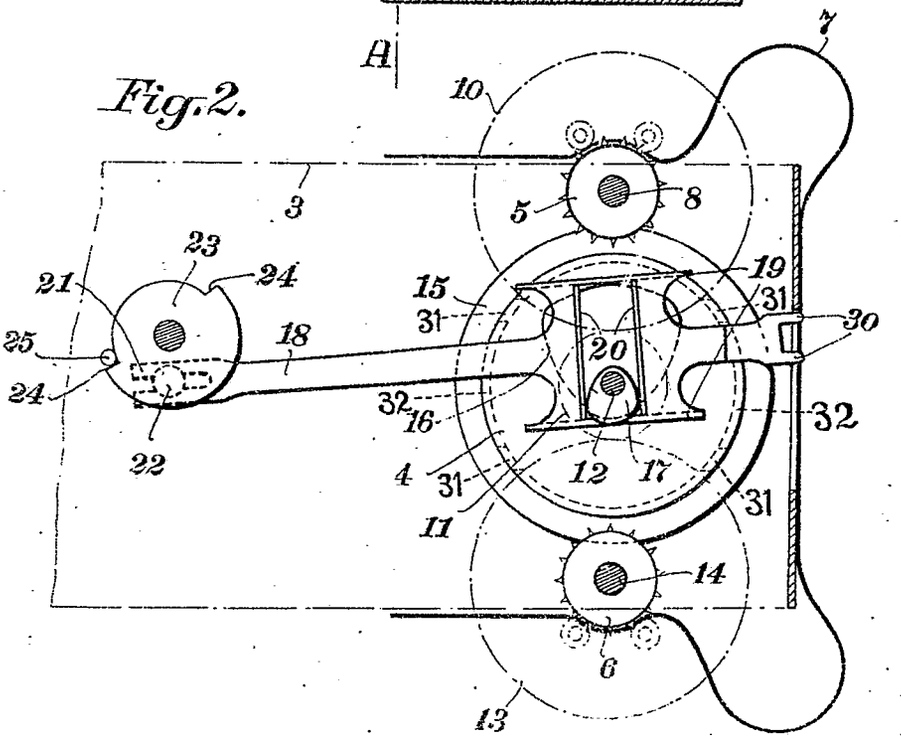
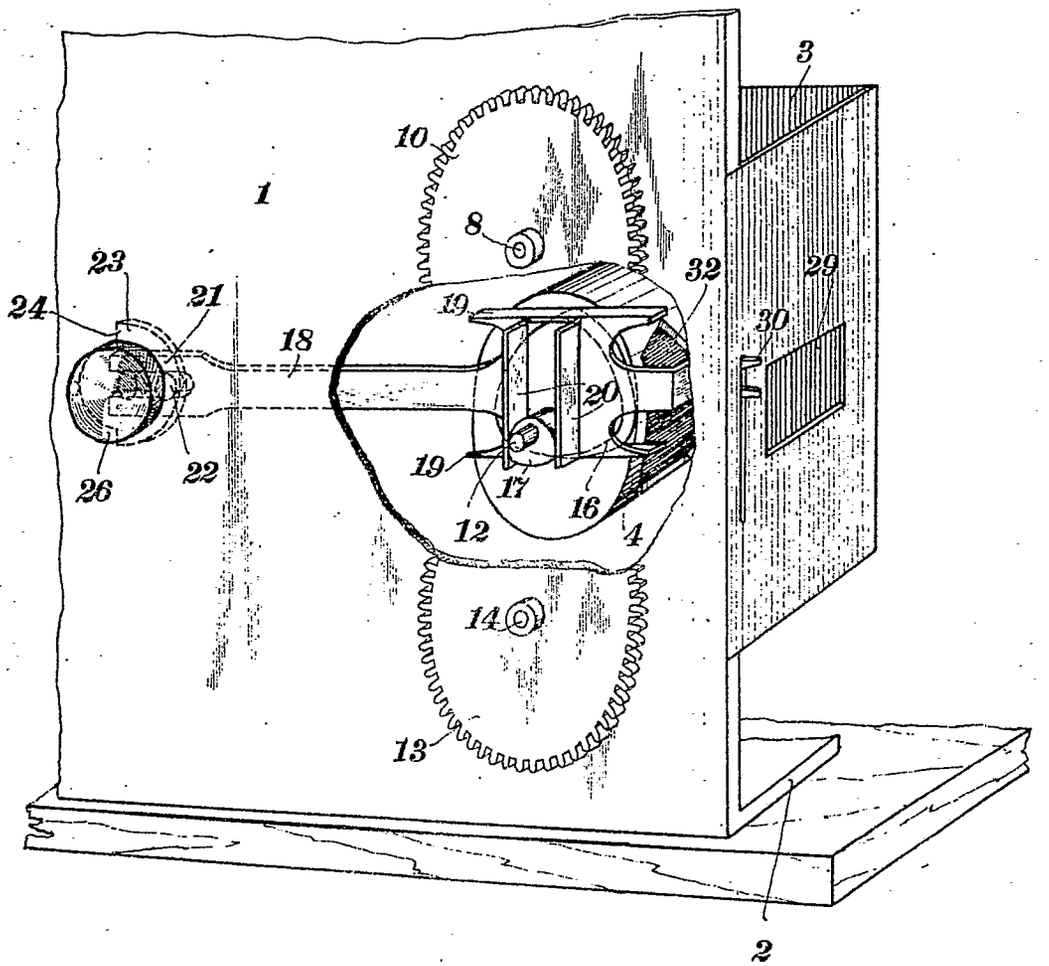


Fig. 4.



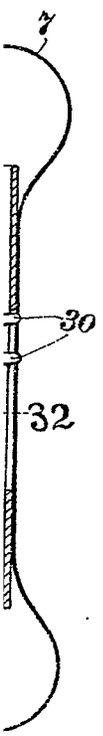
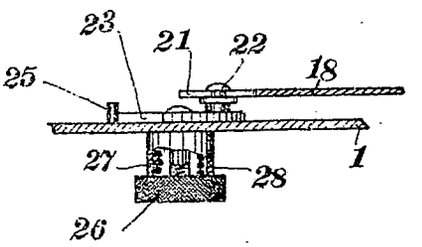


Fig. 5.



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[This Drawing is a reproduction of the Original on a reduced scale]

Fig.3.

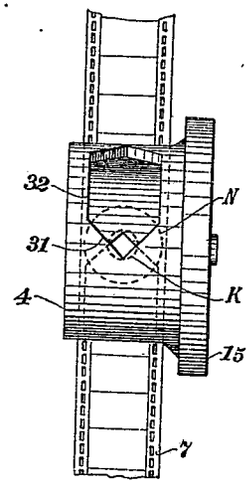


Fig.1.

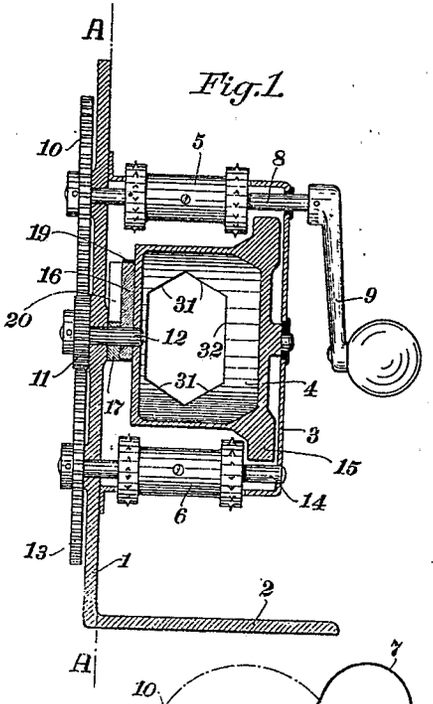


Fig.2.

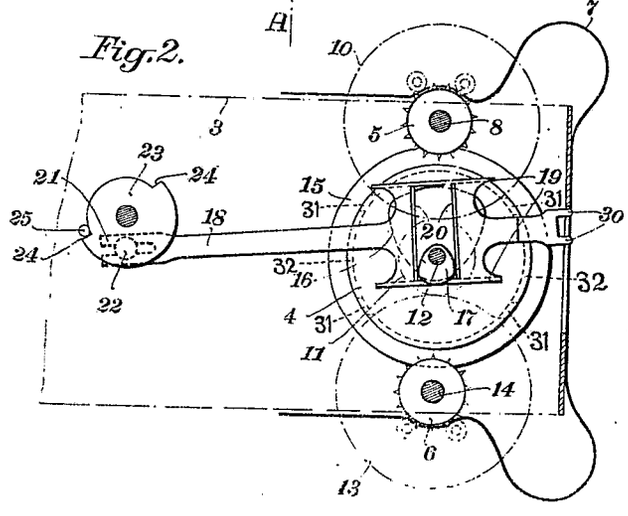


Fig.4.

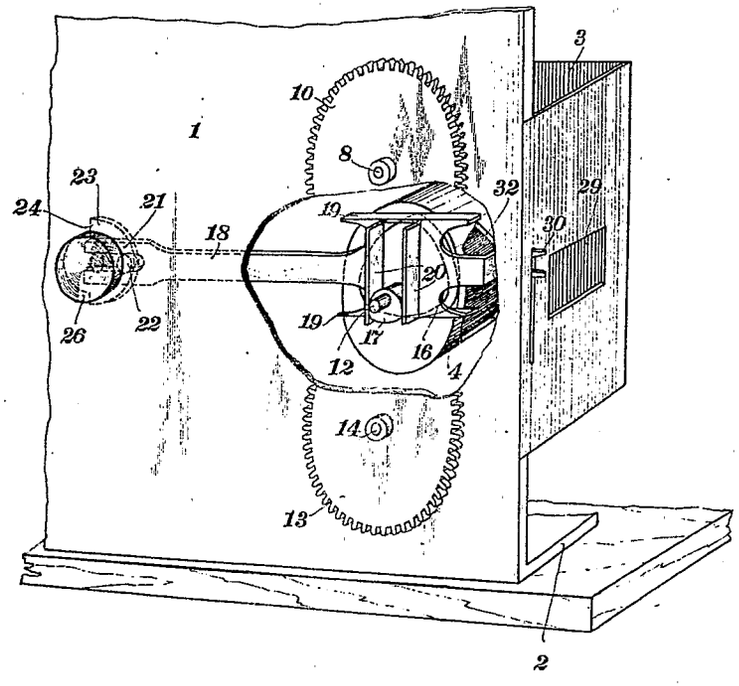
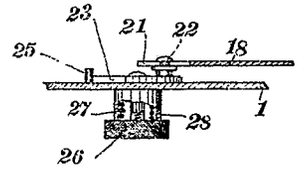


Fig.5.



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