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PROJECTIONIST'S OPERATING MANUAL

for the

BRENKERT F-7 Master Brenograph

BRENKERT LIGHT PROJECTION CO.
Engineers and Manufacturers
DETROIT, MICH., U. S. A.

BRENKERT
Master Brenograph

For the Motion Picture Theatre

WITH twenty years experience designing and manufacturing projectors and effect lighting devices and nine years making and marketing long distance effect projectors as a background Brenkert engineers set forth to build into one projector all the desirable features as learned from this long and broad experience.

The result is the Brenkert Master Brenograph. A master projector which enables the operator from his projection room to project to any part of the stage or front of the auditorium in any size or shape desired with a wide range of light intensity any focused or unfocused object in color either in animation or stationary except the motion picture film.

With the rapid trend to better entertainment and progress in theatre environment the Master Brenograph thoroughly relieves purely picture entertainments of monotony and greatly enhances any entertainment program with results never before obtained in a theatre.

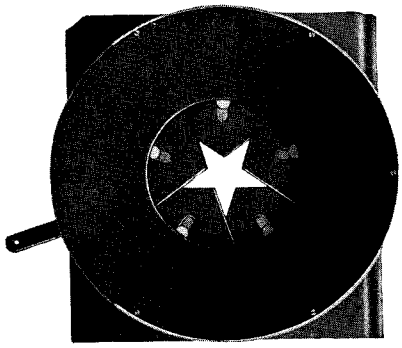
The Master Brenograph is so flexible in operation that an endless variety of novelties, presentations, scenic and color effects can be produced by any projectionist who will study and master it's fundamental operating principles as set forth in the following pages.

The instructions given herein cover the basic operations only of the Master Brenograph as it would be an endless task to enumerate in detail all the varied results to be obtained by it's use.

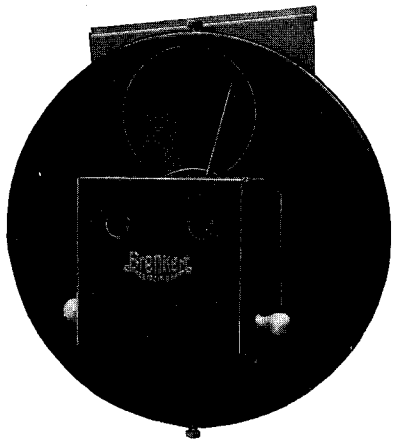
Much has been accomplished in the use of this class of equipment by a large number of projectionists, promoting the art they represent, and with the belief that this work is much needed and will be gratefully received—this instruction manual is dedicated to the Motion Picture Theatre Projectionist.

BRENKERT LIGHT PROJECTION CO.,
ENGINEERING DEPT.

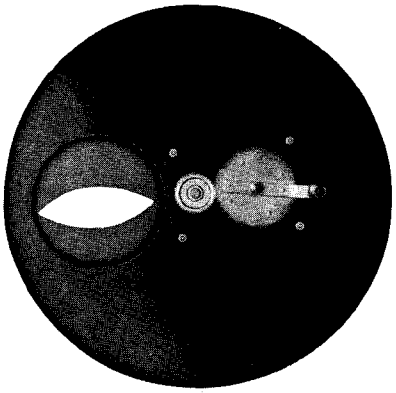
Printed in U. S. A.



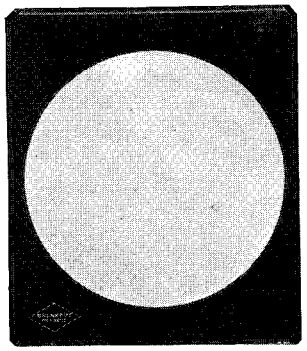
No. 66 Preset Adjustable Star Shutter



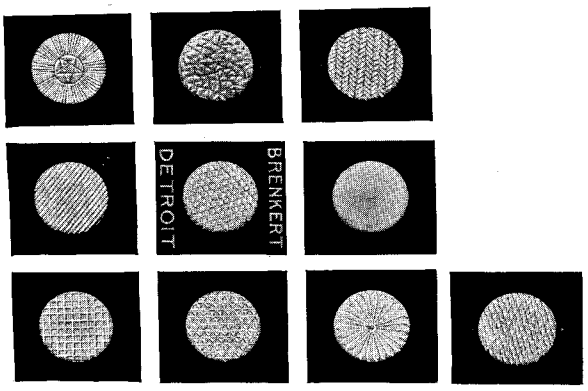
No. 44 Blending Color Wheel



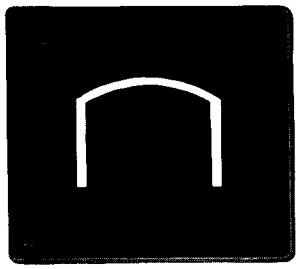
No. 67 Lobsterscope



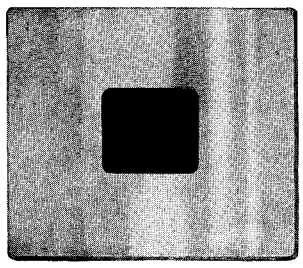
No. 61 Gelatine Color Holder



No. 62 Glass Design Slides

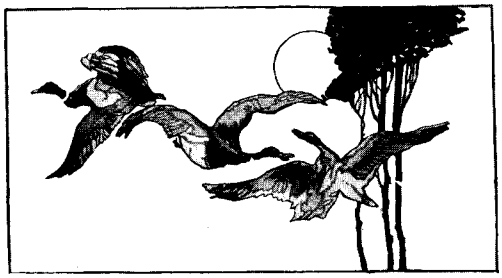


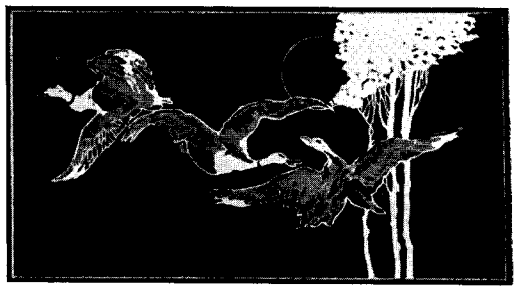
For Proscenlum Arch

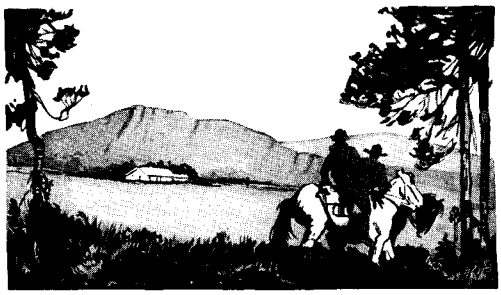


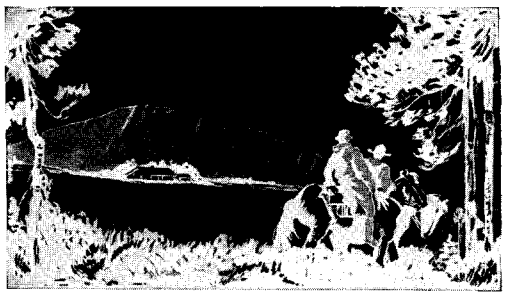
For Picture Screen

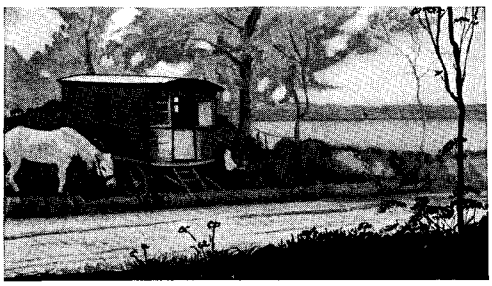
No. 65 Glass Blanking Masks

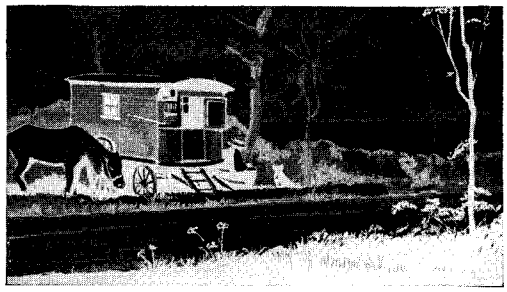




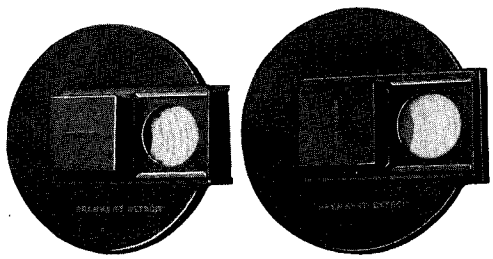








No. 69 Positive and negative Slide effects, Stationary Scene Effects



Clouds **Moving River or Waterfall**

No. 68 Animated Scenic Effects

Description of Working Parts (Continued)

A FRONT UPRIGHT ASSEMBLY, 13 and 24, comprising an effect holder compartment, 27, for the spring driven color wheel used with the blending colors effect and other devices explained hereafter which must be used near the concentrated point of the light beam issuing from the condenser; a swivel holder, 49, containing four single achromatic projection lenses of different focal length for projecting different size areas with index device for registering each lens in the path of the light beam; an iris dissolving shutter with connecting links from upper to lower shutters for dissolving scenic effects, color effects or slides; a stationary mirror, 16, directing the light to two vertically and horizontally adjustable mirrors, 19, whereby the light is directed to any part of the front of the theatre or stage (these mirrors are mounted on a sliding platform, 20, so that two different directions of light are pre-set and change from one to the other is accurately accomplished on each unit thus providing four different pre-sets for light direction on the complete projector).

Projection Lenses

Focal Length recommended for the Master Brenograph

There are four 4″ diameter projection lenses supplied on the upper as well as the lower unit making a total of eight lenses. We supply these lenses in steps of 1″ from 10″ to 28″ focal length and in steps of 2″ from 30″ to 40″ focal length. On each installation we recommend that lenses be chosen for each unit as follows:

40″ FOCAL LENGTH (Longest that can be used) for projecting effects to cover a small area or for projecting spots and floods with greater brilliance than can be obtained with short focal length lenses. These 40″ lenses are always provided with the projector.

MEDIUM LONG FOCAL LENGTH LENS for projecting song or organ slides onto the picture sheet. These lenses are generally from 20″ to 26″ focal length or approximately 3.2 times (for a matt opening of 3″) the focal length of the motion picture projection lens.

MEDIUM SHORT FOCAL LENGTH LENS for projecting slide scenes or moving scenic effects onto the draw curtains or scrim. When selecting this lens the overall width of the draw curtains must be known. The focal length generally lies between 12″ and 20″.

SHORT FOCAL LENGTH LENS for projecting color lighting effects onto draw curtains, orchestra, proscenium arch, etc., (Generally from 10″ to 15″ foccal length). It is necessary to know the overall width of the proscenium trim (from outside edge to outside edge) when selecting this lens.

IMPORTANT: When ordering lenses do not fail to give the following information:

(1) Distance from Master Brenograph to picture screen measured on a straight line.

(2) Width and height of motion picture as projected onto the screen or the focal length of the motion picture projection lens.

(3) Width of draw curtains in the clear (if side drapes are used measure inside of these).

(4) Width of orchestra pit.

(5) Width of proscenium arch from outside edge to outside edge.

Note. In cases of emergency focal length of lenses can be shortened by placing two projection lenses together in the same holder. To compute the resulting focal length of such a combination add the focal length of the two lenses to be used and divide by 4.

Example:

One 40″ focus lens and one 20″ focus lens used together will equal a 15″ focus lens.

One 40″ focus lens and one 14″ focus lens used together will equal a 13½″ focus lens.

We do not recommend this as standard practice as extra lenses placed in the light beam reduce the light intensity.

Carbon Combinations

For best results only carbons of high grade should be used in the Master Brenograph.

The following sizes are recommended for the range of currents over which the Master Brenograph should be operated.

Current	Positive Carbon	Negative Carbon
35 to 45 amperes	5/8″ x 6″ Cored	5/16″ x 6″ Metal Coated
50 to 60 amperes	3/4″ x 6″ Cored	11/32″ x 6″ Metal Coated

Carbon Combinations (Continued)

Special High Intensity Carbons

Special high intensity copper coated carbons are used in the Master Brenograph for producing a whiter light than can be obtained with the ordinary carbons. They can be operated at a higher amperage than the ordinary carbons and thereby obtain more light. An added advantage of using these carbons is the fact that the light beam produces less heat than with the ordinary carbons. There is no change necessary in the Master Brenograph to use these carbons other than an adjustment of the control screw on the magnetic relay box of the arc control. They are to be used in the Master Brenograph as follows.

Current	**Positive Carbon** (Copper Coated)	**Negative Carbon** (Copper Coated)
70 to 80 amperes	II MM. x 6″ high intensity	$\frac{5}{16}$″ x 6″

These carbons are made by the National Carbon Company, Cleveland, Ohio, and can be obtained by writing them direct or by ordering through your supply dealer.

Screens Required for Effect Projection

The screen requirements for effect work are not so strict as those for motion picture projection since light colored draw curtains, drops or inexpensive white scrims can be used to good advantage. The attempt should not be made to use dark colored curtains or drops having scenes painted thereon as colored effects projected onto such surfaces will not be revealed in true form.

For best results, draw curtains of light gray velour, velvet or metallic cloth should be used. A plain white scrim can be flyed about 4 or 5 ft. in front of this if desired. Such a combination will answer all purposes and will permit a wide latitude in the types of effects which can be shown.

Method of Operation

Before projecting the effects which can be produced with the Brenkert F-7 Master Brenograph, it will be necessary for the projectionist to understand the method of operating the machine.

The Master Brenograph has two optical systems which are exactly the same in every respect. These will be designated as the TOP projecting system and the BOTTOM projecting system. The operating instructions for one system will apply also to the other.

To Project Light onto Screen

Place carbons in arc burner, using table on page 8 and 9 as an aid to selecting carbon combination for any desired amperage. In general the current required will range from 35 amperes to 80 amperes depending upon the projection distance and size of screen to be lighted. For small theatres 35-40 amperes will be sufficient whereas large theatres will require the maximum of 60 to 80 amperes.

Adjusting Arc Control—Testing Arc Control

Before closing projector (41) switch, see that the tightening handle (37) is **loose** so as to disengage the control from the arc feed. Then close projector switch (41) and strike arc by turning handle (36) to the **right**. After the arc is burning **slowly** draw carbons apart and observe whether arc control starts to feed before the arc goes out. If it does not, screw **in** on the knurled adjusting screw located on the left side of the relay box 42 until the arc control functions (while the arc is burning). Then tighten handle (37) and let the control feed the carbons together. Should the carbons feed too close together, screw **out** on the relay control and test again by separating the carbons and again tightening handle (37). Keep testing the arc control after each adjustment of the relay screw until the arc burns steady and maintains a constant arc gap. With both arcs burning, it may be necessary to readjust each relay control to allow for a voltage drop which may occur when the second arc is struck. Do not attempt to adjust arc control until carbons have become heated to working temperature.

Group 2
Animated Scenic Effects

(See Illustrations No. 68)

Instructions for Setting

Place proper projection lens in position so that effect will cover the desired area, generally the draw curtains. Use the longest focal length lens possible so that no light will be lost. Place animated effect No. 68 in rear effect holder (28) and move lamphouse to bring effect into focus. Adjust directional mirror to place effect where desired and place framing shutter in rear shutter holder (34) and adjust blades to mask effect down to proper size. It will be necessary to swivel effect casing to get proper direction of motion of effect on screen. If an additional special mask is to be used, as when showing a moving effect around the motion picture or slides, place this center blanking mask (65) (cut to the proper size and proportions) in the compartment (30) between the rear shutter holder (34) and the rear effect holder (28) .

How To Use Animated Scenic Effects

(a) Single moving effect (such as flames or clouds) over entire stage opening projected onto draw curtains or scrim.

(b) Single moving effect over stage opening masked out in center for song slides.

(c) Same as (b) except masked out for short motion picture subjects.

(d) Single moving effect in combination with still slide such as MOVING CLOUDS and STATIONARY AIRPLANE.

(e) Single Moving effect in combination with still scenic slide such as STILL RIVER SCENE with MOVING RIVER or OCEAN SCENE with MOVING OCEAN WAVES.

(f) Single moving effect on scrim while singer, actor or stage band (spotlighted from the side of the stage) appears behind scrim.

(g) Two moving effects projected at same time to create an entire moving scene such as MOVING CLOUDS above and OCEAN WAVES below.

(h) Moving effect, such as FALLING FLOWERS, spotted onto organist, actor, or orchestra leader.

Group 3
Still Scenic Effects

(See Illustrations No. 69 Positive and Negative Slides)

Instructions for Setting

Choose projection lens of proper focal length generally from 12″ to 20″ so that image of slide carrier will cover width of stage draw curtains between the drapes. Place positive effect slide to be projected first in TOP slide carrier and focus this scene sharply on draw curtains. Then insert gelatine color frame No. 61 of light blue, light green, or light blue-green in rear shutter holder (34) Lock directional mirror tightly in position. Place second scene in bottom slide carrier, remove first slide from screen, and focus second negative slide sharply on screen. Place light red, light orange, or straw color gelatine frame in rear shutter holder. Then project both slides to screen at the same time and if second slide does not perfectly match first slide, adjust directional mirror on bottom system until they do.

Method of Projecting Several Different Sets of Positive and Negative Slides in Sequence

To operate, dissolve negative slide on slowly using front iris shutter (23). Allow effect to remain on screen for about one minute, then with iris connecting rod (47) disengaged, slowly dissolve positive slide on top of first and allow combined effect to stand. To remove, dissolve both slides off at same time.

By dissolving back and forth, various colors can be inserted to project the same effect in a variety of colors so as to make the effect require more time.

How to Use Still Scenic Effects

(a) Positive and negative slide scenes for curtain designs.
(b) Positive and negative slide scenes for feature pictures.
(c) Positive and negative slide scenes for preludes.
(d) Positive and negative slide scenes for Orchestra, organ or non-synchronous music.
(e) Single Slide scenes for preludes and curtain designs.
(f) Single slide scenes as a background when running short motion picture subjects on a large or magnascope screen (center blanking mask No. 65 must be used).

Group 4
Blending Colors Effect

(See Illustrations No. 44 and No. 62)

Instructions for Setting

Swing Slide carrier (12) up out of path of light and place proper focus projection lens in position so that entire stage opening can be covered with projected beam. Choose a design glass (62) from those provided with Master Brenograph and insert in rear effect holder (28). Focus image of design glass sharply on draw curtains and then insert framing shutter in rear shutter holder (34), adjusting the blades to frame design in proscenium opening as desired. Place revolving color wheel (44) in front effect holder (27) making certain the color wheel is revolving when beam is being projected so as not to burn gelatines in the wheel. By rotating color wheel casing colors can be made to sweep across design in any desired direction. Combination design effects are obtained by using two design plates, one behind the other in holders No. 28 and No. 34 so as to focus both designs on screen on top of each other. One design can be projected in colors by TOP system using short focal length lens and a second design can be projected on top of the first by using the BOTTOM system and a long focal length lens. This requires two color wheels, (44) one for each system. One of these color wheels should be made up of shades of green and blue colors only and the other should be made up of reds, orange and yellow. Extra color wheel (44) can be obtained on request and gelatines of proper color inserted by the operator.

How to Use Blending Colors Effects

(a) Blending Colors over stage opening during musical numbers.
(b) Blending Colors around short moving picture subjects or song slides with the center blanking mask (65).
(c) Blending Colors on proscenium arch outline (using special proscenium mask No. 65).
(d) Blending colors on any object of beauty at the front of the auditorium or proscenium arch during any part of the program.
(e) Blending colors, without design slide, exactly covering the organ console.

Group 5
Organ and Song Slide Effects

Instructions for Setting

Place stereopticon lens in position and sharply focus image of top slide carrier by moving lamphouse back and forth.

Center slide carrier image on screen by adjusting directional mirror and then lock mirror tightly in position. Focus bottom slide carrier in same manner and adjust bottom directional mirror to make carrier images register perfectly on screen. Set focus indicators (5) as herebefore instructed.

How to Use Song Slide Effects

(a) Project as regular dissolving lantern slides.

Use of Special Double Slide Carrier

(b) Project Still scene slide over stage opening using BOTTOM Projecting system and short focal length lens, project lantern slides in TOP system with stereopticon lens by means of special double slide carrier (Double slide carrier furnished on request).

(c) Project lantern slides with TOP system using stereopticon lens and special double carrier; project moving effect, (with shorter focus lens), masked in center, as border around slide.

(d) Project slides as in (c) with Blending Colors Border, use blending colors effect explained in group 4 with center blanking mask (65) in compartment, (30).

The Lobsterscope No. 67

See Illustration page 4.

The lobsterscope is used on the Master Brenograph in either holder No. 27 or No. 28 to produce light flashing effects on the organ console, orchestra pit or stage during certain parts of musical numbers or acts. It consists of a sheet steel housing containing a metal disc with two openings and is hand driven through gears. (Must be ordered extra).

The Adjustable Star Shutter No. 66

See Illustration page 4.

The five point adjustable star shutter is used in holder No. 28 for projecting varying size star effects on stage curtains, organ console and so forth. Movement of the adjusting handle increases or decreases the size of the star and produces charming effects. (Must be ordered extra).

The Center Blanking Mask No. 65

See Illustration page 4.

The center blanking mask consists of heat resisting glass size 8″ x 9″ with edges ground and polished and is used in mask compartment No. 30 for blanking out the center of the light beam for projecting color light effects or scenes around the motion picture or slide. For opaquing the center india ink or opaquing paint is used while projecting the light onto the screen and observing the size and shape desired to blank out. In this same manner the mask is made for outlining the proscenium arch with colored light. (Standard equipment on each Master Brenograph).

Positive and Negative Slides No. 69

See Illustration page 5.

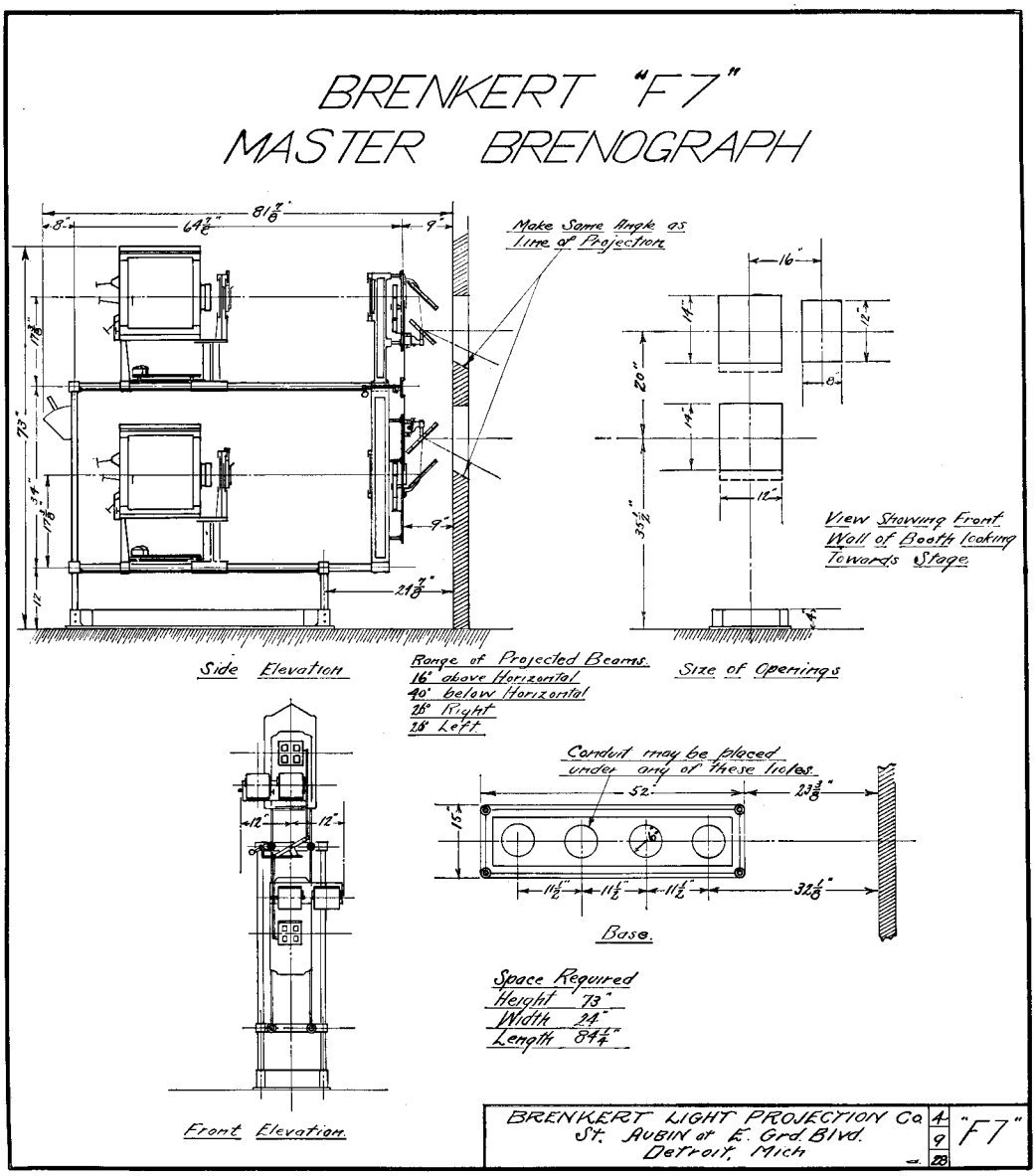
The method of projecting positive and negative slides is explained on page 13 under group 3. These slides are made by us from special drawings of scenes alluding to the feature motion picture and are projected just previous to it's showing. In ordering specify for which feature picture desired. They are also made in a number of miscellaneous scenes which are used with great success during musical numbers of organ, orchestra, synchronous or non-synchronous music. Effect produced is in relief and has some characteristic of the third dimension. Any projectionist by the use of these slides can produce these unusually beautiful scene effects in every shade or tone of colors which will satisfy the most critical in large or small theatres. Special curtain designs to suit individual requirements are produced in this effect and any first class photographer in your locality can produce the slides.

Installation Chart

FOR

Brenkert "F7"

MASTER BRENOGRAPH



The Master Brenograph is made to be operated from the right hand side looking toward the stage. The center line of the port openings can be placed as close as 16″ from the wall at the left hand side of the projection room if necessary to conserve space. As the entire projector remains stationary at all times it is not necessary to allow space for swivelling. Where two Master Brenographs are installed we recommend they be spaced four feet apart center to center of pedestals although if space is limited this distance can be reduced to three feet without interfering with operation of each projector. The measurements in the above chart, showing an overall length of 81 7/8″, are for the standard Master Brenograph which permits the use of 40″ focus lenses. If depth of projection room is limited to such an extent that a shorter projector is necessary we supply the Master Brenograph with floor base and base tubes 14″ shorter reducing the overall length to 69 7/8″. Unless short base is specified we ship the standard size Master Brenograph.