

Feb. 15, 1938.

A. D. EITZEN

2,108,054

STOCK QUOTATION PROJECTING MACHINE

Original Filed Dec. 5, 1933

2 Sheets-Sheet 1

Fig. 1

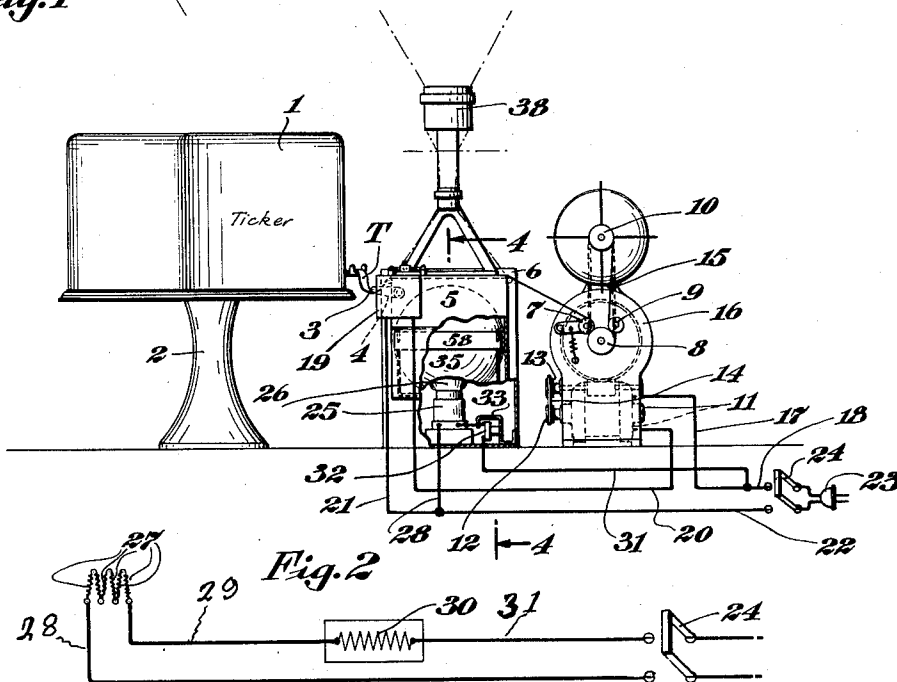
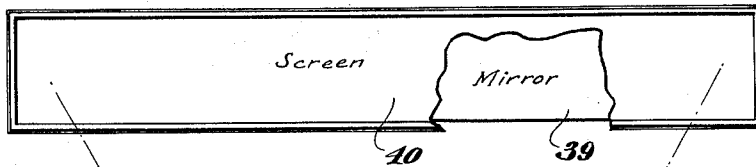


Fig. 4

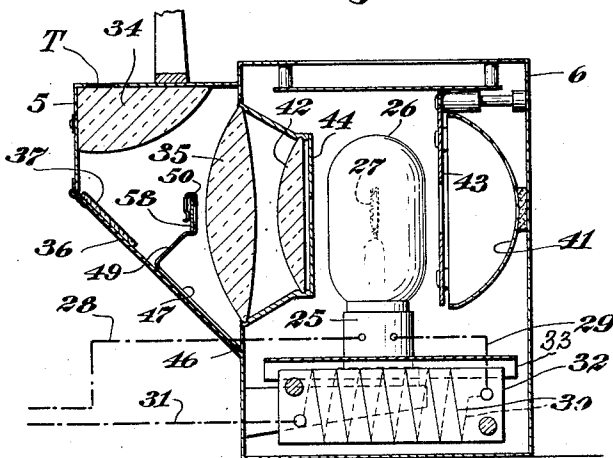
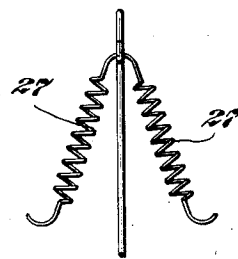


Fig. 3



INVENTOR
August D. Eitzen.
BY *Gustav H. Oraws*
ATTORNEY

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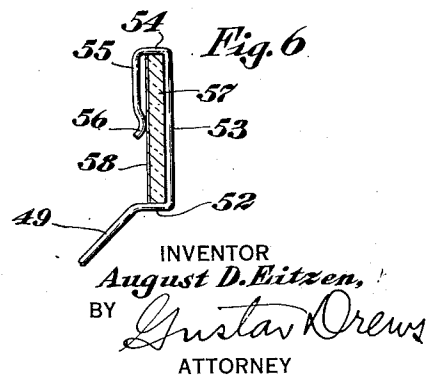
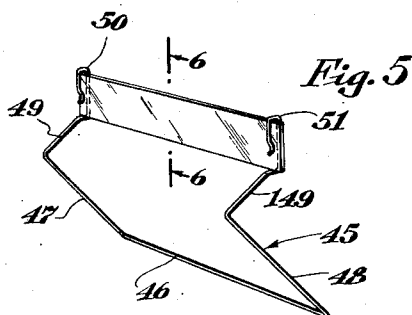
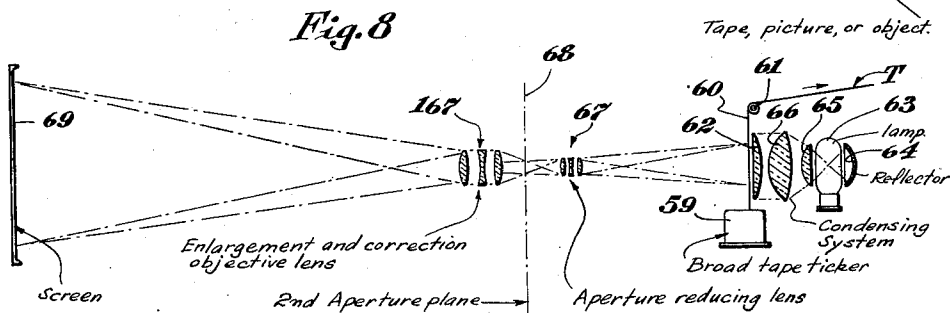
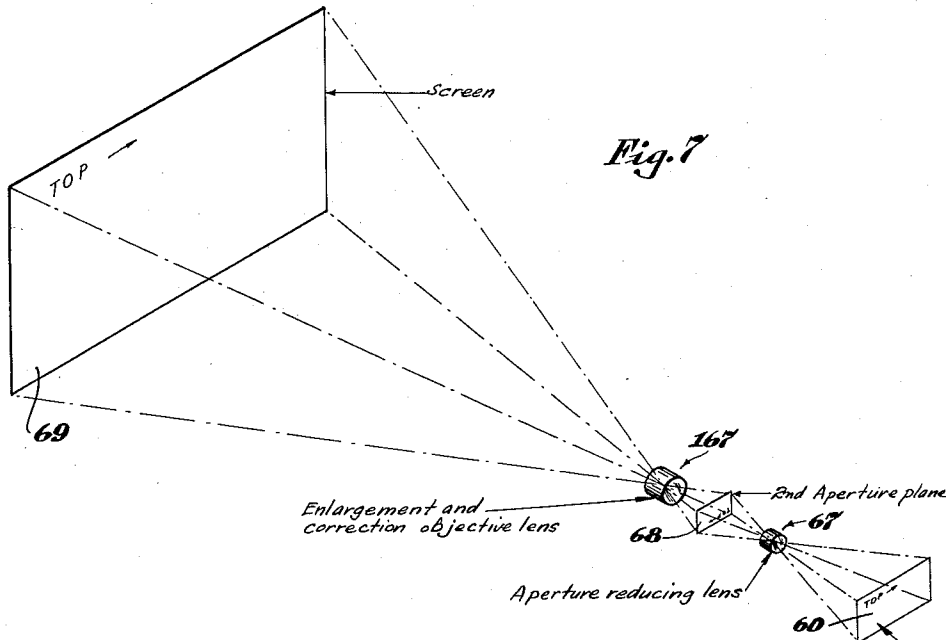
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,108,054

STOCK QUOTATION PROJECTING MACHINE

August D. Eitzen, Rockville Centre, N. Y., assignor to News Projection Corporation, New York, N. Y., a corporation of New York

Application December 5, 1933, Serial No. 700,959
Renewed August 22, 1936

9 Claims. (Cl. 88—24)

This invention relates to stock quotation projecting machines in general and has for an object to provide an improved optical system for a stock quotation projection machine by means of which the heat radiation of the lamp may be reduced to a minimum, the number of mirrors reduced to a minimum, in turn to reduce the excessive light absorption of such mirrors to a minimum and an electric resistance interposed in series with the lamp circuit in turn to retard the initial rush of current when establishing the electric circuit so that for a projected picture of a predetermined acuity, there may be used ordinary crown glass condensers and a lamp of comparatively low light intensity.

More specifically, it is aimed to provide an improved screen for screening out the heat rays or the infra red rays and at the same time improving the acuity of the picture to be produced and presenting an impression that will be soothing to the eyes of the observer.

It is still another object of the present invention to provide an improved lamp projecting device whereby the life of the projecting lamp to be used will be increased by interposing a resistance constructed in the form of a wafer which can be securely mounted in the standard lamp housing today in use with stock quotation projecting machines without calling for any reconstruction.

It is still another object of the present invention to provide an improved image projecting system dispensing entirely with the use of mirrors between the light aperture and the screen thereby reducing the objectionable light absorption by mirrors to a minimum and cooperating to facilitate the use of lamps having a lower light intensity, also the use of eye soothing screens, also the use of ordinary crown glass condensers, and also the use of filament protecting resistors and yet obtain a projected picture of a predetermined acuity.

These and other features, capabilities and advantages of the invention will appear from the subjoined detail description of specific embodiments thereof illustrated in the accompanying drawings in which—

Figure 1 is a front elevation partly in section diagrammatically showing the wiring used;

Fig. 2 is a wiring diagram for the filament projecting resistor;

Fig. 3 is an elevation of a portion of the filament of the projection lamp to be used;

Fig. 4 is a section on the line 4—4 of Fig. 1;

Fig. 5 is a perspective view of the color screen and its associated frame;

Fig. 6 is a section on the line 6—6 of Fig. 5;

Fig. 7 is a perspective diagrammatically showing an optical system in which mirrors between the light aperture and the screen may be omitted; and

Fig. 8 is a side elevation of the diagram illustrated in Fig. 7.

In the embodiment illustrated in Fig. 1, there is shown a ticker 1, such for instance as of the high speed type, mounted on a standard 2 from which the tape T composed of paper, cellophane or the like is discharged and after making a bend to cause its printed face to face downwardly passes under the finger 3 of the switch lever 4 and then passes over the light aperture formed on the top of the extension 5 of the lamp housing 6 and after leaving the extension 5 passes down around the pressure roller 7 into engagement with the pulling roller 8 and then upwardly under the idler 9 to the rewind reel 10.

The motor 11 for driving the pulling roller 8 has a sheave 12 connected to the sheave 13 by the belt 14. The sheave 13 is connected to the driving mechanism of the pulling roller 8 and the pulling roller 8 in turn is drivingly connected with the rewind reel 10 journaled in the extension 15 extending upwardly from the housing 16.

The motor 11 is connected by the conductor 17 with one of the main leads 18 and connected with the switch in the switch box 19 by its other conductor 20. The switch box 19 in turn is connected by the conductor 21 with the other main lead 22. The leads 18 and 22 are adapted to be connected with the outlet plug 23 by the electric switch 24. In the lamp housing 6, there is provided a suitable lamp socket 25 to receive a suitable projection lamp 26. The filament generally associated with such projection lamps 26 is of the type illustrated in Figs. 2 and 3 having a plurality of convoluted elements 27. The lamp in the present instance is connected by the conductor 28 with the conductor 21 and by the conductor 29 with the resistance winding 30, which winding 30 is in turn connected by the conductor 31 with the conductor 18.

The resistance winding 30 is preferably mounted on a rectangular thin wafer 32, which see particularly Fig. 1, can with facility be attached to a bracket 33 secured to the bottom of the lamp housing 6 adjacent to the lamp socket 25 without calling for any reconstruction of the lamp housing 6.

The extension 5 which has a cut condenser 34 at its upper end adjacent to the light aperture and a convexo-convex lens 35 mounted in the wall

separating the extension 5 from the lamp housing 6, preferably has an inclined wall 36 to receive the mirror 37 whereby the light rays projected by the condenser 35 will be received and deflected upwardly to the condenser 34 through the tape T and the image impressed light rays thereupon directed up through the objective lens unit 38 onto the mirror 39 and by the latter deflected onto the rear face of the screen 40.

10 The rays from the lamp 26 will initially be reflected by the reflector 41 onto the condenser 42 and by the condenser 42 projected through the condenser 35 to the mirror 37 as aforesaid.

To cut off the unnecessary light rays, there are provided the light shields 43 and 44 whereby the reflector 41 will only reflect a narrow band of light and the shield 44 only permit a still narrower band of light to pass through to the condenser 42.

20 On the inclined wall 36 below the mirror 37, there is mounted a frame consisting essentially of a wire 45 having an intermediate portion 46 and two wall engaging arms 47 and 48 extending therefrom. The portions 46, 47 and 48 will engage the inner face of the wall 36, see Fig. 4. From the wall 36, the wire 45 has two short arm portions 49 and 149 extending therefrom and being formed at their outer ends into screen supporting hooks 50 and 51. These hooks, see Fig. 6, each have a lower horizontal portion 52, an inner vertically extending portion 53, an upper horizontal portion 54 and a downwardly extending arm 55 having a friction lip 56 at its lower end.

35 The hooks 50 and 51 support the filter 57 which is preferably composed of a main body of clear glass with a coating of green glass 58. The green colored coating 58 is preferably a transparent green colored film consisting either of flash glass, cellulose acetate or the like.

40 There is rather a unique cooperation between the resistor and the filter 57. As an instance, it has been found that projection machine lamps, such as the lamp 26 when they burn out, generally burn out at the beginning of the day and immediately after being turned on in the morning for a day's run when the filament is cold. After a series of tests, this has led to the conclusion that this is due to the unusual magnetic strain to which the filament 27 is subjected when the current is turned on and the heavy electric charge suddenly surges through the same. To overcome this rush of current through the filament at the start, the resistance 30 with a straight line temperature characteristic has been provided and the winding 30 interposed in series with the filament 27 of the lamp 26. As a result of so interposing the resistance 30, the life of the lamp has been materially increased. The intensity of light is so slightly reduced that it is practically imperceptible to the eye. Due however to this use of the resistance, it has been found that the light rays produced by the filament 27 at its lower temperature contains a greater proportion of infra red and reddish orange rays. The heat generated or radiated by the infra red rays is of course objectionable, especially its effect on freshly inked tape. It has been found that where the heat rays were intense, the freshly inked characters on the tape and the tape itself would slightly shrivel and cause an ultimate distortion on the screen.

To offset this defect, the green colored filter 57 is interposed which practically absorbs all of the infra red radiation and therefore protects

the tape at the light aperture above the condenser 34 from this shriveling up action. As aforesaid, the reduction of heat radiation produced by the lamp is desirable. It is also of course desirable to use a lamp of the lowest wattage possible in order to reduce the cost of operation. A low wattage lamp would of course serve both ends. However, to use a low wattage lamp, care must be exercised that all unnecessary light absorption is avoided. To this end, the mirror dispensing system disclosed in Figs. 7 and 8 very nicely cooperates with the resistor and filter 57.

This optical system especially with horizontal projection from the light aperture to a screen may entirely dispense with all mirrors between the light aperture and the screen. The arrangement disclosed in Figs. 7 and 8 is particularly adapted for broad tape projection in which the broad tape ticker 59 discharges the broad tape or page tape 60 which is drawn across the idler 61 up above the condenser 62. A lamp 63 is provided having a reflector 64 which directs the light rays through the condensers 65 and 66 to the light converging condenser 62 which converges the light rays after passing through the tape 60 and directs the image impressed light beam through the initial objective lens unit 67. This objective lens unit projects the image impressed beam onward to the second objective lens unit 167 establishing a picture at the second imaginary plane 68 from which it is picked up by the objective lens unit 167 and directed onto the projection screen 69, although not necessarily limited to front projection.

With the latter optical system, it is of course assumed that the markings on the tape face to the right of Fig. 8. As illustrated, it will also appear that the objective lens units 67 and 167 have their short focal lengths between them. In other words, the long focal length of the objective lens unit 67 is disposed between the tape 60 and the objective lens unit 67 and the long focal length of the objective lens 167 is disposed between the screen 69 and the objective lens unit 167. With this set-up, the objective lens unit 67 receives the image impressed beam from the light aperture and rotates it 180 degrees end for end and the objective lens unit 167 thereupon receives the image impressed light beam and returns it to upright readable position on the screen 69 by rotating the received image another one hundred and eighty degrees end for end.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. The combination with an electric lamp, of a projecting screen, a light aperture for receiving marked tape or the like, means for directing the light rays from said lamp through the marked tape at the light aperture to produce an image impressed light beam, a resistance interposed in the lamp circuit in series with the lamp to overcome the rush of the current through the filament of the lamp, a wire frame mounted between said light aperture and said lamp, and a green colored screen supported by said frame and thereby interposed between the light rays and the tape substantially to absorb the infra red radiation and the like thereby to reduce the heat rays to a minimum before the light beam passes through the tape in turn to protect the tape at the light aperture from injury by such heat rays.

2. The combination with a lamp housing hav-

ing an extension and a light aperture in said extension, of a light converging condenser disposed at the upper end of the extension adjacent to the light aperture for a marked tape or the like, a lamp in said housing, a mirror at the bottom of said extension, means including condensers for directing a beam of light from said lamp onto said mirror, said mirror being inclined to the vertical and deflecting the received light rays upwardly to and through said converging condenser, a resistance interposed in the lamp circuit in series with the lamp to overcome the rush of the current through the filament of the lamp, a wire frame mounted in said extension between said light aperture and said lamp, and a sheet of clear glass having a green colored transparent film on one face thereof mounted on said wire frame and interposed between said mirror and said condensers substantially to absorb the infra red radiation and the like and thereby to reduce the heat rays to a minimum and produce an eye soothing background to the resulting picture to be projected and in turn to protect the tape at the light aperture from injury by such heat rays.

3. The combination with a lamp housing having an extension, of a light aperture at the upper end of said extension having a tape, a lamp in said housing, an inclined wall forming the lower face of said extension, a mirror secured to the inner face of said inclined wall to receive the light rays from said lamp and direct them upwardly through said light aperture, a resistance interposed in the lamp circuit in series with the lamp to overcome the rush of the current through the filament of the lamp, a wire frame having a U-shaped arm engaging the inner face of said inclined wall, said frame having arms extending away from said U-shaped arm and terminating in hook shaped gripping fingers, and a clear glass sheet having a green colored film formed on one face thereof and secured by said gripping fingers to intercept the light rays directed at said mirror substantially to absorb the infra red radiation and the like and thereby to reduce the heat rays and ultimately produce a soothing background to the resulting picture to be projected and in turn to protect the tape at the light aperture from injury by such heat rays.

4. The combination with a lamp housing having a lamp socket in the base thereof spaced from the side walls of said housing, of a light aperture having tape means including a reflector and condensers cooperating with said lamp to direct a horizontally extending beam of light through said tape, a rectangular thin resistance frame, a resistance winding mounted on said frame, a bracket formed in said housing to one side of said socket and supporting said resistance frame, said bracket and resistance frame being disposed out of the path of the light rays of said lamp and thus not interfering with the formation of said beam of light, means including conductors connecting said lamp and resistance winding in series to overcome the rush of the current through the filament of the lamp, and a filter disposed between the tape and the light rays substantially to absorb the infra red radiation and the like and thereby reduce the heat rays to a minimum before the light rays pass through the tape.

5. The combination with a lamp housing having an extension, of a light aperture at the upper end of said extension having a tape, a lamp in said housing, an inclined wall forming the lower face of said extension, a mirror secured to the

inner face of said inclined wall to receive the light rays from said lamp and direct them upwardly through said light aperture, a wire frame having a U-shaped arm engaging the inner face of said inclined wall, said frame having arms extending away from said U-shaped arm and terminating in hook shaped gripping fingers, and a clear glass sheet having a green colored film formed on one face thereof and secured by said gripping fingers to intercept the light rays directed at said mirror substantially to absorb the infra red radiation and the like thereby to reduce the heat rays and ultimately produce a soothing background to the resulting picture to be projected and in turn to protect the tape at the light aperture from injury by such heat rays.

6. The combination with a lamp housing, of a light aperture at the upper end of said lamp housing having tape disposed at said light aperture, a lamp in said housing, a resistance interposed in the lamp circuit in series with the lamp to overcome the rush of the current through the filament of the lamp, a wire frame having a U-shaped supporting arm engaging the inner face of said housing, said frame having arms extending away from said U-shaped arm and terminating in hook shaped gripping fingers, and a clear glass sheet having a green colored film formed on one face thereof and secured by said gripping fingers to intercept the light rays passing to said light aperture substantially to absorb the infra red radiation and the like and thereby to reduce the heat rays and ultimately produce a soothing background to the resulting picture to be projected and in turn to protect the tape at the light aperture from injury by such heat rays.

7. The combination of a projection machine lamp of high wattage having a filament formed by a plurality of convoluted windings overlapping one another, a projector having a light aperture for receiving marked tape or the like, means for directing the light rays from the lamp through the marked tape at the light aperture to produce an image impressed light beam, a resistance having a straight line temperature characteristic, a source of current, and means for connecting said filament and resistance to said source of current in series with one another to overcome the rush of current through the filament of the lamp when the current is turned on.

8. The combination with a lamp housing having an extension, of a light aperture at the upper end of said extension having a tape, a lamp in said housing, an inclined wall forming the lower face of said extension, a mirror secured to the inner face of said inclined wall to receive the light rays from said lamp and direct them upwardly through said light aperture, a frame, and a clear glass sheet having a green colored film formed on one face thereof and secured by said frame to intercept the light rays directed at said mirror substantially to absorb the infra red radiation and the like thereby to reduce the heat rays and ultimately produce a soothing background to the resulting picture to be projected and in turn to protect the tape at the light aperture from injury by such heat rays.

9. The combination with a lamp housing having an extension, of a light aperture at the upper end of said extension having a tape, a lamp in said housing, an inclined wall forming the lower face of said extension, a mirror secured to the

inner face of said inclined wall to receive the light rays from said lamp and direct them upwardly through said light aperture, a wire frame having a U-shaped arm engaging the inner face of said inclined wall, said frame having arms extending away from said U-shaped arm and terminating in hook shaped gripping fingers, and a filter secured by said gripping fingers to intercept the light rays directed at said mirror substantially to absorb the infra red radiation and the like thereby to reduce the heat rays and ultimately produce a soothing background to the resulting picture to be projected and in turn to protect the tape at the light aperture from injury by such heat rays.

AUGUST D. EITZEN.