

Feb. 5, 1924.

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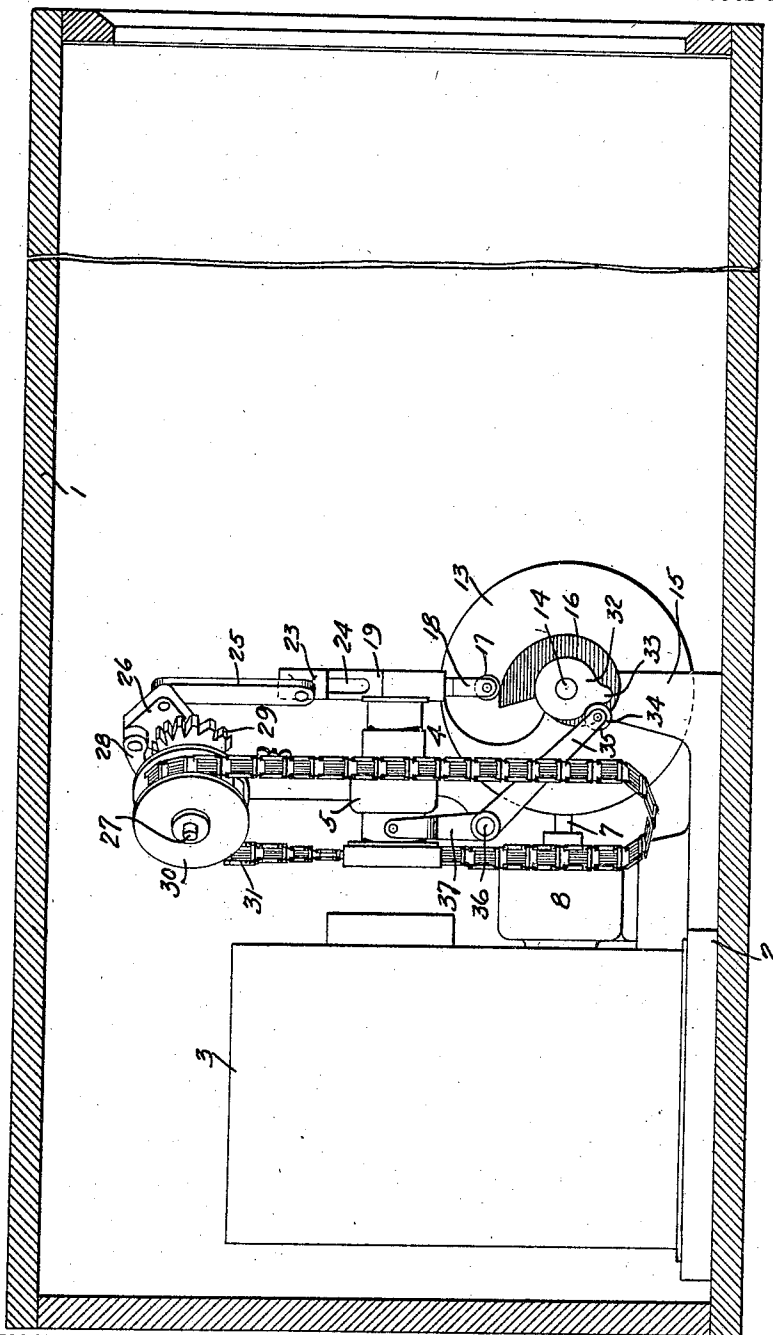
G. M. TUCKER, JR

PROJECTING MACHINE

Filed Sept. 27, 1921

3 Sheets-Sheet 1

Fig. 1.



WITNESSES

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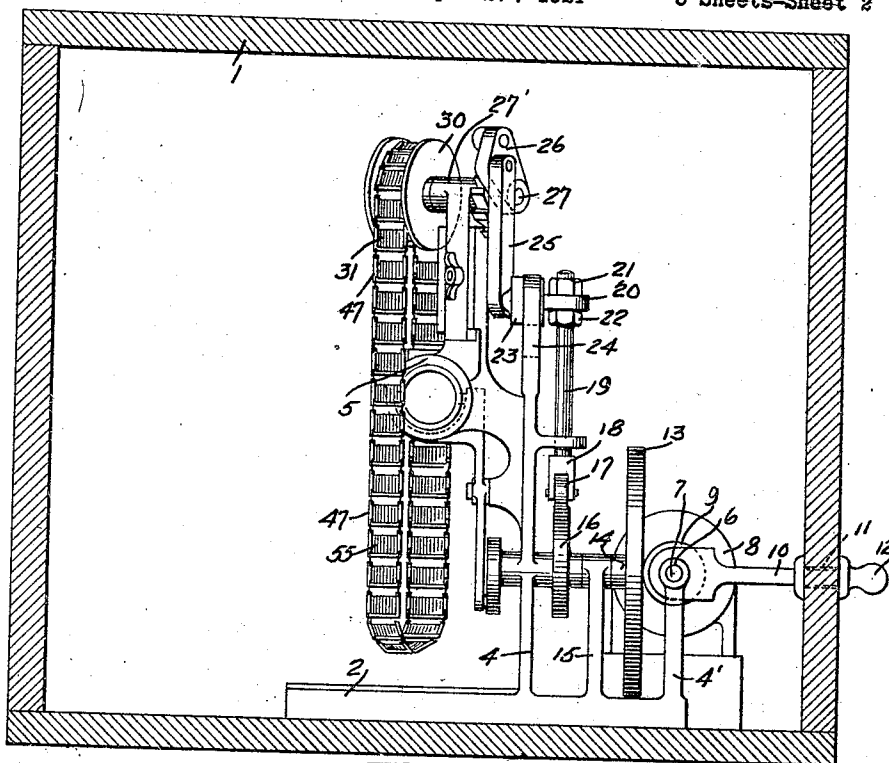


Fig. 2.

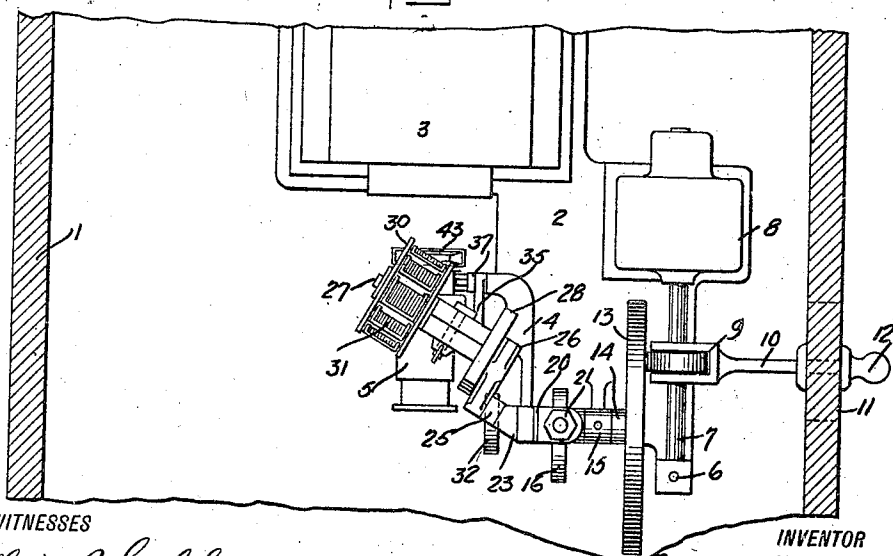


Fig. 3.

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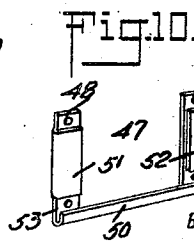
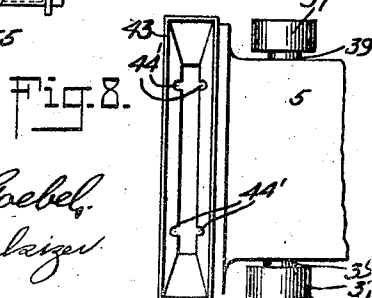
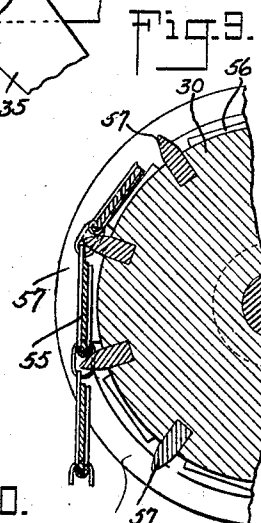
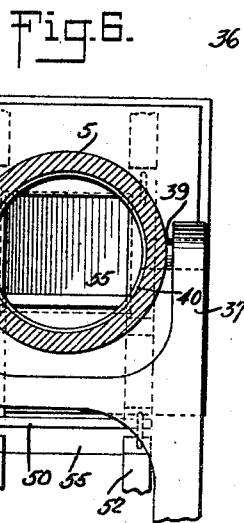
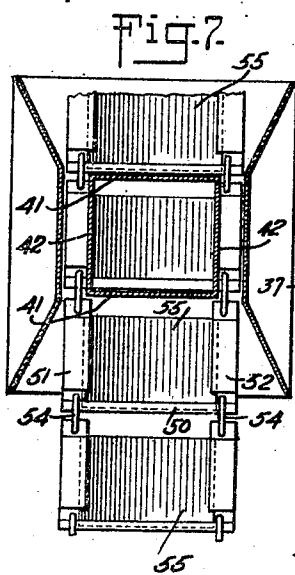
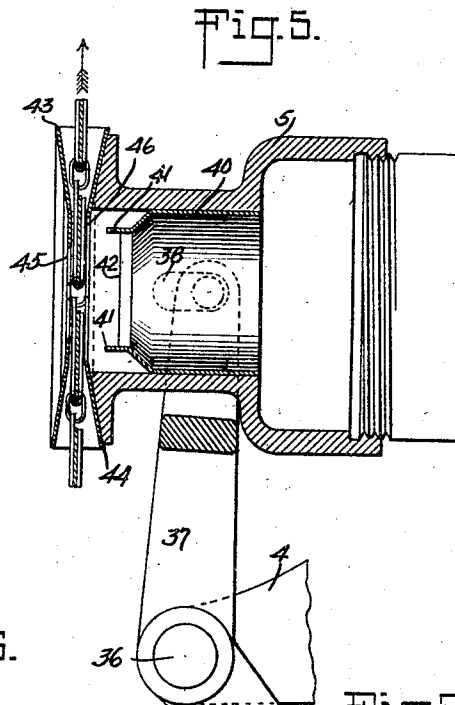
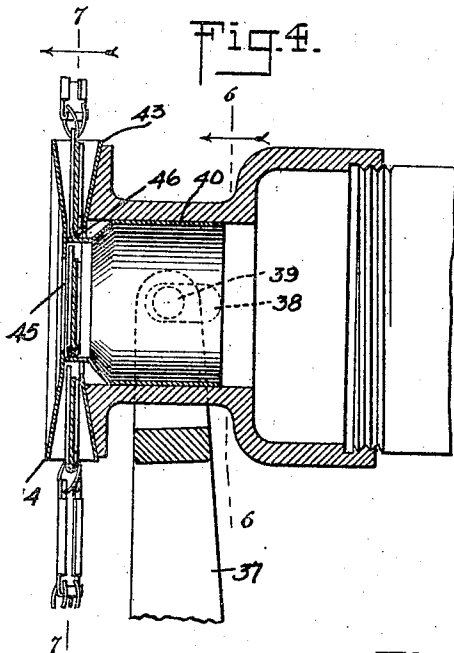
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PROJECTING MACHINE

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3 Sheets-Sheet 3



WITNESSES

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Patented Feb. 5, 1924.

UNITED STATES PATENT OFFICE.

GILBERT M. TUCKER, JR., OF GLENMONT, NEW YORK.

PROJECTING MACHINE.

Application filed September 27, 1921. Serial No. 503,556.

To all whom it may concern:

Be it known that I, GILBERT M. TUCKER, Jr., a citizen of the United States, and a resident of Glenmont, in the county of Albany and State of New York, have invented a new and Improved Projecting Machine, of which the following is a full, clear, and exact description.

This invention relates to projecting machines. An object of the invention is to provide a simple, compact apparatus which is easily operated and readily portable for the purpose of showing pictures, especially for the purpose of presenting a series of illustrations in connection with a lecture where the projection of successive pictures is not continuous and is entirely under the control of the lecturer.

Another object resides in the provision of means whereby a plurality of connected or disconnected subjects may be shown and in which ordinary photographic films or portions thereof can be securely mounted in a series to be shown in a manner as easily and simply as specially prepared lantern slides have been heretofore.

A further object resides in the provision of the particular means whereby any number of sections of film can be securely mounted in an endless chain whereby the continuous operation and repeated showing is easily effected.

A still further object resides in the simple and novel means whereby as each picture is shown, automatically operated mechanism presents the inflaming of the other sections of the series should the one under projection become ignited.

Another object resides in a simple and efficient frame for the reception of a section of film, and an equally simple means for connecting a series of frames in a sort of endless chain or belt.

A further object resides in the provision of means whereby although a flexible belt of picture sections is provided, each picture when under projection is held positively and firmly in place in the proper optical position for a clear projection.

A still further object resides in the provision of means whereby this apparatus can be manually operated or can be operated by any suitable means under the control of the person delivering the lecture and in an entirely automatic manner.

Another object resides in the particular

construction and arrangement of parts which are hereinafter described and claimed and shown in the accompanying drawings.

This invention in general comprises a source of power, preferably a motor, which is adapted, through a suitable power-transmitting mechanism, to intermittently advance, at the will and under the control of the operator, a series of picture sections to a definite position in the line of the projecting light. As each picture is moved to this position, automatically actuated means are provided for clamping the picture definitely and rigidly in this position and for interposing means between it and the other picture section whereby the danger of fire is substantially eliminated. Further means are provided whereby whenever the operator wishes the picture under projection can be released and the next section advanced into position. A particular frame for supporting the sections of pictures, preferably films, is provided which is economical to manufacture and is capable of being loosely connected to other frames in the form of an endless belt. The flexibility of this belt is of such character as to permit of the portion not under projection being angularly diverted in order to be out of the line of the light. The invention is illustrated in the drawings, of which—

Figure 1 is a side view of the device;

Figure 2 is a front view;

Figure 3 is a plan view;

Figure 4 is a detail vertical section showing a picture section in position to be projected;

Figure 5 is a similar section showing the parts in position when the sections are being moved;

Figure 6 is a transverse section taken on the line 6—6 of Figure 4;

Figure 7 is a transverse section taken on the line 7—7 of Figure 4;

Figure 8 is a partial plan view showing the picture frame receiving channel;

Figure 9 is an enlarged partial section of the pulley over which the picture belt passes; and

Figure 10 is a perspective detail view of one of the picture frames.

As shown in the drawings, a preferred form of my invention comprises a box or casing 1 of any suitable design, within which is disposed a baseplate 2 on which a suitable projecting casing 3 is mounted. This pro-

jecting casing 3 is adapted to contain any suitable source of light, as desired. A vertically extending pedestal 4 is mounted on a baseplate 2 and is adapted to support a lens frame 5. Another vertically extending pedestal 4' is mounted on the baseplate 2 and at its upper end is adapted to support a bearing box 6 at one end of the shaft 7, the other end of which is connected to a motor 8. This motor may be an electric motor or any other suitable source of power, even manually operable means. On this shaft 7 a small disk pulley 9 is mounted for rotation but is adapted to be moved longitudinally of the shaft. This pulley is movable by means of an arm 10 extending through a slot 11 in the casing 1 and provided on its outer end with a manually operable handle 12. This pulley 9 is adapted to bear against a large disk 13. It will be observed that by moving the pulley 9 along the face of the disk 13 the ratio of power transmission between the source of power 8 and the disk 13 is varied at will. This disk 13 is mounted on a shaft 14 which is journaled in a bearing 15. Also, on this shaft 14 is a cam disk 16 which is adapted to co-operate with a roller 17 mounted in a bracket 18 which is connected to a bar 19. The upper end of the bar 19 is connected to a bracket 20 and adjustably fastened thereto by nuts 21 and 22. This bracket 20 is provided with a crosshead 23 which is adapted to slide in a slot 24 in the upper end of the pedestal 4. This crosshead is connected to a link 25 which at its other end is pivotally connected to a plate 26. This plate 26 is loosely mounted on a shaft 27. This shaft 27 is mounted in a bearing 27' disposed on the upper end of a portion of the pedestal 4. The plate 26 is provided with a pivoted pawl 28. This pawl is adapted to engage with a toothed gear 29 rigidly connected to the shaft 27. On the other end of the shaft 27 a pulley 30 is disposed and rigidly connected thereto. This pulley is adapted to support and move an endless chain, such as 31, which comprises a series of picture sections hereinafter to be described.

Also, disposed on the shaft 14 is another cam disk 32 having a cam projection 33 thereon adapted to engage with a roller 34 mounted on the end of a lever arm 35. This lever arm is pivotally mounted on a shaft 36 and is rigidly connected to forked lever arms 37. The lens combination or mounting 5 is cylindrical in form and on opposite sides of a portion thereof is provided with two slots 38 through which pins 39 project. These pins extend from the upper ends of the lever arms 37. The inner ends of these pins are connected to a cylindrical sleeve 40 one end of which is reduced in diameter and is shaped in the form of a rectangular

portion having upper and lower ribs 41 and side edges 42. It will be noted from an examination of Figs. 4 and 5 that the edges 41 project beyond the lateral edges 42. When a picture section has been moved into proper position, an examination of Fig. 4 will show that the upper and lower edges 41 project beyond the upper and lower edges of the picture section and act as a shield between that section and the ones immediately above and below it to prevent the spreading of fire or flame, in the event that the picture section under projection becomes ignited.

The picture sections are adapted to be received in a guideway or channel frame the upper and lower ends of which are formed in the shape of funnel sections 43 and 44. The front and rear middle portions of this frame are cut away, as at 45 and 46 to provide a projecting aperture. An examination of Fig. 8 will show slots 44' disposed in the walls of the middle portion of the channel frame to permit the ready passage therethrough of the links connecting the picture sections to be hereinafter described.

In Fig. 10 I have shown in detail one of the picture section supporting frames. This section is denoted generally by the numeral 47 and comprises a pair of side portions 48 and 49 which at their lower ends are connected by a turned-up flange portion 50. The side portions are also provided with bent-over portions 51 and 52 between which and the side portions a picture section is adapted to be received. The lower edge of the picture section rests in the channel portion 50. This frame can be made of sheet metal, and very economically, and is provided with apertures, such as 53, through which suitable links, hereinafter mentioned, are disposed to connect one section with another. These links 54, shown particularly in Fig. 7, are of any suitable metal and are so disposed to connect the adjacent sections as to permit a definite space to exist between the sections. In Fig. 7 it is readily seen how the edges of the cylindrical sleeve 40 act as shields to prevent the spread of flame, should such occur. Furthermore, the side edges 42 of this cylinder are disposed to press against the rear face of the frame 47 so that the picture or film is held rigidly against the front portion of the channel member whereby the definite location of the picture in focus is made possible.

These frames are especially adapted, and this entire mechanism is especially intended, for use to project a series of pictures more or less related; and it is the particular purpose of this apparatus to permit the use of strips of film or sections of negatives, such as 55, which can be very readily inserted in the frames 47. The series of frames and pictures, forming a sort of endless belt, are

adapted to extend over the pulley 30 which is provided with a plurality of flat faces or seats 56 against which the sections of pictures can bear when passing over the pulley 30. A plurality of teeth 57 extend at intervals from the surface of the pulley 30 and are adapted to engage with and move the series of pictures.

From an examination of Fig. 2 it will be observed that the flexibility of the series of picture sections is such as to permit the angular positioning of the pulley 30 with respect to the axis of the lens combination 5, so that one portion of the series of sections is moved to the side of this axis whereby it will not interfere with the projection of the pictures.

In the operation of the device, the person manipulating the machine or giving a lecture may if desired have under his control any suitable means whereby the source of power 8 can be started and stopped at will so that the pictures may be shown at any desired interval and for any length of time. Upon the energization of the source of power and the proper setting of the disk 9, the speed of the operation is determined. The movement of shaft 14 causes the actuation of the pawl 28 whereby the shaft 27 is operated at the desired speed. Simultaneously, the cylinder or sleeve 40 is operated to clamp a desired picture section in the channel frame or passageway and to interpose the flame barrier as above described. The mechanism which moves the series of pictures and the mechanism which moves the clamping and flame preventing shield are properly synchronized to permit the functioning of each without the one interfering with the other.

It will, therefore, be observed that I have provided a simple, rugged and readily operable device whereby a series of pictures, preferably sections of films, can be very readily mounted and projected in a machine which may be entirely under the control of a person at some distant point and in which any number of pictures can be provided to be shown in the form of an endless belt whereby the successive projections of the series of pictures require a minimum of time and attention on the part of the operator.

What I claim is:

1. A projecting apparatus which comprises a plurality of spaced picture sections, a projecting frame through which said picture sections are successively passed, means for moving said series of pictures through said projecting frame, and means operated by said picture-moving means to clamp each picture successively in position in said projecting frame and to interpose a shield between the clamped section and the adjacent section to prevent the spread of fire.

2. A projecting apparatus which comprises a lens mounting having therein a channel passage, a series of picture sections adapted to be passed through said passage, means for moving said series of pictures, and a shield adapted to be moved by said picture-moving means to be interposed automatically between each picture section and adjacent sections during the time that said section is disposed in the line of projection, to prevent fire.

3. A projecting apparatus which comprises a cylindrical frame adapted to support a lens, a picture-receiving frame at one end thereof and having a channel passage through which picture sections are adapted to be passed, means for moving said series of pictures during said passage, a hollow sleeve movable in said lens cylinder having upper and lower projecting edges, and means for moving said sleeve to dispose said projecting edges above and below any picture section as it is being disposed in the line of projection to prevent the transmission of flame from said section to the other section during the interval in which said picture is being subjected to a light source.

4. A projecting apparatus which comprises a cylindrical frame, a hollow sleeve within said frame, a projecting support for a series of pictures disposed on said frame, said sleeve having a plurality of projecting edges at one end, and means for moving said sleeve into engagement with the picture being projected whereby certain of said edges are disposed between the section and adjacent sections to prevent the spread of flame, and certain other of said edges adapted to bear against and clamp a picture rigidly in said support.

5. A projecting apparatus which comprises a source of power, an operating shaft driven by said source of power, a drum for supporting a series of picture sections, a cam on said shaft, a pawl and ratchet mechanism for operating said drum, connections between said pawl and ratchet mechanism and said cam whereby the drum is intermittently operated, a picture guiding frame disposed in the line of the projecting light, a clamping and fire-preventing shield disposed in said frame, a second cam on said shaft, and connections between said second cam and said shield whereby it is operated to clamp any given picture in position as said picture is fed through said frame.

6. A projecting apparatus which comprises an operating shaft, a series of pictures, means for supporting said pictures, connections between said supporting means and said operating shaft to intermittently move said supporting means, a projecting frame through which said picture sections are passed, means on said frame for clamp-

ing each picture in position as it is being disposed in the line of projection, means associated with said clamping means to interpose a fire shield between the picture section being clamped and the adjacent section and connections between said clamping means and the operating shaft whereby the movement of the clamping means is synchronized with the movement of the picture supporting means.

7. A projecting apparatus which comprises a projecting frame forming a lens mounting, a funnel-shaped picture-guiding frame, a plurality of picture sections spaced apart, and a plurality of links flexibly connecting the picture sections, said frame having grooves extending therethrough from

one end to the other to receive and permit the passage of said links.

8. A projecting apparatus which comprises an endless series of picture sections, a projecting frame or support through which said picture sections are passed to be projected, means for intermittently moving said series through said frame, means for clamping each picture in position, means associated with said clamping means for interposing a fire shield between the picture section being clamped and the adjacent section and means for synchronizing the movement of the picture-moving means and the clamping means.

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