

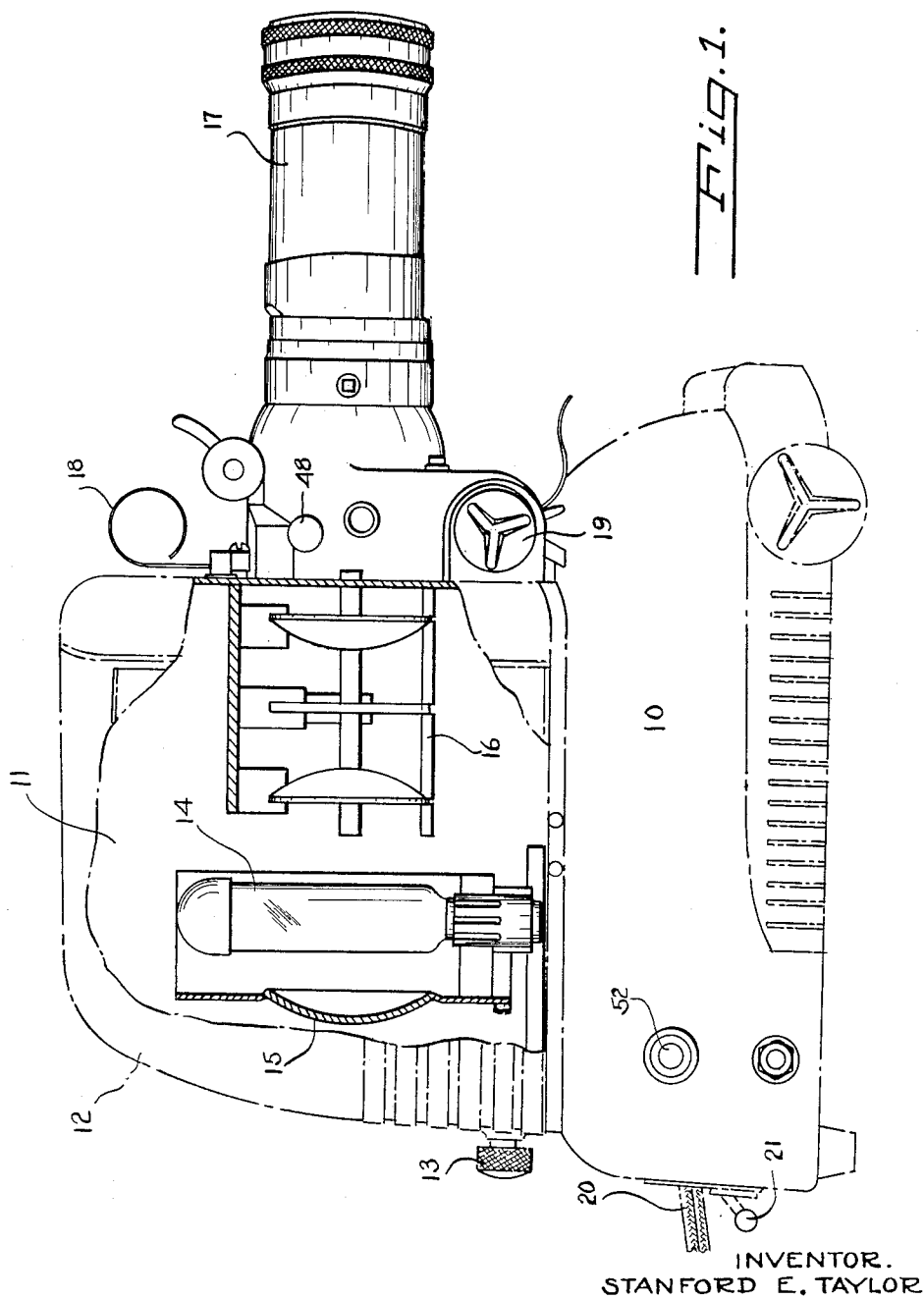
May 15, 1956

S. E. TAYLOR
CONTROLLED READING PROJECTOR

2,745,313

Filed May 20, 1952

5 Sheets-Sheet 1



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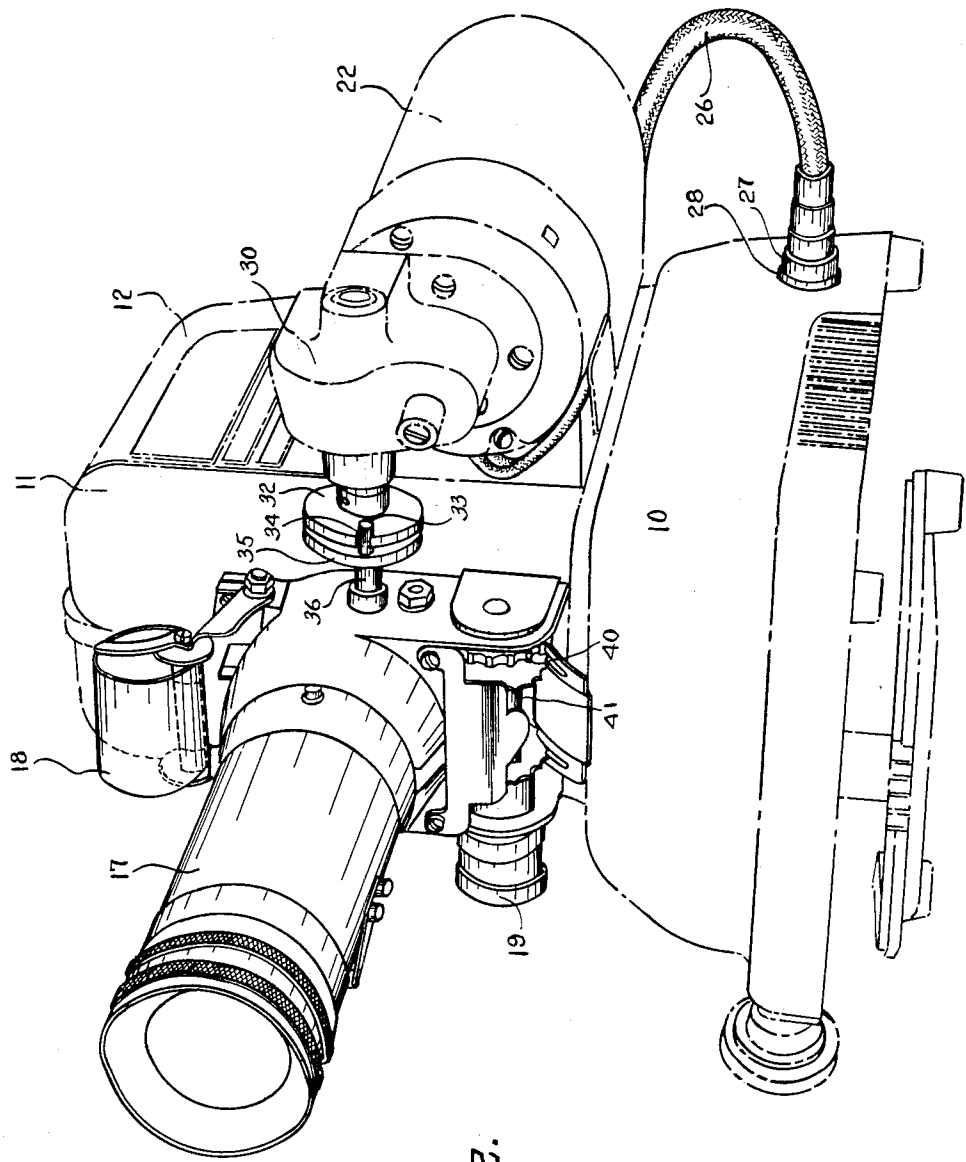


Fig. 2.

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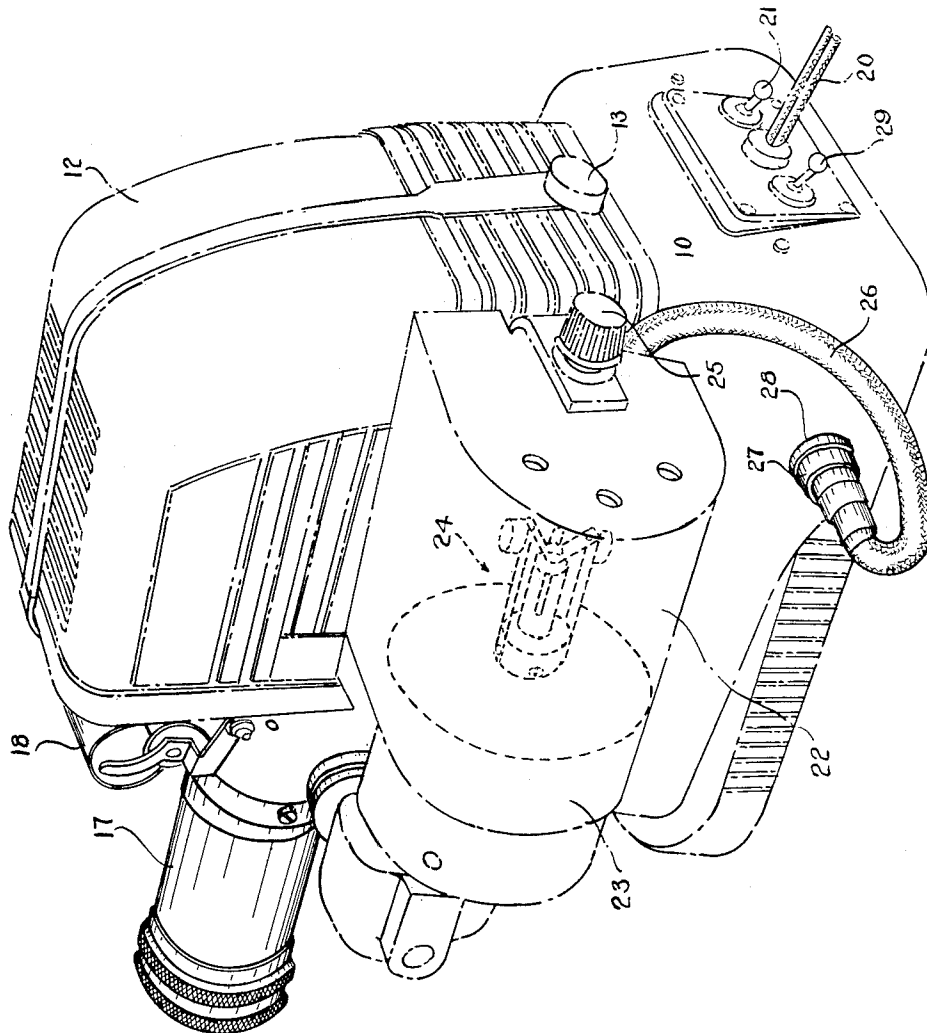


Fig. 3.

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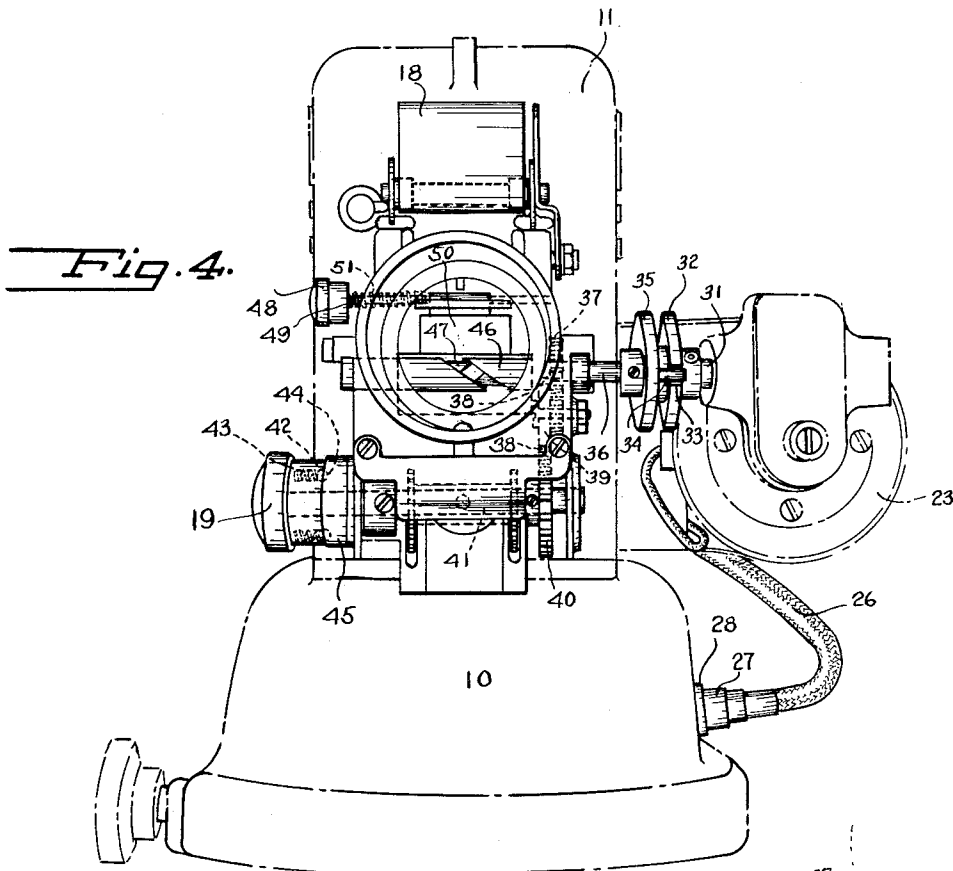
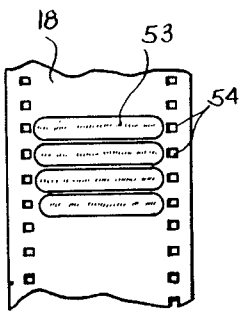
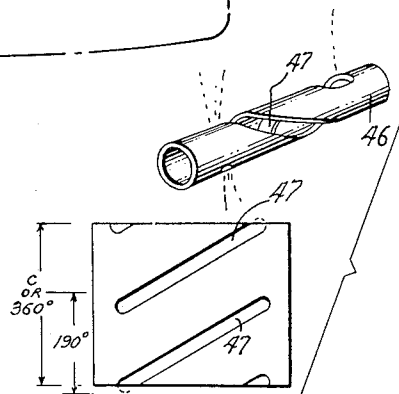
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5 Sheets-Sheet 4



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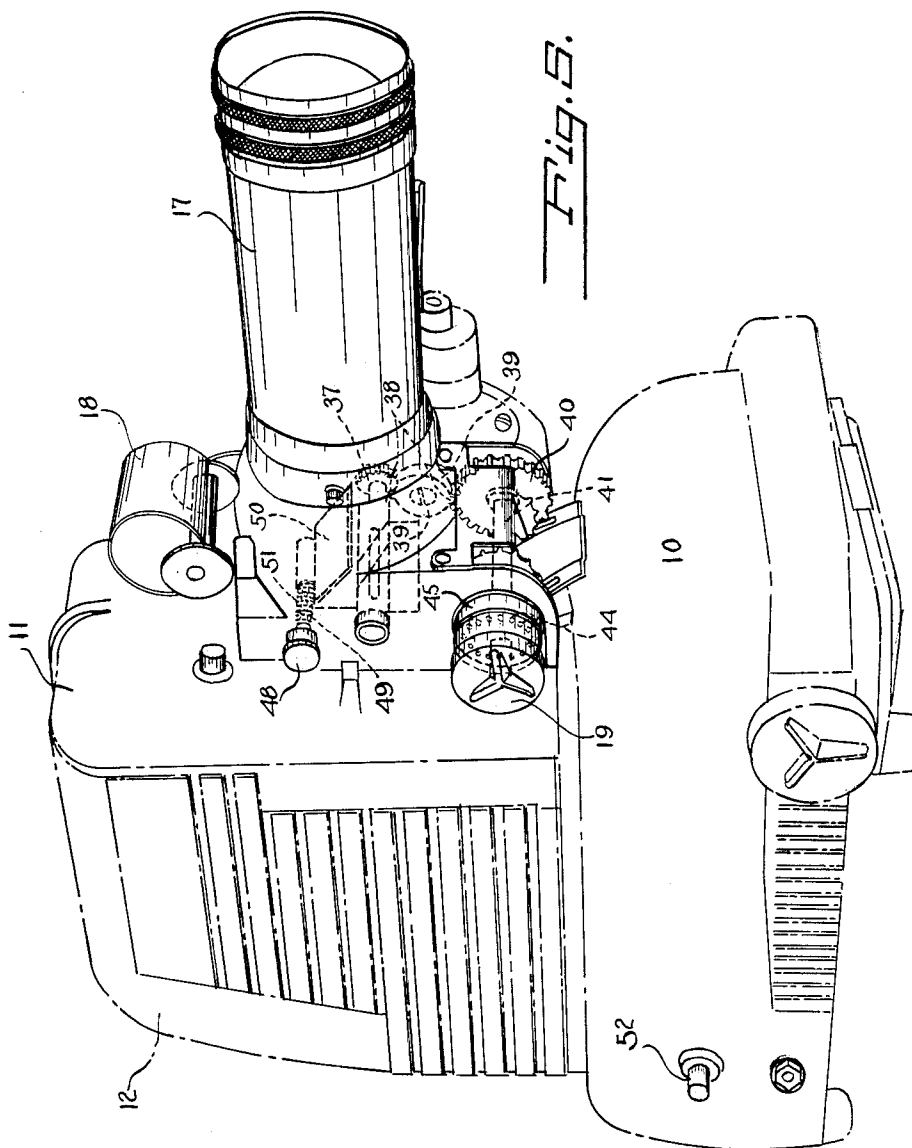
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5 Sheets-Sheet 5



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2,745,313

CONTROLLED READING PROJECTOR

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3 Claims. (Cl. 88—28)

This invention relates to a new and improved controlled reading device for exhibiting reading material or symbols or groups of such symbols in progressive sequence in the direction of reading for increasing the ability of a person to read with greater speed and accuracy.

An object of the invention is to provide a new and improved apparatus of the type set forth which apparatus is relatively simple and economical in construction and efficient in operation.

Another object of the invention is to provide a device of the type set forth which is of the projection type.

Another object is to provide a device of the type set forth which has novel means of obscuring that part of the material not being read at the time and which allows the viewing of a complete line at a time or only portions thereof in sequence.

Another object of the invention is to provide an apparatus of the type set forth which is automatic in operation.

Another object is to provide a device of the type set forth having novel means for easily and quickly changing the speed of exhibition of the material to be read.

Another object of the invention is to provide a device of the type set forth having improved means for actuating the material to be read to successively position the lines thereof in correct position.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings. It will be understood that changes may be made in the details of construction and arrangement of parts without departing from the scope of the invention as set forth in the accompanying claims, as the preferred form has been given by way of illustration only.

Referring to the drawings:

Fig. 1 is a side view partially in section of an apparatus embodying the invention;

Fig. 2 is a perspective view of the apparatus shown in Fig. 1;

Fig. 3 is another perspective view of the apparatus embodying the invention;

Fig. 4 is a front view thereof;

Fig. 5 is a perspective view thereof showing some of the mechanism in broken lines;

Fig. 6 is a perspective view and development of the apparatus for the obscuring apparatus; and

Fig. 7 is a fragmentary view of one of the film strips that may be employed with the projector of the present invention.

Referring more particularly to the drawings wherein similar reference characters designate corresponding parts throughout, the device shown embodying the invention comprises a projector having a base 10 on which is positioned the projection housing 11 adapted to be enclosed by the cover or casing 12 which is locked in position on base 10 by set screw or the like 13.

The projection system includes the projection lamp 14 and reflector 15, and in aligned relation therewith is the condensing lens system 16 and objective lens tube 17.

Between the condensing lens system 16 and objective lens system 17 is a film gate adapted to receive slide

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film or other appropriate types of film 18 which may be manually moved through said film gate for setting by means of knob 19.

Electric current is furnished the apparatus through the wires 20 adapted to be connected to the usual lighting source of current and the current supply is controlled by means of switch 21 which controls the supply of current to projection lamp 14.

On the side of housing 12 is secured the drive assembly 22 comprising the motor 23 and governor 24. The speed of the governor may be varied to vary the speed of operation of the device by means of governor control knob 25. The motor receives current through lead 26 which has the plug 27 adapted to engage a plug 28 in the side of base 10 and which receives current through lead 20 and is controlled by switch 29.

On the front of the housing for motor 23 is the gear box 30 containing gears adapted to be driven by motor 23 and adapted to drive shaft 31 on which is secured coupling member 32 having arch 33 adapted to receive pin 34 on coupling member 35 which is on shaft 36, on which is positioned gear 37 adapted to engage the idler 39 to progressively or intermittently effect rotation of gear 40 for advancing the film strip 18.

Gear 40 is on shaft 41 on the end of which is manual control knob 19 in which are positioned a plurality, preferably sixteen spring pressed ball members 42 behind each of which is a coil spring 43 adapted to urge said ball members into indentations 44 in the stationary member 45 which is secured to the side of the housing to retain the film strip in such position that the lines thereof are successively aligned with the projection aperture.

On shaft 36 is provided the rotating member 46 having the spiral slot 47 therein as shown in perspective and in development in Fig. 6. The spiral slot 47 is milled so that the slot extends 190 degrees around member or tube 46 which member is of tubular form and in the process of milling, the spiral slot 47 may be milled straight through the tube cutting the slot 47 in the two walls of the tube at the same time. It will be seen therefore, that since the slot extends diametrically through member 46, that as member 46 rotates there will be an open passage for projection light through said member at all times, but due to the helical or spiral form of the slot the opening will appear to move across the field of projection.

The rotation of tube 46 allows the projection of portions of the line to be read in sequence progressively across the screen and may expose or allow projection of any desired portion of the line, but preferably one-third of the line is exposed at a time. The effect is that of a slowly moving path of light uncovering the line of print and when the slot has reached the extreme end of the line, new line of material is moved into place. The slot disappears in the line and reappears on the left for the new exposure. The rate at which this slot moves and correspondingly the lines exposed per minute can be regulated as desired within reason, such as from fifteen lines per minute to approximately 120 lines per minute.

The shift to each new line of print is positioned correctly by the spring pressed ball members 42 in the film advance knob, as previously described, as they fall into the sixteen depressions in the stationary member 45 corresponding to the sixteen teeth of the film advance sprocket 40.

Referring to Figure 4 of the drawing it will be seen that shaft 36 drives the spirally slotted shutter element and also a gear 37 mounted on shaft 36, at a constant speed which, however, may be varied by changing the governor setting. Aligned and meshing with gear 37 is an idler gear 39, which has mounted thereon two diametrically spaced

teeth 38. (See Figure 1.) Film advance shaft 41 is driven by a gear 40 which is so aligned that the two teeth mounted on gear 39 will mesh with the teeth of gear 40. Since the gear 40 has sixteen teeth, the film advance shaft 41 will be turned one-sixteenth of a revolution each time one of the teeth 38 engages a tooth or gear 40 and this allows a new line of material to be projected to be moved into projection position in alignment with member 46 each time the spiral slot reaches the extreme right and is ready for projection of the new line.

To allow projection of two additional lines of print or only one as desired, the free reading knob 48 is provided on shaft 49 on which is secured the cover 50 which may be pivoted into obscuring position or out of such position by means of the knob 48. This cover 50 covers one-half of the projection slot and the shaft 49 is spring loaded by spring 51 so that it can be left at any position from closed completely to open completely, allowing the instructor to determine the number of lines, that is, one or two that will appear in the free reading slot.

To reverse or partially rewind the film strip advance knob 19 is rotated in reverse, as desired, when the instrument is not in operation.

The instrument is controlled by manual start and stop switch 52 and may be stopped or started at any time by actuation of such switch and this will in no way affect the lamp 14 or the ventilation fan in the base 10, which are controlled by other control switches.

With the coupling arrangement shown and the plug in connection of the leadin from the motor to the housing, the projector cover 11 and motor and governor assembly may be removed from the projector as a unit. When the connector pin 34 is left in the front, as shown in Fig. 2, the whole cover 11, motor and governor assembly 22 can be slid to the mill and this facilitates such operations as changing the projection lamp 14, cleaning the condensor lens 16, etc., by providing access to the interior of the housing.

It will be noted that the controlled reading device of the present invention makes use of projection as a means of presenting the reading material on a projection screen or ground glass, and specifically the instrument adapted for this purpose is a film strip projector or the like and the material to be projected is in film strip form with each line of material to be projected 53, corresponding to a notch 54 on the film with an average strip comprising 340 lines of material to be projected and having 340 notches or sprocket holes, as shown in Fig. 7, so that each line of material to be projected may be aligned with the projection aperture successively.

In the operation of the device, the instructor determines the speed of operation of the device, that is, the number of lines per minute to be exposed or projected by adjustment of the speed control knob 25 and the film strip to be projected is inserted in the projector in the usual manner.

Upon reaching the drive sprocket, the film can be engaged by rotating manually the film advance knob 19 and with the framing pre-set, as previously described, each line of print will fall into the correct position with relation to the projection slot. The projector is then turned on and the manual start switch 52 depressed and the reading device is in automatic operation by means of the motor 23, which operates shaft 31 to rotate gear 37 and slot member 46, as previously described.

This rotation of gear 37, through idler 38 effects intermittent rotation or film advancing sprocket or gear 40 for placing the next line to be projected into projection position and upon rotation of spiral member 46, the successive portions of the line which is in projection position is projected on the screen for viewing.

From the foregoing, it will be seen that I have provided simple, efficient and economical means for obtaining all of the objects and advantages of the invention.

I claim:

1. In a device of the character described, a projector including a light source and a projection lens system optically aligned therewith, means for supporting in projection position a film having a plurality of lines of material to be projected, a sprocket for advancing said film intermittently with each line being successively positioned in projection position and held stationary during projection, a motor operatively connected to said sprocket for advancing said film at a predetermined speed and a rotary cylindrical member in parallel alignment with the line of said material being projected, said rotary member having a helical slot diametrically therethrough whereby the projection portions of said line is in continuous progressive sequence upon rotation of said rotary cylindrical member and means operatively connecting said rotary cylindrical member to said motor for effecting rotation thereof.

2. In a device of the character described, a projector including a light source and a projection lens system optically aligned therewith, means for supporting in projection position a film having a plurality of lines of material to be projected, a sprocket for advancing said film intermittently with each line being successively positioned in projection position and held stationary during projection, a motor operatively connected to said sprocket for advancing said film at a predetermined speed and a cylindrical rotary member in parallel alignment with the line of said material being projected, said rotary member having a helical slot diametrically therethrough whereby the projection of portions of said line is in continuous progressive sequence upon rotation of said rotary member while said sprocket holds the film stationary and means operatively connecting said rotary member to said motor for effecting rotation thereof in synchronization with said sprocket and variable governor means for varying the speed of operation of said motor to thereby vary the speed of advancing said film and the speed of rotation of said rotary member.

3. In a device of the character described, a projector including a light source and a projection lens system optically aligned therewith, means for supporting in projection position a film having a plurality of lines of material to be projected, a sprocket for advancing said film intermittently with each line being successively positioned in projection position and held stationary during projection, a motor operatively connected to said sprocket for advancing said film at a predetermined speed and a rotary cylindrical member in parallel alignment with the line of said film being projected, said rotary member having a helical slot diametrically therethrough whereby the projection of portions of said line is in continuous progressive sequence upon rotation of said rotary member to said motor for effecting rotation thereof, and obscuring means operable at will to allow the projection of additional lines of the material being projected in addition to the line in alignment with said rotary member.

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