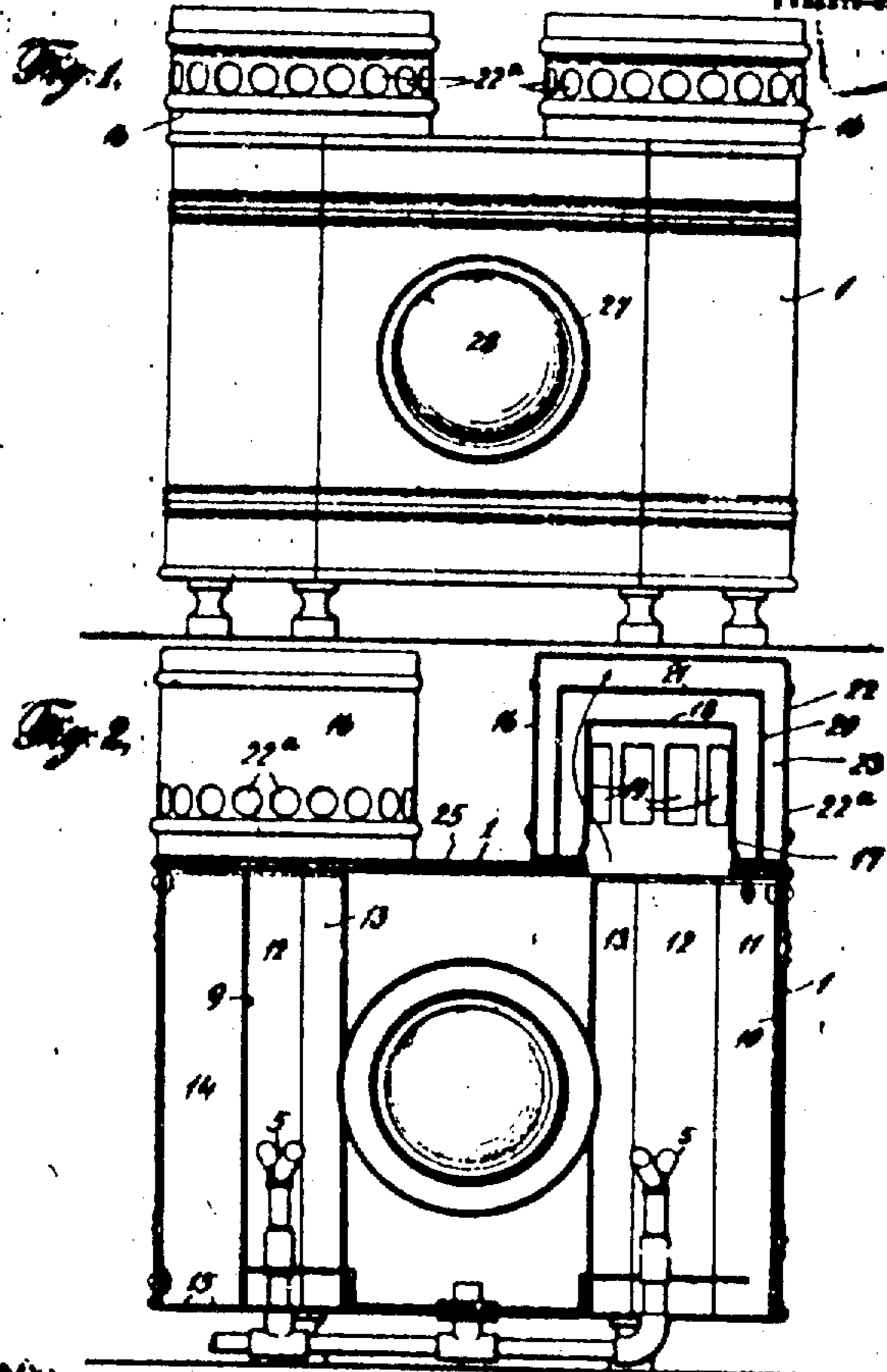


THE NEW  
PUBLIC

H. O. & C. W. WHITE.  
PROJECTING APPARATUS.  
APPLICATION FILED OCT. 9, 1910.

991,575.

Patented May 9, 1911.  
1,991,575—22077.  
NEW YORK, N. Y.



Witnesses:  
Ray A. Perry  
Paul H. Frank

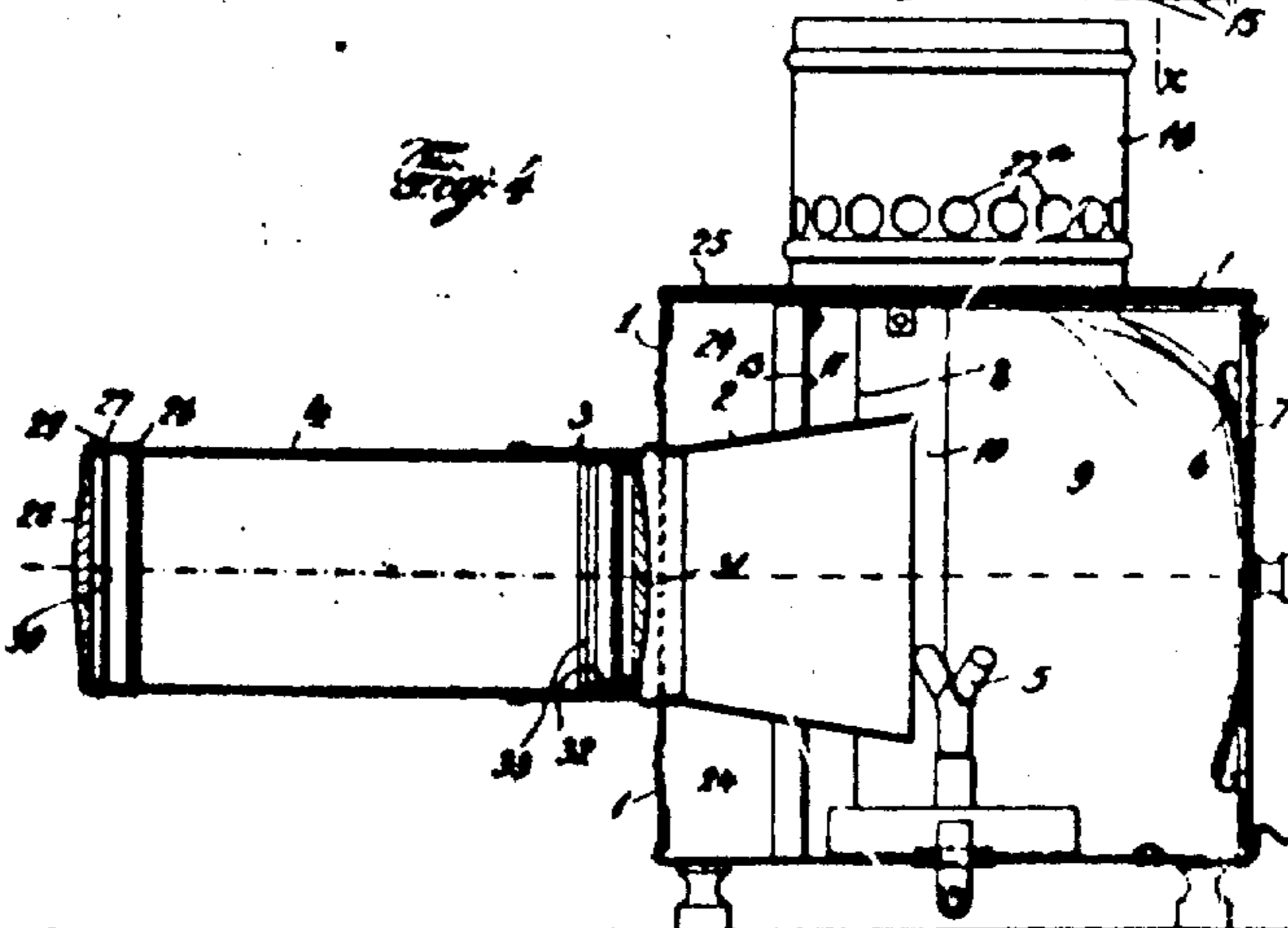
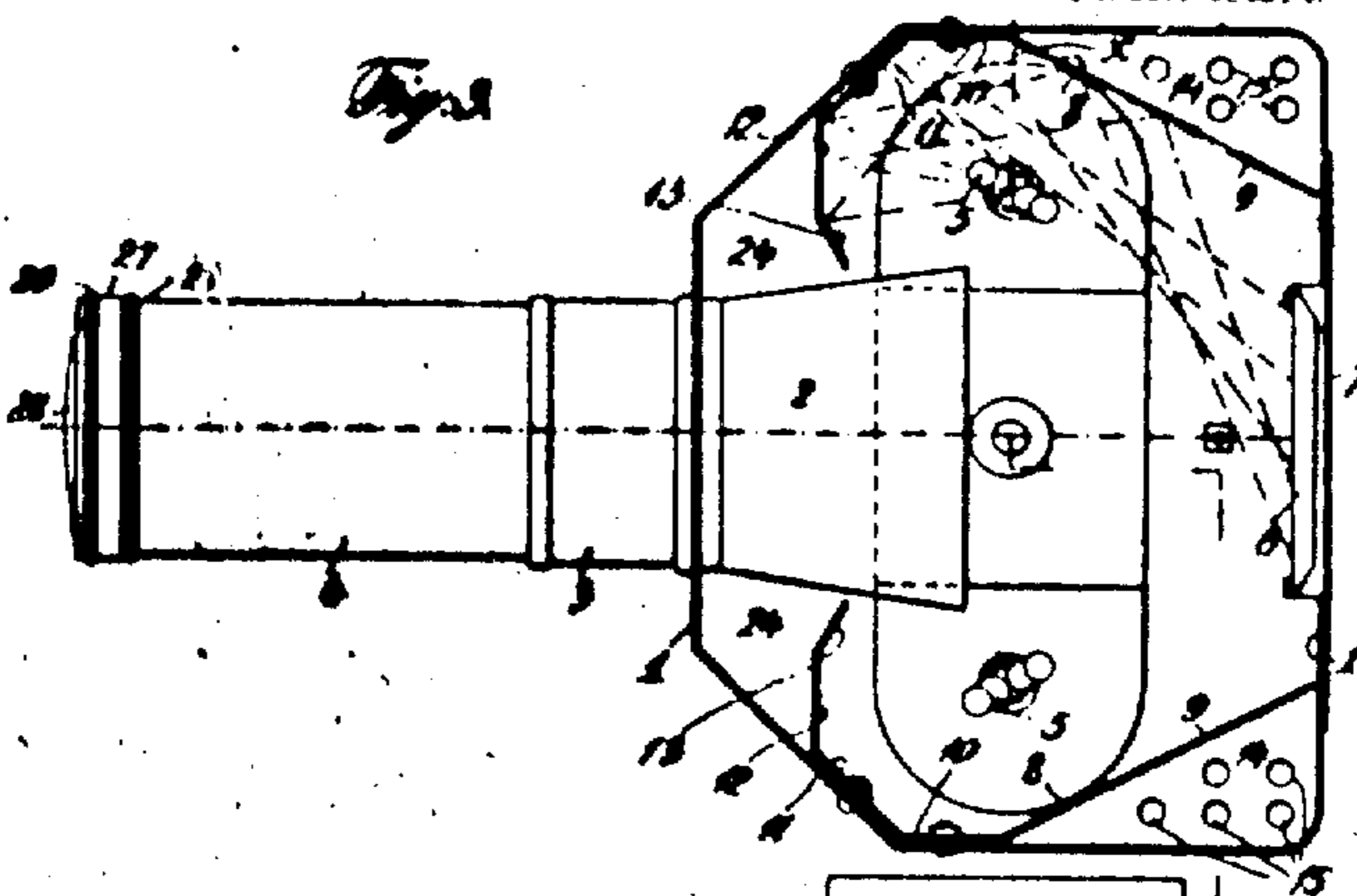
Inventors:  
Henry C. White & Clarence W. White  
By [Signature]  
Attorneys: [Signature]

PART

NO. 1  
PAT. 991,575.

H. C. & C. W. WHITE.  
PROJECTING APPARATUS.  
APPLICATION FILED OCT. 2, 1910.

Patented May 9, 1911.  
2 SHEETS-SHEET 1.



Witnesses:  
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991,575. PROJECTING APPARATUS,  
HAWLEY C. WHITE and CLARENCE W.  
WHITE, North Bennington, Vt., assignors  
to H. C. White Co., North Bennington,  
Vt., a Corporation of Vermont. Filed  
Oct. 8, 1910. Serial No. 585,959.

*To all whom it may concern:*

Be it known that we, HAWLEY C. WHITE  
and CLARENCE W. WHITE, citizens of the  
United States, and residents of North Ben-  
nington, in the county of Bennington and  
State of Vermont, have invented certain new  
and useful Projecting Apparatus, of which  
the following is a specification.

Our invention relates to picture project-  
ing apparatus, and particularly to appara-  
tus adapted to project by reflection from  
opaque pictures placed within the appara-  
tus, and involves in part features illustrated  
but not claimed in our application for Let-  
ters Patent filed July 5, 1910, Sr. No.  
570,325.

Our invention comprises a novel reflector  
for reflecting light from one or more sources  
of illumination upon the pictures to be pro-  
jected, the said reflector being designed to  
give a particularly uniform illumination of  
the said pictures while being of a very  
simple and inexpensive nature.

Our invention further comprises an im-  
proved construction of the apparatus, where-  
by efficient ventilation is obtained; an im-  
proved ventilator head and light guard; and  
an improved lens mounting, all as herein-  
after described and particularly pointed out  
in the appended claims.

The objects of our invention are to im-  
prove the construction and design of picture  
projecting apparatus such as referred to,  
and to produce apparatus which, while sim-  
ple and relatively inexpensive, and easy to  
operate, shall have relatively high efficiency  
and which shall be so ventilated and the ex-  
terior of which shall be so protected, that  
there shall be no overheated exterior parts  
which may burn the hands of the operator.

We will now proceed to describe our in-  
vention with reference to the accompany-  
ing drawings, illustrating one form of ma-  
chine or apparatus embodying our inven-  
tion.

In said drawings: Figure 1 shows a front  
elevation of the projecting lantern; Fig. 2  
shows a vertical section of the apparatus  
on the irregular section line *a-a* of Fig. 3,  
and looking from the rear; Fig. 3 shows a  
horizontal section of the apparatus, the sec-  
tion being taken just below the top of the  
light chamber; and Fig. 4 shows a vertical  
section of the apparatus taken on its optical  
axis.

The lantern comprises a box or case 1,  
provided, on its front side, with an inwardly  
flaring light shield 2, and with an outwardly

projecting lens carrying sleeve 3 adapted  
to receive within it a lens tube 4. In the  
particular construction shown two sources  
of illumination are provided, one on each  
side of the optical axis of the apparatus,  
the particular sources of illumination shown  
being acetylene gas burners 5 so placed that  
light from them will illuminate a picture  
carried by the curved picture holder 6 piv-  
otally mounted upon a door 7 hinged to  
the rear wall of the box or case 1. To fur-  
ther increase the illumination of a picture  
carried by this picture carrier 6, reflectors  
8 are provided, one for each of the two burn-  
ers 5, said reflectors each having angularly  
related plane reflecting surfaces 9, 10, 11,  
12 and 13, so arranged, relative to the axis  
of the burners 5, as to reflect upon a picture  
carried by the picture carrier 6, the greater  
part of the light emitted from said burners  
and which otherwise would not impinge  
upon said picture, and furthermore to dis-  
tribute the so reflected light with approxi-  
mate uniformity over the said picture.

By dotted lines we have indicated in Fig.  
3 a few of the rays of light emitted from one  
of the burners 5 and thence reflected by the  
corresponding reflector 8 toward the picture  
carrier 6, from which it will be seen that in  
some cases the light rays are reflected toward  
said picture carrier by single reflection, and  
in other cases by double reflection, and that  
the rays are so reflected as to distribute  
the light quite uniformly over the surface  
of a picture carried by said picture carrier.  
In practice these reflectors 8 are formed of  
bright-surfaced sheet metal bent to the form  
indicated, the said form being such that the  
sheet of metal to form the reflector may be  
bent readily to the desired form by means  
of simple dies, and these reflectors also form  
in effect inner walls for the greater portion  
of the sides of the box 1, there being between  
these reflectors and the outer side walls of  
the box, air spaces 14 into which air is ad-  
mitted through openings 15 in the bottom of  
box 1. Because of the double walls so pro-  
vided, and because practically all of the  
light and heat rays emitted from the burners  
5 impinge, either directly upon the picture  
carried by the carrier 6, or upon one or the  
other of the said reflectors, or upon the  
light guard 2, and because of the efficient  
ventilation of the air space between the  
reflectors and the outer walls of box 1, these  
outer walls remain quite cool in practice, so  
that the operator will not burn his hands  
in case he accidentally touches the sides of  
the lantern.

To provide for the escape of products of  
combustion, the lantern is provided, directly  
above each burner 5, with a ventilating head  
and light guard 16 consisting of an inner  
shell 17 fitting into an opening in the top  
wall of box 1 and provided with a closed

top 18 and with lateral openings 19; a cylindrical light guard 20 surrounding this inner shell 17 and having no openings in its side but provided with a top opening 21, the diameter of which is only very slightly greater than that of the shell 19, and a further outer shell 22, constituting a heat guard, and open at the top, and provided, near its bottom, with air inlet openings 22<sup>a</sup>. Between shells 20 and 22 an air space 23 is inclosed which serves to keep the shell 22 quite cool so that the operator may not burn his hands even if he accidentally touches the exterior of the ventilating head 16. The shell 20 in itself forms a very efficient light guard, so that if, as is customarily the case, the inner wall of shell 20 is a dull black, practically no light will be emitted from the ventilating head 16, even upward, while a nearly direct upward path is provided for the upward passage of the products of combustion, the gases not being compelled to travel downward at any point in their passage through the ventilating head 16. Furthermore, since the reflectors 8 do not extend quite to the top of the box 1, a space is provided, between the top edges of the reflectors and the top of box 1, for the escape of air from the air spaces 14 over the tops of reflectors 8, into the ventilating head and so upward, the construction also being such that the products of combustion in passing from the burner upward to the ventilating head have a strong inducing action, tending to draw air from these air spaces 14, and also from the front air space 24 of the box, (i. e., the space around the light guard 2) so that there is constant change of air going on through these air spaces, while the lantern is in operation, whereby the outer walls of these air spaces are maintained at a relatively low temperature.

The top of the box 1 is double, as clearly indicated in Figs. 2 and 4, and in the interspace so provided we customarily place asbestos or other suitable insulating material 25, to keep the outer top wall relatively cool.

The lens tube 4 is arranged to slide in and out within the sleeve 3 to permit adjustment of focus of the apparatus. In an apparatus of this sort it is very important to provide a lens mounting which shall be at once simple and inexpensive and shall permit ready

removal of the lenses for cleaning, removal of condensed moisture, etc., and which shall provide for the easy return of the lenses to their exact predetermined positions. In the construction shown, the lens tube 4 is provided, near its front end, with a bead 26 adapted to form a stop for the front lens carrier 27, the latter being a cylindrical cap the front edge of which is turned over to form a front stop for the front lens 28, said cap 27 having in it a bead 29 to receive a spring ring 30 forming a rear stop for lens 28. Since these lenses as manufactured,

frequently differ more or less in thickness, we in practice provide spring rings 30 of different thicknesses, using a spring ring of one thickness or another, according to the thickness of the lens, which will hold that lens in a proper position. The rear lens 31 is carried by a cap 32 similar to cap 27, except that, since the rear end of lens tube 4 is to slide within sleeve 3, this cap 32 fits within tube 4 instead of over it, thus providing a smooth outer surface on lens tube 4 for close engagement with the interior of sleeve 3. An inwardly extending bead 33 is provided near the rear end of tube 4, forming a stop for lens carrier 32. Beads 33 and 26, besides forming lens stops, stiffen the lens tube 4, providing sufficient strength to preserve the desired cylindrical form of the lens tube during handling.

In our previous application, Sr. No. 570,325, above mentioned, we have described and claimed the curved picture carrier 6 herein illustrated and described, and therefore it is unnecessary in this specification to describe the reason for the curvature of such picture carrier; and for the same reason we do not in this specification claim the said curved picture carrier.

What we claim is:—

1. A projecting lantern such as described, comprising a box provided with a picture carrier, a plurality of sources of illumination located on opposite sides of the optical axis, and arranged to illuminate a picture on said carrier, inner walls for said box said walls extending from the bottom of said box to within a short distance of the top of said box partly inclosing the said sources of illumination and constituting reflectors, the said box provided with ventilating openings for the spaces between said inner walls and the outer walls of the box, and ventilators for the interior of the box and said air spaces, located above said sources of illumination.

2. A projecting lantern such as described, comprising a box provided with a picture carrier, a plurality of sources of illumination located on opposite sides of the optical axis, and arranged to illuminate a picture on said carrier, inner walls for said box said walls extending from the bottom of said box to within a short distance of the top of said box partly surrounding said sources of illumination and constituting reflectors, there being air spaces between said inner walls and the outer walls of the box, the box being provided with ventilating openings communicating with said air spaces, the said inner walls extending upward a distance less than the full interior height of the box, and ventilators over said sources of illumination.

3. A projecting lantern comprising in combination a box provided with a picture holder, means within the box for illuminating a picture carried thereby, and a ventilator for said box comprising a sleeve open

at the bottom and there in communication with the interior of the box, closed at the top and having lateral side openings, a light shield comprising a sleeve fitting over said first mentioned sleeve, closed at the sides and having a top opening, and a heat guard surrounding said second mentioned sleeve and consisting of a sleeve open at the top and having lateral perforations.

4. A projecting lantern such as described, comprising a box provided with inner and outer side walls said inner walls extending from the bottom of said box to within a short distance of the top of said box, said box being provided with openings connecting space between said walls with the outer air, a source of illumination within said box, and a ventilator over such source of illumination, and arranged to receive heated gases therefrom, the said air space also in communication, near the top of the box, with the space immediately adjacent to the inlet of said ventilator, whereby the hot gases from the source of illumination, in passing into the ventilator, induce a flow of air through said air space.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

HAWLEY C. WHITE.  
CLARENCE W. WHITE.

Witnesses:

MYRON H. JONES,  
IRVING C. COBB.