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Grieger

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[54] APPARATUS FOR ILLUMINATING TRANSPARENT IMAGES, ESPECIALLY DIAPOSITIVES

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[51] **Int. Cl.** **G09f 13/10**
[58] **Field of Search** ..... 40/106.1, 158 B

[56] **References Cited**

UNITED STATES PATENTS

3,279,109	10/1966	Whittum	40/106.1
2,962,825	12/1960	Bravo et al.	40/106.1
1,680,299	8/1928	Mabee	40/158 B
2,500,782	3/1950	Wiklund	40/158 B X
2,944,356	7/1960	Anthon	40/106.1
3,253,358	5/1966	Wright	40/106.1

FOREIGN PATENTS OR APPLICATIONS

1,472,297	6/1969	Germany	40/158 B
713,770	7/1965	Canada	40/158 B

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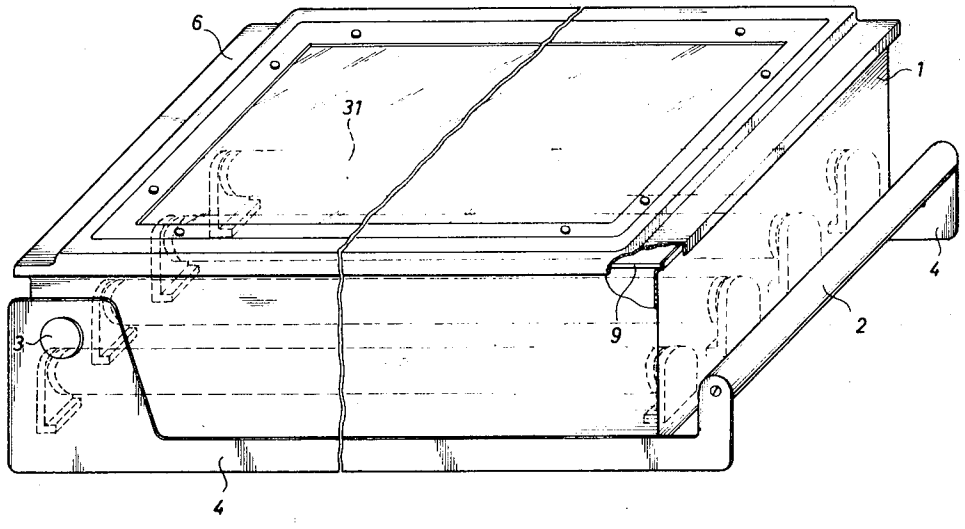
[57] **ABSTRACT**

An apparatus for illuminating diapositives, negatives or the like for inspecting the same which comprises a box-shaped housing the open upper side of which is covered by a plate of opal glass or the like and carries a supporting frame the lateral sides of which are provided with index studs upon which a flat, partly transparent, pocketlike element for holding one or more diapositives or the like may be applied in different positions. This frame is adapted to receive a cover frame for holding down the pocketlike element in each of its positions. This cover frame may be exchanged for another which is provided with apertures in each of which a framed diapositive or the like may be deposited.

5 Claims, 8 Drawing Figures



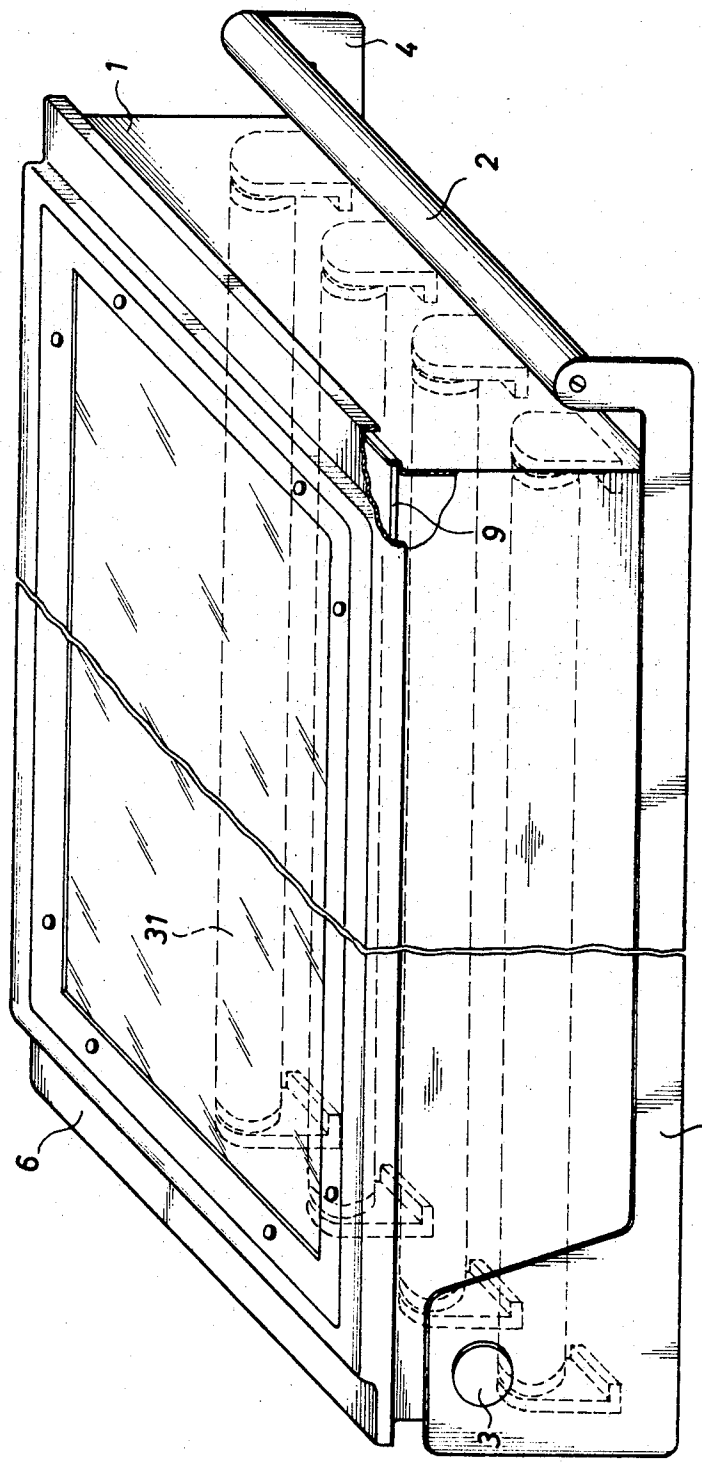


Fig. 1

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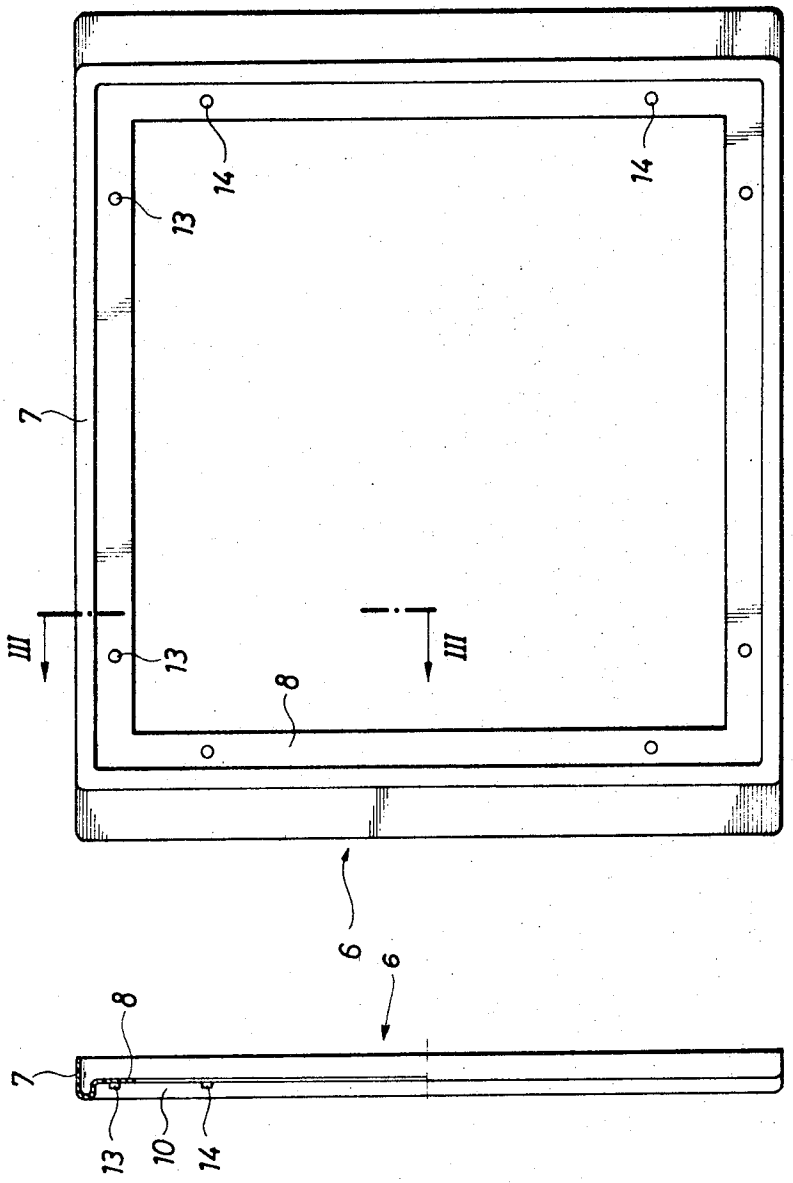

Fig. 2

Fig. 3

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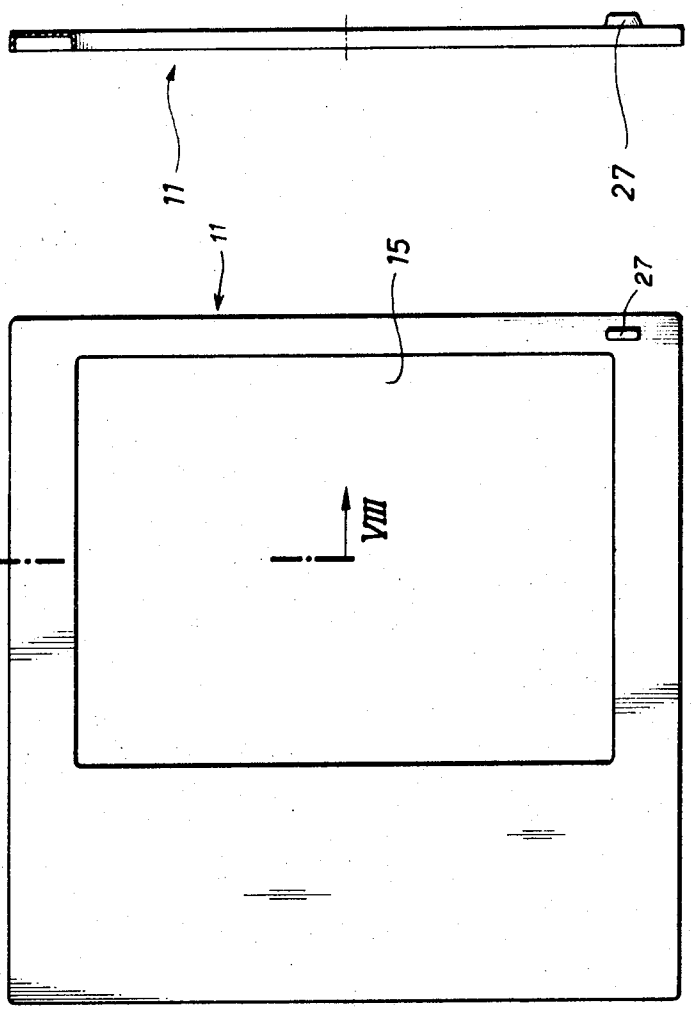

Fig. 8

Fig. 4

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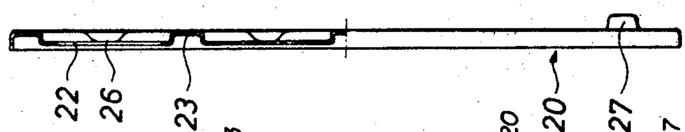

Fig. 7

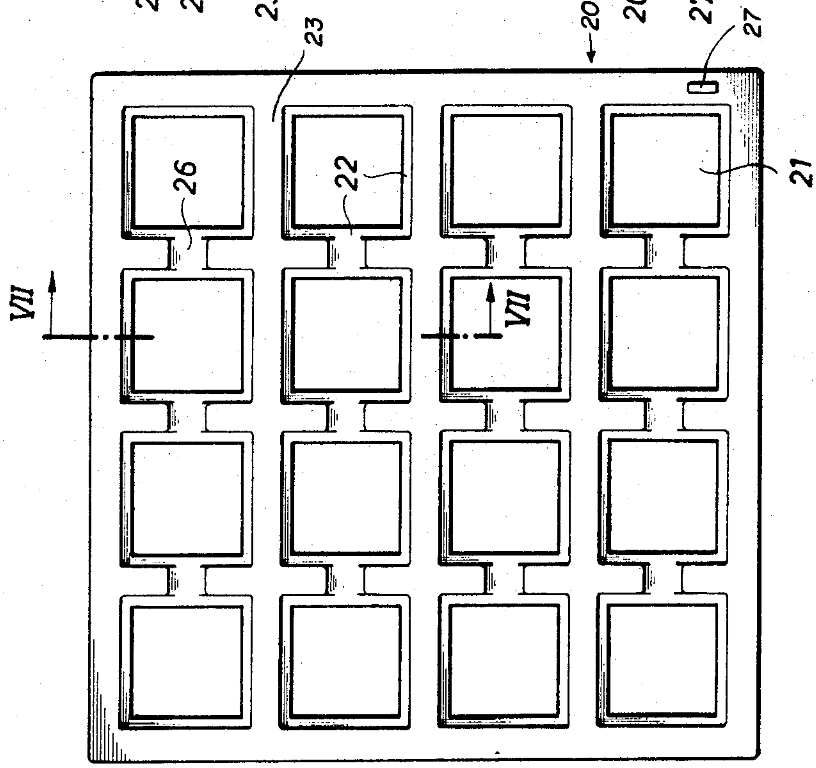

Fig. 6

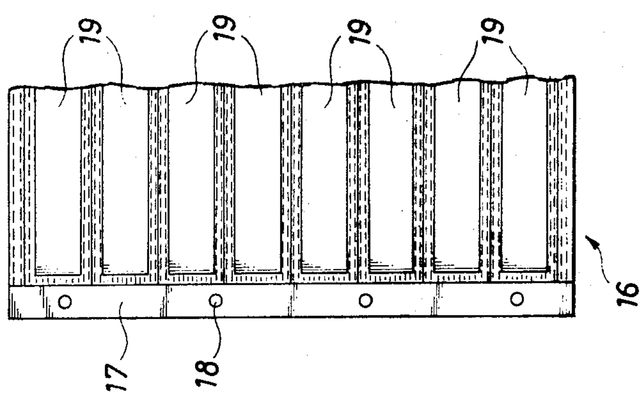

Fig. 5

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APPARATUS FOR ILLUMINATING TRANSPARENT IMAGES, ESPECIALLY DIAPOSITIVES

The present invention relates to an apparatus for illuminating transparent images, especially diapositives or negatives, which comprises a housing, having one open side, a source of light within the housing, and a transparent plate, preferably of opal glass, which covers the open side of the housing and the light source therein and diffuses the light coming from this source.

It is an object of the present invention to provide an illuminating apparatus of the above-mentioned type which may be easily manipulated and easily converted for illuminating transparent images of different kinds and different dimensions so as to permit these images to be inspected.

For attaining this object, the invention provides that the transparent plate is mounted on the upper edges of the housing and covers the open side thereof; that this plate is held on the housing by a supporting frame which covers the lateral edges of the transparent plate and engages over and surrounds the upper outer edges of the housing; that the upper side of this supporting frame is adapted to receive a cover frame; that adjacent to at least one of its lateral sides the supporting frame is provided with at least one index stud; and that the cover frame is provided on each of at least two adjacent lateral sides with a recess or aperture for receiving the index stud.

Within its outer contours the cover frame of the apparatus may be of different shapes and dimensions in accordance with those of the transparent images, especially diapositives, which are to be inspected. Thus, by exchanging one of these cover frames for another, diapositives or other transparent images of many different shapes and dimensions may be inspected. The index stud or studs are provided on the supporting frame for holding a pocketlike element into which the transparent images may be inserted in a certain uniform position. The cover frame according to one embodiment of the invention is provided with an aperture which has a slightly smaller size than the pocket element which is made of a transparent plastic and preferably has a certain conventional size of, for example, 9 × 12 inches. The marginal parts of this pocket element surrounding the actual image part or parts of the diapositives, negatives or the like are coated so as to be opaque, and the marginal part at one side of the pocket element is provided with at least one small hole for receiving the short index stud which projects from the supporting frame. Although all of the pocket elements which are to be employed in connection with the apparatus according to the invention preferably are of the same size, they may be divided by masks into smaller pockets of the sizes of the images or image strips to be inspected.

According to another embodiment of the invention, the cover frame which is carried by the supporting frame is designed for receiving a plurality of framed transparent images, for example, diapositives, and is for this purpose provided with intersecting longitudinal and transverse bars which surround apertures and between which the framed images may be inserted. The lateral sides of these bars form stop surfaces for the outer edges of the frames of the images, while the lower edges of these bars form inwardly projecting shoulders which define the apertures and are adapted to support the framed images and to form masks for the actual images.

These and other features of the present invention will become further apparent from the following detailed description thereof which is to be read with reference to the accompanying diagrammatic drawings, in which:

FIG. 1 shows a perspective view of the illuminating apparatus according to the invention, the central part of which is broken away;

FIG. 2 shows a top view of the supporting frame of the apparatus, but on a smaller scale than that shown in FIG. 1;

FIG. 3 shows a cross section which is taken along the line III — III of FIG. 2;

FIG. 4 shows a top view of a first cover frame;

FIG. 5 shows a top view of a part of a pocket element which is adapted to be employed in combination with the cover frame according to FIG. 4;

FIG. 6 shows a top view of another cover frame;

FIG. 7 shows a cross section which is taken along the line VII — VII of FIG. 6; while

FIG. 8 shows a cross section which is taken along the line VIII — VIII of FIG. 4.

As illustrated in FIG. 1 of the drawings, the illuminating apparatus according to the invention comprises a one-piece box 1 which has a closed bottom and four closed side walls and in which several fluorescent tubes 31 are mounted which may be connected to or disconnected from a source of electric current. Two opposite lateral sides of box 1 carry a pair of brackets 4 which are made of a flat material and are connected to each other at one end by a handle 2 so as to form a frame and are pivotable together at the other wider end about a pair of screws 3 which are secured to the box 1. Between the brackets 4 and the box 1 each screw 3 carries a friction disk, not shown, which preferably consists of rubber and permits the box 1 to be pivoted relative to the bracket frame 2, 4 only when the resistance is overcome which is produced by these friction disks. Box 1 may thus be adjusted to different angular positions relative to the bracket frame. Of course, instead of providing such pivotable brackets 4 and such a handle 2, it is also possible to provide a different pivotable mounting of the box 1, for example, by providing a pivotable foot on the lower side of the box 1 and to secure the handle 2 to the box itself for pivoting it relative to the foot.

On all sides of its upper end, box 1 is provided with an outwardly and upwardly projecting rim which is adapted to receive the outer edges of a plate 9 of opal glass or the like which completely covers the upper opening of box 1 and is adapted to diffuse the light of the fluorescent tubes 31. Box 1 further carries a one-piece supporting frame 6, as shown especially in FIGS. 2 and 3, which has a large central square aperture. This frame 6 has an outer rim 7 which projects downwardly and fits over the upper rim of box 1 into which the glass plate 9 is inserted. Frame 6 further has an inwardly projecting shoulder 8 which extends at right angles to the rim 7, defines the large square aperture of this frame and is adapted to rest on the glass plate 9. This shoulder 8 is downwardly offset from the upper surface of the frame so as to form a square recess 10 into which a one-

piece cover frame **11**, as shown in FIGS. **4** and **8**, may be inserted. Rim **7** may also be provided with one or more locking projections, not shown, which may snap over the rim of box **1**. The upper surface of each shoulder member **8** is provided with two short index studs **13** or **14**, respectively.

Cover frame **11** fits into the square recess **10** of the supporting frame **6** and has an aperture **15** which is slightly smaller than a flat pocket element **16**, as shown in FIG. **5**, which is made of a transparent flexible plastic and adapted to receive, for example, a diapositive of a size equal to that of a standard sheet of typing paper. In accordance with the size and shape of this pocket element **16**, the aperture **15** in the cover frame **11** is provided more closely toward one lateral side of this frame. For taking up the index studs **13** and **14** when the square cover frame **11** is fitted into the corresponding recess **10** of the supporting frame **6**, the arms of cover frame **11** have a U-shaped cross section. Due to the unilateral position of the aperture **15** in the square cover frame **11**, this frame may be inserted in four different positions into the recess **10** of the supporting frame **6**. This permits a diapositive always to be inspected on an upright position regardless of the position in which the diapositive is inserted into the pocket element **16**.

This pocket element **16** has a lateral margin **17** in which four index holes **18** are provided two of which are adapted to receive the two studs **13** or **14** on one or another side of the supporting frame **6**, as shown in FIG. **2**. The flat pocket element **16** is made of two sheets of plastic which are welded together along their margins **17** and at least along their outer edges. The upper of these two sheets may be provided with transparent strips **19** for covering the diapositives to be inspected and with opaque frame parts at the outside of these strips for framing the individual diapositives, while the lower or rear sheet may be matted or satin-finished. The opaque areas of pocket element **16** may be formed by a layer which may, for example, be printed upon the transparent material. This layer has a nonreflective color between white and black, for example, gray, so that the eyes of a person inspecting the diapositives will not be affected by the color of the layer. The pocket element may be divided by one or more lines of weld into individual pockets in accordance with the sizes of the particular diapositives or diapositive strips to be examined which are to be inserted into these pockets through openings which are provided in the lower layer of the pocket element **16** at the side of the latter opposite to the margin **17** or at one of the narrower sides of the pocket element.

In place of such a partly opaque pocket element it is also possible to employ a transparent pocket element and to insert therein an opaque mask for holding the diapositives and separating them from each other.

The cover frame **11** as shown in FIG. **4** may also be pivotably connected to the supporting frame **6** at one lateral side of the latter by means of hinges, so as to permit the cover frame to be pivoted upwardly when a pocket element **16** is to be inserted and fitted over the studs **13** or **14** or to be removed therefrom. These hinges may be of a very simple construction and consist, for example, of projections on one side of the cover frame **20** which engage into apertures in the supporting frame and are pivotable within these apertures.

In place of the cover frame **11** as shown in FIGS. **4** and **8**, it is also possible to insert a different kind of cover frame into the supporting frame, for example, a cover frame **20** as shown in FIGS. **6** and **7** which is designed for receiving a plurality of individual framed diapositives and is for this purpose provided with apertures **21** which have a size in accordance with that of the image parts of the diapositives and are defined by webs **22** forming shoulders which are downwardly recessed from the plane of the upper side of cover frame **20** and have a width in accordance with that of the frames of the diapositives which they are adapted to support. These webs **22** for supporting each diapositive are, in turn, defined by substantially vertical shallow walls which form stop surfaces for the outer edges of the frame of a diapositive. The upper edges of these walls are rounded and connected by intermediate webs **23** to the corresponding walls of the recessed webs **22** surrounding the adjacent apertures **21**. At least in one longitudinal direction of cover frame **20**, each connecting web **23** is provided with a recess **26** which extends substantially to the level of the shoulderlike webs **22** and permits a person to insert a finger to reach the outer edge of the frame of a diapositive which is inserted into one of the recessed parts **22** so as to lift this diapositive easily out of this recess.

The pocket element **16** as shown in FIG. **5** or the mask thereof and also the cover frame **20** as shown in FIGS. **6** and **7** may be designed for receiving pictures or picture frames of different sizes. For pocket elements **16** with clear masked parts **19** of different sizes the particular cover frames **11** to be used may also be provided with a plurality of apertures of sizes in accordance with those of the clear masked parts **19**.

All of the parts of the apparatus according to the invention with the exception of the electrical parts and the metallic brackets **4** and the means for connecting the same to the box **1** and the handle **2** are made of a relatively stiff plastic and may be produced by injection molding or by deep-drawing. The handle **2** consists of a tube of plastic which is secured by screws to the brackets **4**. Each cover frame **11** and **20** is further provided with at least one projection **27** serving as a grip for lifting this frame out of the supporting frame **6**.

By means of different pocket elements **16** with differently masked pockets **19** and/or by means of cover frames **11** or **20** with apertures of different sizes, the apparatus according to the invention therefore permits transparent illuminated images of different sizes to be inspected which may be easily inserted and removed and may also be examined from different angles by pivoting the box **1** relative to the support on which the bracket frame **2, 4** is placed.

Although my invention has been illustrated and described with reference to the preferred embodiments thereof, I wish to have it understood that it is in no way limited to the details of such embodiments but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. A device for illuminating transparency sheets in the form of diapositives and negatives and the like, said device comprising:

a housing having an upper opening;

a light source in the housing;

a translucent plate mounted on the housing in covering relationship to said opening for scattering the light from the source;

a supporting frame having a central aperture, said frame being configured for resting on the edge portions of the upper surface of the plate with said central aperture in alignment with said opening,

there being a downwardly projecting flange on said frame disposed for engaging the lateral edges of the plate and the sides of the housing;

structure for partially covering the central aperture of the frame, said structure including means presenting at least one aperture therein,

said frame including shoulder means on the upper side thereof disposed for receiving and supporting the covering structure in a predetermined position thereon with the aperture of the structure disposed in alignment with at least a portion of the central aperture of the frame; and

a pair of index pins on the frame extending upwardly from the shoulder means for aligning a transparency support device having a plurality of index holes therein with said apertures,

said covering structure including pin bridging means disposed for clearing said pins to prevent the latter from interfering with the placement of the covering structure on the shoulder means.

2. A device as set forth in claim 1 wherein the covering structure includes means presenting a recess at the aperture therein for receiving and supporting a transparency in alignment with the aperture of the covering structure.

3. A device as set forth in claim 1 wherein said transparency support device comprises a pocket-like element including structure defining a plurality of separate pockets.

4. A device as set forth in claim 1 wherein is included means for pivotally interconnecting the supporting frame and the cover structure.

5. A device as set forth in claim 1 wherein a plurality of apertures are presented by said aperture presenting means of the covering structure, there being included means at each aperture for receiving and supporting a separate transparency in alignment with the corresponding one of said apertures.

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