

VARIOUS TYPES OF OPTICAL PROJECTION LANTERNS.

Owing to the variety and number of questions asked by our correspondents concerning the different types of optical lanterns for various uses, we publish herewith a number of illustrations showing the construction of lanterns adapted to different forms of gas, electric and oil lamps.

The importance of the optical lantern as a means of illustrating lectures on travel, art, science, or, in fact, any subject that may be brought before an audience, is now generally acknowledged, and educators have adopted it as an important factor in all branches of teaching. The development of the mechanical structure of the lantern has kept pace with the increasing demands for an instrument of accurate construction and ready adjustment. A wide departure has been made, as will be seen in the accompanying illustrations, from the older form of apparatus.

The apparatus here illustrated is manufactured by J. B. Colt & Company, 115 Nassau Street, New York. Fig. 1 shows the various adjustments of a new form

SS, thus providing for a forward and back adjustment. The hoods connecting the various attachments and shutting in the light are held in position on the condensing lens support, O. Lateral and vertical adjustments are afforded by the method of supporting the illuminator on the vertical posts. This arrangement affords a ready and accurate means for the centering of the light in the optical axis of the lantern.

Fig. 3 shows an improved automatic arc lamp. This lamp is provided with all necessary adjustments for the control of the carbons. Owing to the intensity of the light, it may be used in a room that is but partially darkened, and owing to the fact that the light emanates from approximately a point, it has optical advantages not found in other forms of artificial light. This lamp automatically maintains the arc in the optical axis of the lenses, and is therefore to be recommended for scientific demonstrations.

Fig. 4 shows an improved form of oil burner. This is constructed on the student's lamp principle, and is provided with a central draft and a positive wick

ingly convenient form of light for small exhibitions. In the illustration the polished reflector is cut away in order to show the mantle, D.

Fig. 8 illustrates the 100 candle power incandescent electric attachment. These lamps are specially constructed with a small carbon spiral, and are provided with an adjustable reflector fitted with a sliding and swivel adjustment at A, which enables the most advantageous centering of the light in relation to the lenses.

These lanterns are constructed in double or triple form, mounted one above another or side by side, as may be most convenient, for producing dissolving effects. When it is desired to use this lantern for scientific demonstrations the slide support, J, the bellows, C, and the objective lens and its supports are removed and the sliding rods, D D, give place to an optical bench on which may be supported a great variety of chemical and physical apparatus. A polariscope, a microscope, and a spectroscope may be applied to this lantern. The self-focusing arc lamp has been adapted

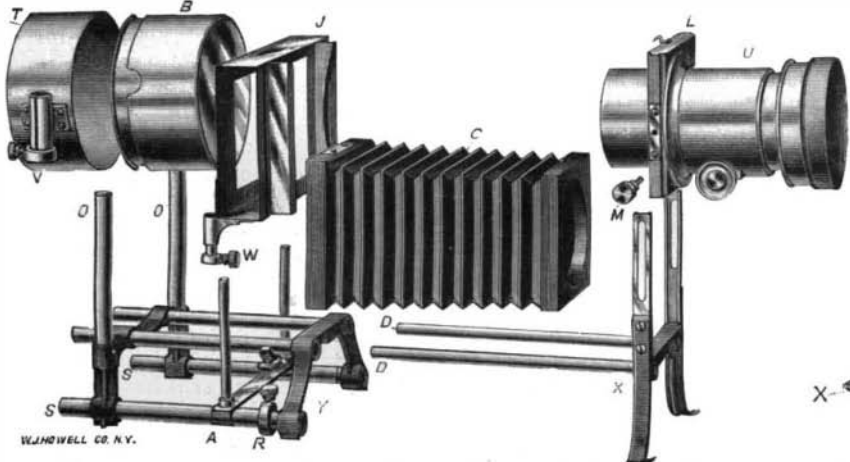


Fig. 1.—OPTICAL LANTERN, PARTS DISCONNECTED, TO SHOW ADJUSTMENTS.

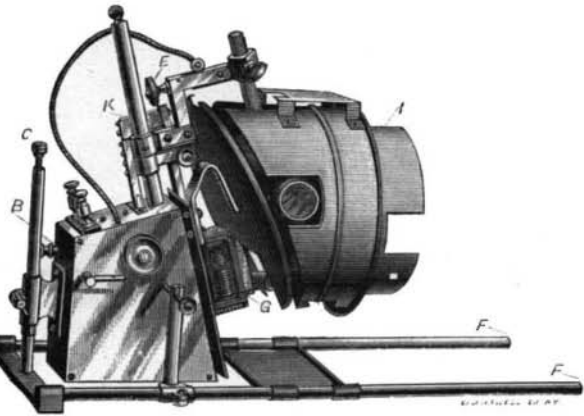


Fig. 3.—AUTOMATIC ARC LAMP.

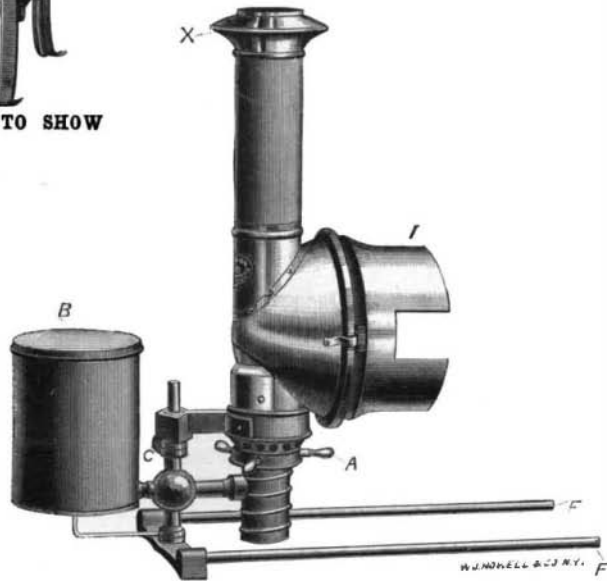


Fig. 4.—OIL BURNER.

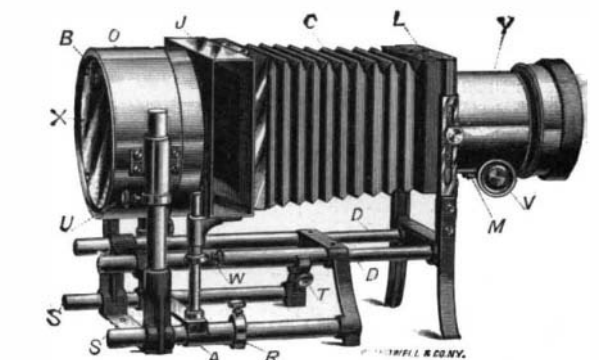


Fig. 2.—LANTERN WITH LIGHT REMOVED.

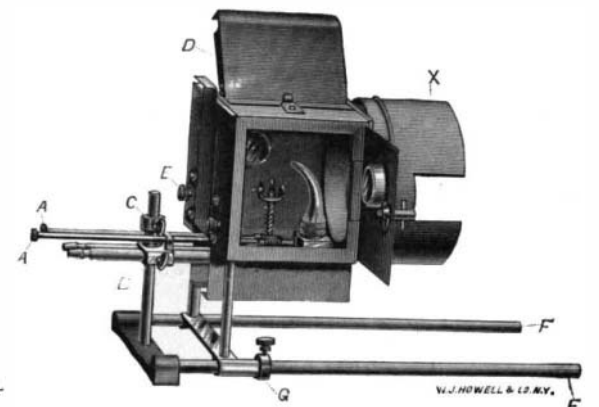


Fig. 5.—OXYHYDROGEN BURNER.

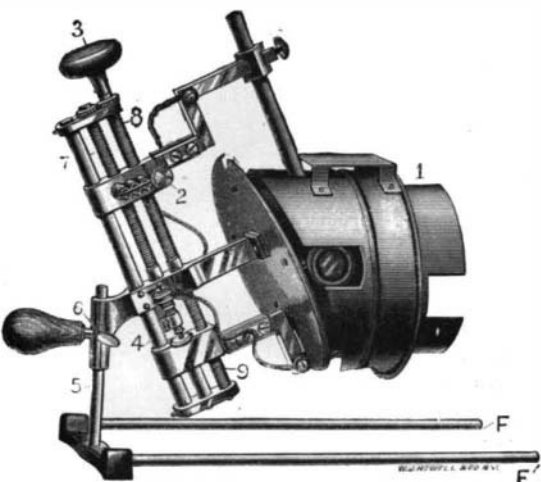


Fig. 6.—HAND FEED ELECTRIC LAMP.

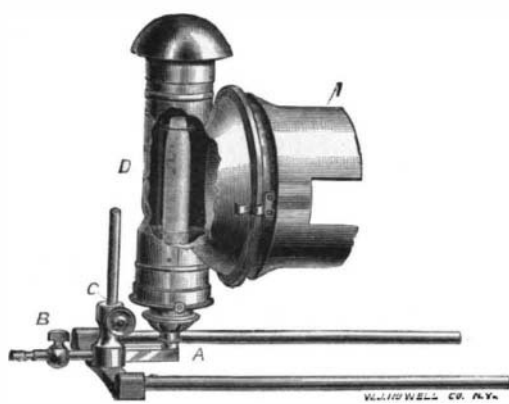


Fig. 7.—WELSBACH GAS BURNER APPLIED TO LANTERN.

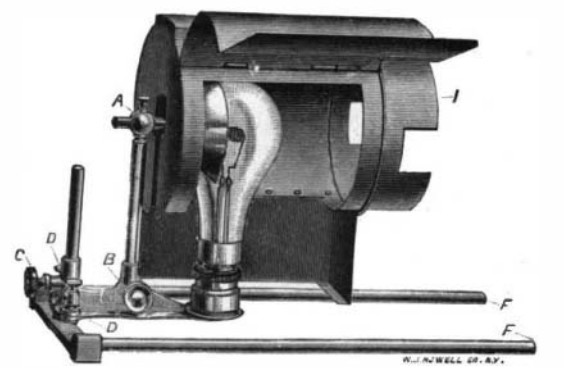


Fig. 8.—INCANDESCENT ELECTRIC LAMP APPLIED TO LANTERN.

of lantern called the Criterion. In this cut the various parts are disconnected in order to show more clearly its mechanical construction. It will be seen that all its parts are vertically adjustable, and that any of them may be removed without the use of tools; so that this lantern is perfectly adapted for physical, chemical, and optical demonstrations, as well as for the projection of pictures and diagrams.

Fig. 2 shows the apparatus and its various component parts in their normal positions, excepting the light or radiant. Of these six different forms are shown, any one of which may be used. This variety has been made possible by the perfection of three forms of electric attachment, and the adaptation of the Welsbach burner, with which the ordinary house gas is used, an improved form of oil lamp, and an oxyhydrogen attachment. In the construction of this apparatus the old form of light box or casing has given place to an entirely different construction, which consists of parallel rods, F F, with a cross piece on which is supported a vertical post, to which the various forms of radiant are attached. In each instance, the parallel sliding rods, F F, fit accurately the tubular bearings,

adjustment. This lamp gives unusually strong light, entirely free from smoke and disagreeable odors.

Fig. 5 illustrates a very perfect form of oxyhydrogen jet or burner, which is provided with mechanical screw rods, A A, for raising, lowering, and turning the lime and for controlling it at the proper distance from the tip of the burner. The metal hood is supported on vertical posts on the slide, O. This device enables the jet with its hood to be removed from the lantern without disarranging their relative adjustments.

In Fig. 6 is shown a hand feed electric arc lamp. Owing to the simplicity of construction of this apparatus, it can be sold at much lower price than the automatic form. In this case the carbons are fed by hand, by turning the insulated knob, 3, at intervals of three or four minutes, as the carbons are consumed. This lamp is provided with an adjustment so that it may be used on either the direct or alternating circuits, in either case maintaining the arc in the axis of the lantern.

Fig. 7 shows the adaptation of the Welsbach gas burner to the Criterion lantern. This is an exceed-

ingly convenient form of light for small exhibitions. In the illustration the polished reflector is cut away in order to show the mantle, D.

Fig. 8 illustrates the 100 candle power incandescent electric attachment. These lamps are specially constructed with a small carbon spiral, and are provided with an adjustable reflector fitted with a sliding and swivel adjustment at A, which enables the most advantageous centering of the light in relation to the lenses. These lanterns are constructed in double or triple form, mounted one above another or side by side, as may be most convenient, for producing dissolving effects. When it is desired to use this lantern for scientific demonstrations the slide support, J, the bellows, C, and the objective lens and its supports are removed and the sliding rods, D D, give place to an optical bench on which may be supported a great variety of chemical and physical apparatus. A polariscope, a microscope, and a spectroscope may be applied to this lantern. The self-focusing arc lamp has been adapted

Calculus in the Kidney.

Bartholow says that borotartrate of potassium is the first remedy for calculus in the pelvis of the kidney. A weak solution must be used for a long time, a strong solution being detrimental. The calculus of the kidney is formed from uric acid, and the neutral phosphatic alkaline salts are the best solvents of uric acid; therefore, to promote its elimination they would appear to be the best remedies to administer. The fruit acids are very useful, says the Buffalo Medical Journal; therefore abundance of fresh fruit would also be indicated for the relief and prevention of nephritic calculi.

ONE of the novelties exhibited at the National Cycle Show, at Crystal Palace, London, was a canopy which protected the rider from sun or rain. This canopy is like the ordinary buggy top, and is steadied by means of a small wheel at the back which runs on the ground.