

Aug. 11, 1936.

A. K. HANKS

2,050,317

PRINTING TELEGRAPH PROJECTING MACHINE

Original Filed Feb. 27, 1924 2 Sheets-Sheet 1

Fig. 1.

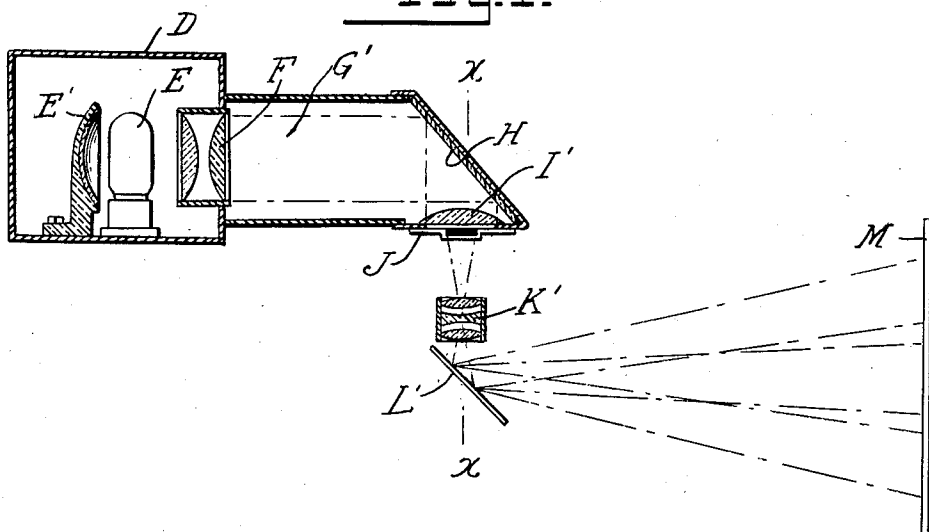
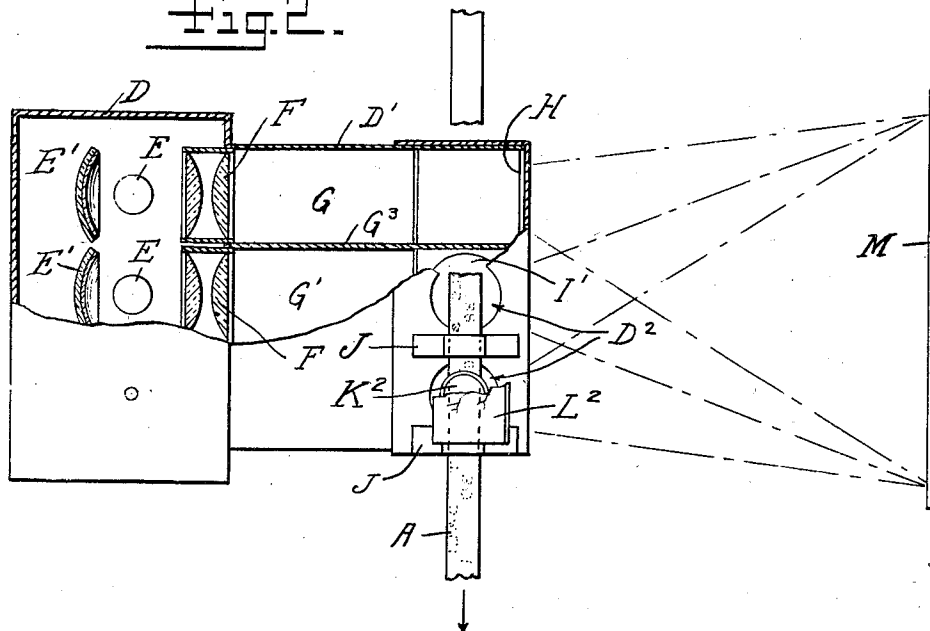


Fig. 2.



INVENTOR

Austin K. Hanks
BY
Frank M. Ashley
ATTORNEY

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A. K. HANKS

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Fig. 3.

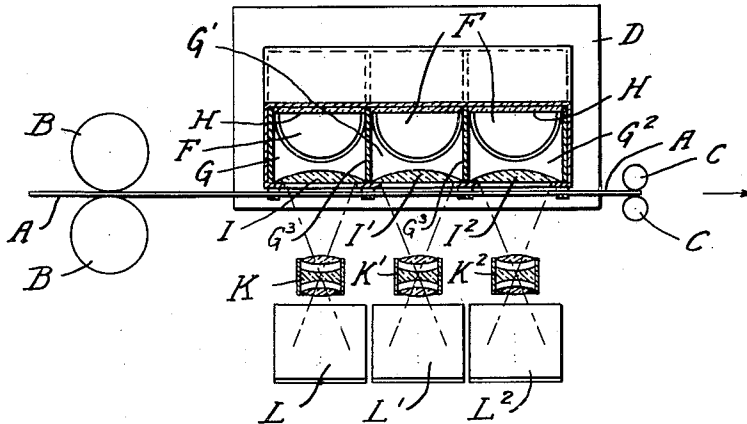
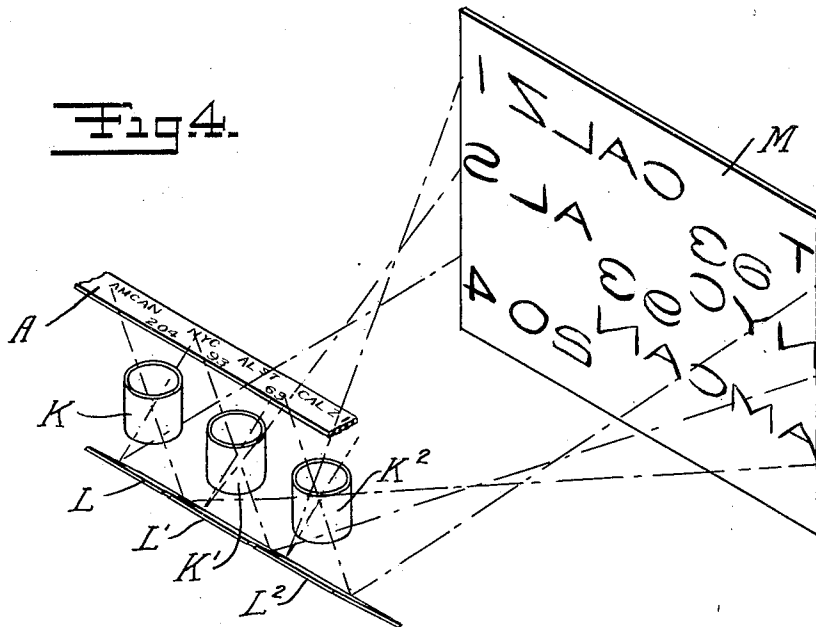


Fig. 4.



INVENTOR
Austin K. Hanks
BY
Frank M. Schlegel
ATTORNEY

UNITED STATES PATENT OFFICE

2,050,317

PRINTING TELEGRAPH PROJECTING
MACHINE

Austin K. Hanks, Forest Hills, N. Y., assignor to
Trans-Lux Daylight Picture Screen Corpora-
tion, New York, N. Y., a corporation of Dela-
ware

Application February 27, 1924, Serial No. 695,418
Renewed April 1, 1936

14 Claims. (Cl. 88—24)

My invention relates to projection apparatus for use with printing telegraph machines and especially to the type of machine known as a "stock ticker" generally used in the offices of stock

brokers. letters NAC—MA projected on the back of the screen would appear as AM—CAN to those viewing the screen from the front or display side thereof. If, however, it is desired to show the characters on an opaque screen by reflection, this may also be accomplished with my apparatus.

The object of my invention is to provide a method of and apparatus for projecting the characters printed on a tape by the stock ticker, to a screen whereon the characters will appear to an audience in their proper relation to permit reading.

Referring to the drawings which form a part of these specifications:—

Figure 1 is a vertical sectional elevational view through one of the lens units of the apparatus.

Figure 2 is an inverted plan view showing the apparatus partly in section.

Figure 3 is a front sectional view taken on line X—X of Figure 1.

Figure 4 is an illustrational diagrammatic view illustrating the tape used in the machine and the arrangement of the characters as they appear when viewed from a point behind the screen.

A further object is to provide an apparatus and screen by means of which the characters projected on the screen may be clearly observed in the daylight.

A further object is to provide an apparatus which is adapted and designed to repeat the characters first shown on the screen while projecting new characters thereon, each set of characters being simultaneously displayed in separate alignments.

It is well known that in printing the stock quotations on a tape the printing telegraph machine, hereinafter referred to as a "ticker" prints a paragraph in a condensed form such as AM—CAN 68½ on the tape which passes through the machine or ticker, and after printing these characters there is a pause or rest period before the next item or quotation is printed.

My apparatus is designed to project one or more of such items in one alignment, that is, the words being in alignment and the figures being offset relative thereto as they appear on the tape, the said item first being displayed on the top portion of the screen, then as further items appear in the top portion of the screen, the items first appearing in the top portion disappear from the top line and appear on the second line located below the top line on the screen, and then pass from the top line and again appear on the third line of the screen which is located below the second line, etc., so that the items are on the screen for a considerable period of time for observation by the audience while they remain at rest between the pauses of the ticker and during the time period of rest while the characters are being printed by the ticker, as the projection apparatus receives the tape and projects the items in timed relation with the movement of the tape through the ticker.

I prefer to use a translucent daylight picture screen for use with my apparatus since it permits the images to be projected on the back thereof and viewed from the front side thereof, and therefore it will be understood that the

Referring to Figure 3, the tape is indicated by A and is printed by the usual printing characters used in the tickers comprising wheels indicated by B—B respectively, between which the tape passes. C—C respectively indicate two rollers which frictionally engage the tape A and pull it taut as fast as it is released from the wheels B—B, and therefore the length of tape between the wheels B and C moves in timed relation with the movement of said wheels B—B. D indicates a casing, preferably made of sheet metal, in which is located a number of lamps, E—E—E respectively with reflectors E'—E'—E' respectively, and condensers F—F—F respectively. The casing D is provided with an extension D' which is divided into three compartments indicated by G—G' and G² respectively by partitions G³, G³, etc., and a reflecting mirror H is located in the outer end of each compartment, and inclined relative to the axis of the condensers at an angle of 45 deg. Located under each of the mirrors H are lenses I—I' and I² respectively and directly below said lenses is a guide-plate J which is carried by the extension D', and which is provided with openings D² formed directly below the lenses is to permit light projected through the condensers and reflected by the mirrors H, to pass freely through said openings to the image forming lenses K—K' and K² respectively which are carried by the extension D' and located below the lenses I—I' and I² respectively, and below each of the lenses K—K' and K² are mirrors L—L' and L² respectively, adapted to reflect the image formed to a screen M. It will be observed that each compartment with the lamp and lenses associated therewith forms a projection unit, and while but three are shown herein, more may be used if found to be desirable.

Each of the mirrors or reflectors L—L' and L² are relatively inclined to a degree sufficient to reflect the image formed by its co-operating lens, to a different position of alignment on the screen so that the image formed by the lens K is projected to the top line of the screen, the lens K', to the centre line and the lens K² to the bottom line or space, as illustrated in Figure 4.

The tape A used with my apparatus is transparent and the characters printed thereon are opaque, and as the tape passes from the ticker through the projection apparatus the characters thereon are projected on the back of the screen and appear in black on a light grey background by reason of the translucent material of which the screen is composed. This apparatus and screen properly installed in a stock exchange room in which trading is carried on, could be viewed by all the members on the floor at the same time, thus serving a very useful purpose.

It will be understood that specific changes may be made in the apparatus without departing from the scope of the invention disclosed, such as using prisms in place of the mirrors L—L' and L², and using more or less of the units above referred to, etc., and I therefore do not wish to be limited in this respect except as to the degree defined in the claims.

Having thus described my invention I claim as new:—

1. A projection apparatus comprising two or more projection units, each unit having an image forming lens, means for supporting and guiding a tape having characters thereon in operative relation to the said lens of said units, and a separate mirror located in operative relation with each of said lenses to reflect the image formed by the lens, to a screen so that the same characters on the tape will be brought into operative relation with each unit whereby they may be repeatedly projected on the screen.

2. A projection apparatus comprising a casing having a plurality of chambers formed therein, a lamp located at one end of each of said chambers, a lens held at the opposite end of each of said chambers, a reflector located adjacent each of said lenses to change the direction of the light rays and cause them to flow through said lenses, means for supporting a character bearing tape below said lenses, an image forming lens located in axial alignment with each of said last named lenses, and light reflecting means located adjacent each of said image forming lenses to reflect the characters on the tape to a screen.

3. A projection apparatus comprising a casing having a plurality of chambers formed therein, a lamp located at one end of each of said chambers, a lens held at the opposite end of each of said chambers, a reflector located adjacent each of said lenses to change the direction of the light rays and cause them to flow through said lenses, an image forming lens located in axial alignment with each of said last named lenses, a movable character tape and light reflecting means located adjacent each of said image forming lenses to reflect the characters on the tape to a screen, each of said means being set at a different angle relative to each other to cause the characters to appear at relatively different places on said screen.

4. In combination, a tape having a plurality of characters thereon, and a plurality of projection systems arranged in a horizontal plane each having means to project a section of the tape upon different horizontal positions on a screen.

5. In combination, a plurality of projection systems arranged in a horizontal plane, a tape, means for feeding the tape through the projection systems in succession, a screen upon which each system is adapted to project a section of the tape as it passes through said system, and means in each system to project said section of tape upon different horizontal planes of the screen from the others.

6. In combination, a plurality of projection systems arranged in a horizontal plane, a tape, means for feeding the tape through the projection systems in succession, a screen upon which each system is adapted to project a section of the tape as it passes through said system, and means in said systems to project said sections of tape in separate horizontal rows upon said screen.

7. A projection apparatus comprising a plurality of projection units, each unit having an image forming lens, means for supporting and guiding a tape having characters thereon in operative relation to said lens of said unit, and separate mirrors located in operative relation with each of said lenses, said mirrors being inclined at different angles relative to each other, whereby the image formed by the lens is projected in different horizontal positions on to a screen.

8. The combination with a ticker tape having printed thereon a single row of successive configurations, of a plurality of adjacent light apertures disposed to the rear of said tape so that the light rays from said apertures will simultaneously be projected through successive adjacent portions of the tape and project images of the printed matter formed on said tape, a lens for each light aperture to receive the images projected from its light aperture, a screen for receiving the images of the printed matter so projected, and means for preventing the superimposition upon said screen of any image upon another image including reflecting means for intercepting the images projected from some of said lenses and directing them onto said screen to reproduce the printed matter on said tape in its original order of printing.

9. An apparatus for projecting images of the characters written lengthwise on stock ticker tape, said apparatus comprising a plurality of projection systems, means for feeding said tape through said projection systems in succession, a screen upon which each system is adapted to project an image of a section of the tape as it passes through said system with the images of the tape characters traveling horizontally across said screen in normal upright relation, and means to project images of said sections of tape on different respective parts of the screen, said last named means including means preventing the superimposition of images on the screen.

10. An apparatus for projecting images of the characters written lengthwise on stock ticker tape, said apparatus comprising a plurality of projection systems arranged in a horizontal plane, a guide through which said tape is passed, said guide having light apertures, a screen upon which each system is adapted to project an image of a section of the tape as it passes through said system with the images of the tape characters traveling horizontally across said screen in normal upright relation, and means to project images of said sections of tape on different respective parts of the screen, said last named means including means preventing the superimposition of images upon the screen.

11. In a system for projecting images of the

characters written lengthwise on stock ticker tape, the combination with a projection field through which said tape is movable, of means for passing light for projecting purposes into engagement with the tape section in said projection field, and means for projecting a plurality of images of each character on the tape as the latter passes through said projection field, said images traveling horizontally in their respective image planes in normal upright relation, the projecting means causing the images in one image plane to move horizontally therethrough free from interference with the images moving horizontally through another image plane.

12. In a system for projecting images of the characters written lengthwise on stock ticker tape, the combination with a projection field through which said tape is movable, means for passing light for projecting purposes into engagement with the tape section in said projection field, and means comprising objective lenses for producing a plurality of images of each character on the tape, said images traveling horizontally in their respective image planes in normal upright relation, the light path leading to each image plane including one of said objective lenses and each of said objective lenses forming an image of each of said characters.

13. In a system for projecting images onto a screen, a projection field comprising a plurality of zones, means for passing light for projecting purposes into said zones, a screen structure, and means for projecting images of said zones and any characters therein onto said screen structure, said means comprising reflecting means serving to arrange the images of the zones on the screen structure in a relation different with respect to each other than the relation occupied by said zones in the projection field.

14. The combination with a ticker tape having printed thereon a single row of successive configurations, of a projection field through which said tape is movable, means for passing light for projecting purposes into engagement with the tape section in said projection field, a plurality of lenses spaced to receive light from different respective sections of said tape, a screen upon which images of the printed matter are projected, and means for preventing the superimposition upon said screen of any image upon another image including reflecting means for intercepting the images projected from some of said lenses and directing them onto said screen to reproduce the printed matter on said tape in its original order of printing.

AUSTIN K. HANKS.