F. W. MINOR.

ENLARGING LANTERN OR PROJECTOSCOPE.

APPLICATION FILED AUG. 15, 1914.

1,136,697.

Patented Apr. 20, 1915.

2 SHEETS—SHEET 1.

Fig. 1

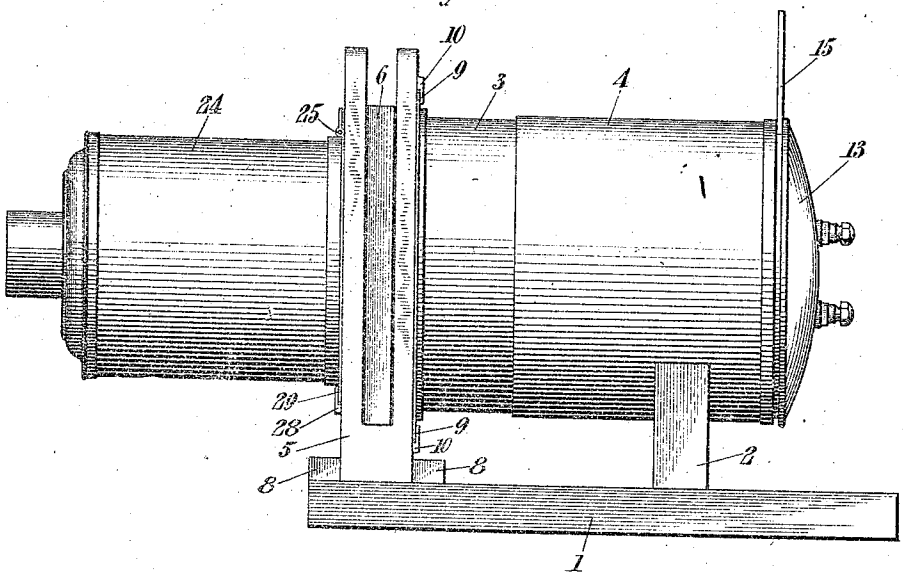
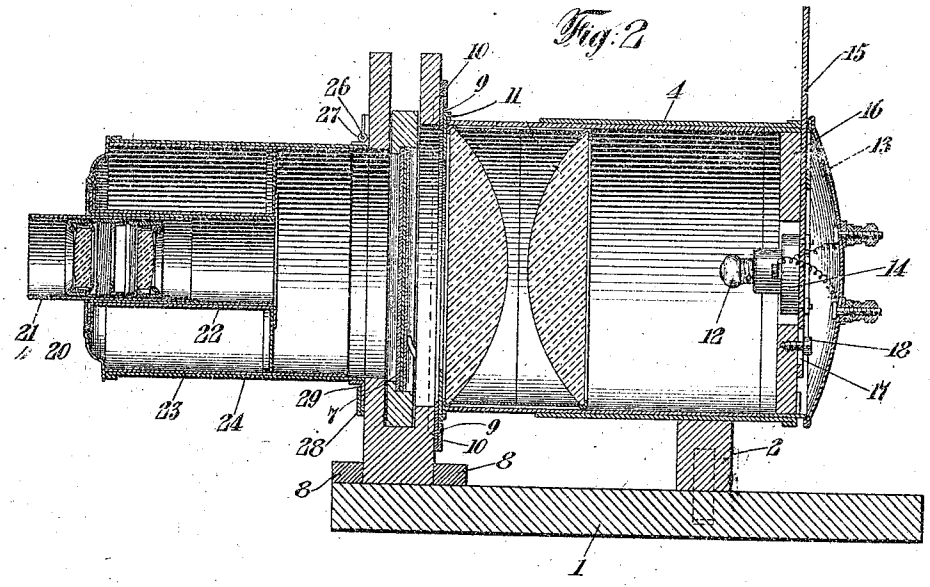


Fig. 2



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2 SHEETS—SHEET 2.

Fig. 3

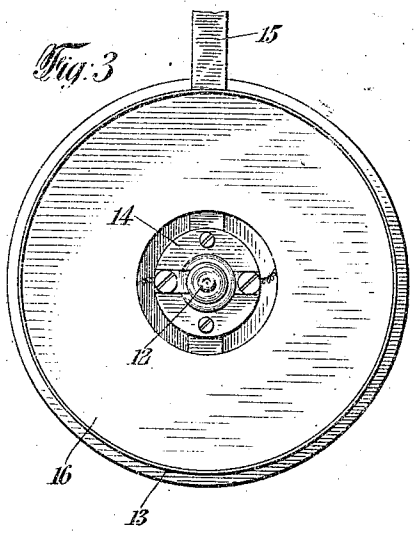


Fig. 4

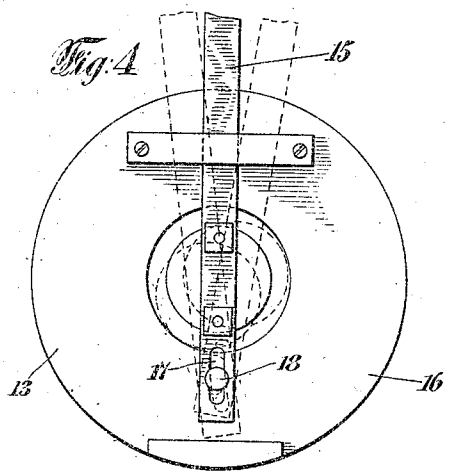


Fig. 5

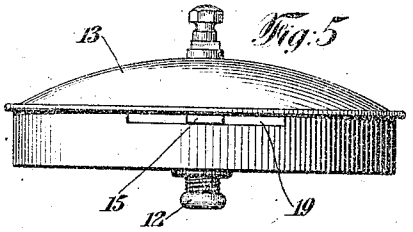
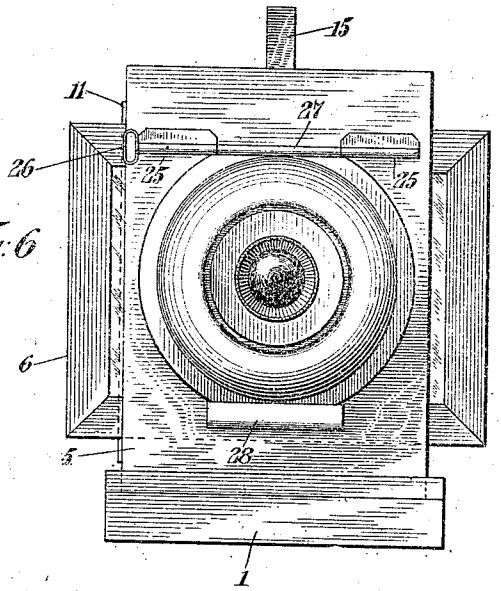


Fig. 6



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UNITED STATES PATENT OFFICE.

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ENLARGING-LANTERN OR PROJECTOSCOPE.

1,136,697. Specification of Letters Patent. Patented Apr. 20, 1915.

Application filed August 15, 1914. Serial No. 856,884.

To all whom it may concern:

Be it known that I, FRANK W. MINOR, of Richmond, in the county of Henrico, and in the State of Virginia, have invented a certain new and useful Improvement in Enlarging-Lanterns or Projectoscopes, and do hereby declare that the following is a full, clear, and exact description thereof.

The object of my invention has been to provide a lantern for use in enlarging and projecting which shall have, among others, the advantages of being simple, compact, cheap and convenient, and to such ends my invention consists in the enlarging lantern or projectoscope hereinafter specified.

In the accompanying drawings, Figure 1 is a side elevation of a lantern embodying my invention; Fig. 2 is a vertical, longitudinal, sectional view through the axis of the lantern shown in Fig. 1; Figs. 3, 4 and 5 are detail views of the lamp mounting at the rear of the lantern; and, Fig. 6 is a front view of a lantern.

While I have illustrated in the drawings that embodiment of my invention which is the best embodiment known to me, such embodiment is to be regarded as typical only of many possible embodiments, and my invention is not to be restricted thereto.

In the illustrated embodiment I have provided a base plate 1 upon which is mounted a saddle 2 adapted to sustain the rear portion of the lantern, comprising telescopic tubes 3 and 4, the tube 3 containing the condensing lenses, and the tube 4 carrying the lamp hereafter to be described. The saddle is preferably removably secured to the base by dowel pins. A yoke 5 stands normally between the condenser tube 3 and the front portion of the lantern having the projecting lenses, and such yoke is adapted to receive the frame 6 in which the slide, negative or other object 7 to be projected is carried. The yoke is preferably open at the top so that the slide frame can be inserted from above as well as from the sides. The said yoke is preferably removably mounted between parallel strips 8 on the base plate. The condenser tube 3 is preferably removably attached to the yoke, and in the present instance I have shown such attachment as consisting of a plate 9 attached to the end of the condenser tube and having its upper and lower edges engaged by guides 10 mounted on the rear face of the yoke, the plate 9 preferably having a flange 11 at one end to strike against the yoke and properly position the tubes when the plate 8 is slid beneath the guides.

A lamp 12 is carried by a head 13 which is fitted into the rear telescopic tube 4, the lamp being preferably received in a socket 14 which latter is mounted on a bar 15 that is so mounted that the lamp can be moved in any position vertically or horizontally so as to bring its center of light at the optical axis of the condenser lenses. In the present instance I have mounted the said bar between the said head 13 and a plate 16 that is secured therein, and have provided the said bar with a slot 17 which is adapted to engage a pin or screw 18, the handle of the bar extending through the slot 19 in the flange of the said bar or cover. The bar can be swung on the pin or screw 18 as on a pivot, so that the lamp will be given a motion horizontally, and by reason of the slot the bar can be raised or lowered so that the lamp is given a capability of adjustment to any position necessary to bring its center of light into the desired position. I thus provide a very wide range of adjustment with a simple construction.

The projecting lenses 20 are mounted in a tube 21 which is itself mounted in a tube 22 that is carried by a preferably larger tube 23, and the latter telescopes with the tube 24 which is removably attached to the front side of the yoke. The form of attachment which I have chosen for illustration consists of eyes 25 formed on the upper part of the front plate of the yoke and adapted to receive a wire 26 having a handle thereon, an eye 27 formed on the said tube 24, and a guide 28 on the lower part of the front face of the yoke, which is adapted to receive a flange 29 on the under side of the said tube.

In the operation of my lantern, it will be understood that the parts being in the position shown in Fig. 1, the negative or lantern slide which is to be projected or enlarged, is placed in the yoke being held by the frame, and the yoke being open at the top there is the greatest facility for placing the slide in the right position so that it can not only be readily inserted but can be readily inverted or replaced if it be placed by accident in the wrong position at first. By means of the adjustment before described, the lamp can be placed in the proper position to bring its center of light in the axis of the con-

denser lenses, and by means of the telescopic tubes the proper focal distances can be obtained.

When the lantern is to be stored or transported, the rear tubes are disconnected from the yoke, the front tubes are likewise disconnected from the yoke, and all of said tubes can be "nested" together so that they require a very small space. The yoke and the saddle can be disconnected from the base and laid upon it, and thus the lantern, which in operation is a comparatively large, bulky structure, is, when dismantled, brought within a very compact compass.

I claim:

1. A lantern comprising a yoke open at the top and sides, and adapted to receive a transparent object to be enlarged, light forming and condensing means mounted upon and supported by one side of said yoke, and projecting means mounted upon and supported by the other side of said yoke.

2. A lantern comprising a yoke having telescopic tubes connected to it on the front and rear, said front tubes having projecting lenses and said rear tubes having condensing means and a lamp, said yoke being detachably connected to a base.

3. A lantern comprising a yoke having telescopic tubes detachably connected to it on the front and rear, said front tubes having projecting lenses and said rear tubes having condensing means and a lamp, said yoke being detachably connected to a base.

4. A lantern comprising a yoke having telescopic tubes detachably connected to it on the front and rear, said front tubes having projecting lenses and said rear tubes having condensing means and a lamp, said yoke being detachably connected to a base, and a saddle adapted to support said rear tubes.

5. A lantern comprising a yoke having telescopic tubes detachably connected to it on the front and rear, said front tubes having projecting lenses and said rear tubes having condensing means and a lamp, said yoke being detachably connected to a base, and a saddle adapted to support said rear tubes, said saddle being detachably attached to said base.

6. In a projecting lantern, the combination of a yoke, telescopic tubes detachably attached to the rear of said yoke, one of said tubes containing condensing lenses and the other of said tubes carrying a lamp, and telescopic tubes attached to the front of said lantern and carrying projecting lenses, said latter tubes being smaller in diameter than said former tubes, so as to be capable of being nested therein.

7. In a projecting lantern, the combination of a yoke, telescopic tubes detachably attached to the rear of said yoke, one of said tubes containing condensing lenses and the other of said tubes carrying a lamp, telescopic tubes attached to the front of said lantern and carrying projecting lenses, the latter tubes being smaller in diameter than said former tubes, so as to be capable of being nested therein, and a base to which said yoke is detachably connected.

8. In a projecting lantern, the combination of a yoke, telescopic tubes detachably attached to the rear of said yoke, one of said tubes containing condensing lenses and the other of said tubes carrying a lamp, telescopic tubes attached to the front of said lantern and carrying projecting lenses, the latter tubes being smaller in diameter than said former tubes, so as to be capable of being nested therein, a base to which said yoke is detachably connected, and a saddle for said first mentioned tubes, detachably connected to said base.

9. A lantern comprising a frame adapted to receive a transparent object to be enlarged, tubes mounted upon and supported by one side of said frame, said tubes carrying a light and condensing lenses, and tubes mounted upon and supported by the other side of said frame, said tubes carrying projecting lenses.

10. A lantern comprising a frame adapted to receive a transparent object to be enlarged, tubes mounted upon and supported by one side of said frame, said tubes carrying a light and condensing lenses, and tubes mounted upon and supported by the other side of said frame, said tubes carrying projecting lenses, said latter tubes being smaller in diameter than said former tubes, so as to be capable of being nested therein.

In testimony that I claim the foregoing I have hereunto set my hand.

FRANK W. MINOR.

Witnesses:
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