

Oct. 23, 1956

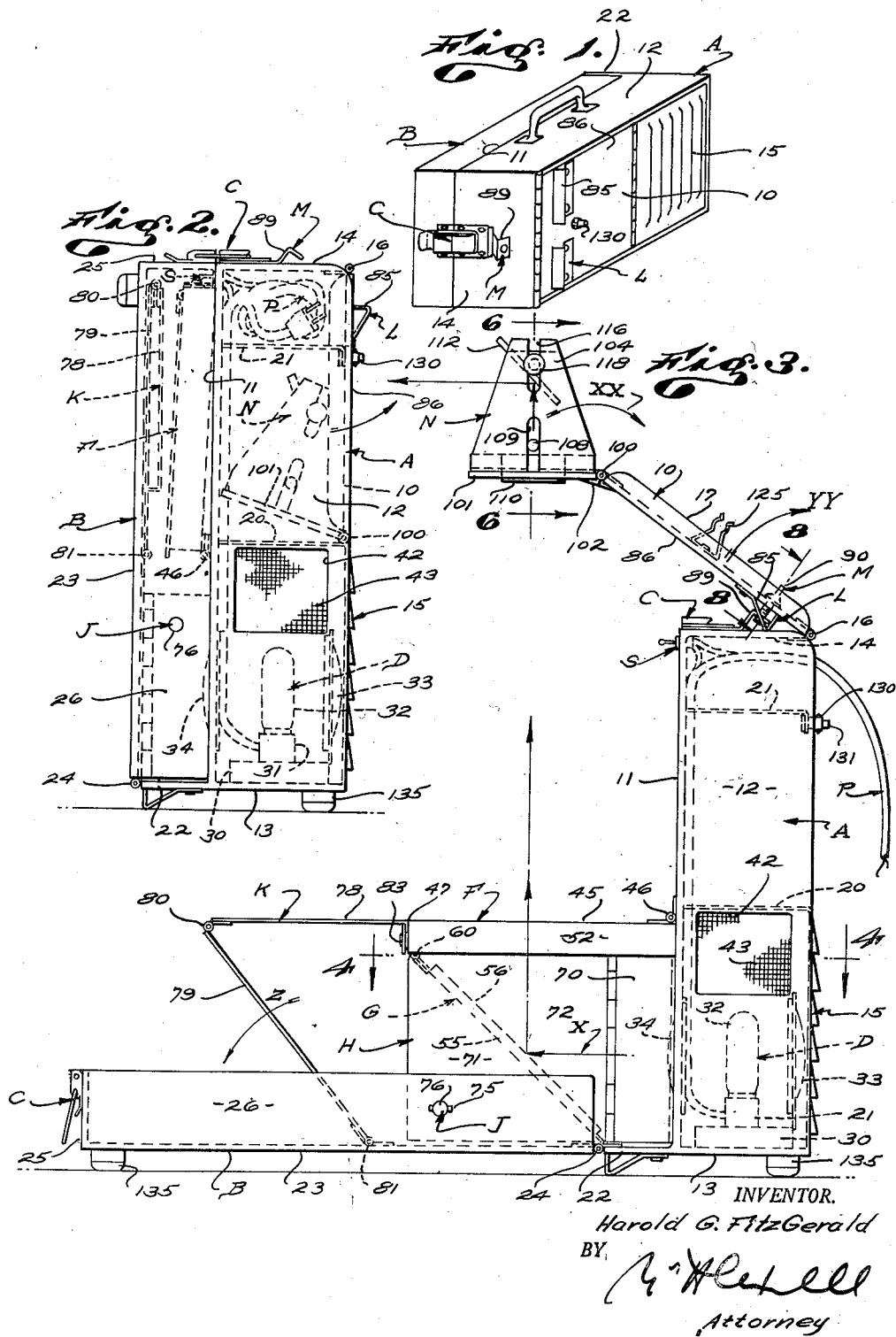
H. G. FITZ GERALD

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COLLAPSIBLE PORTABLE IMAGE PROJECTING APPARATUS

Filed Dec. 22, 1952

3 Sheets-Sheet 1



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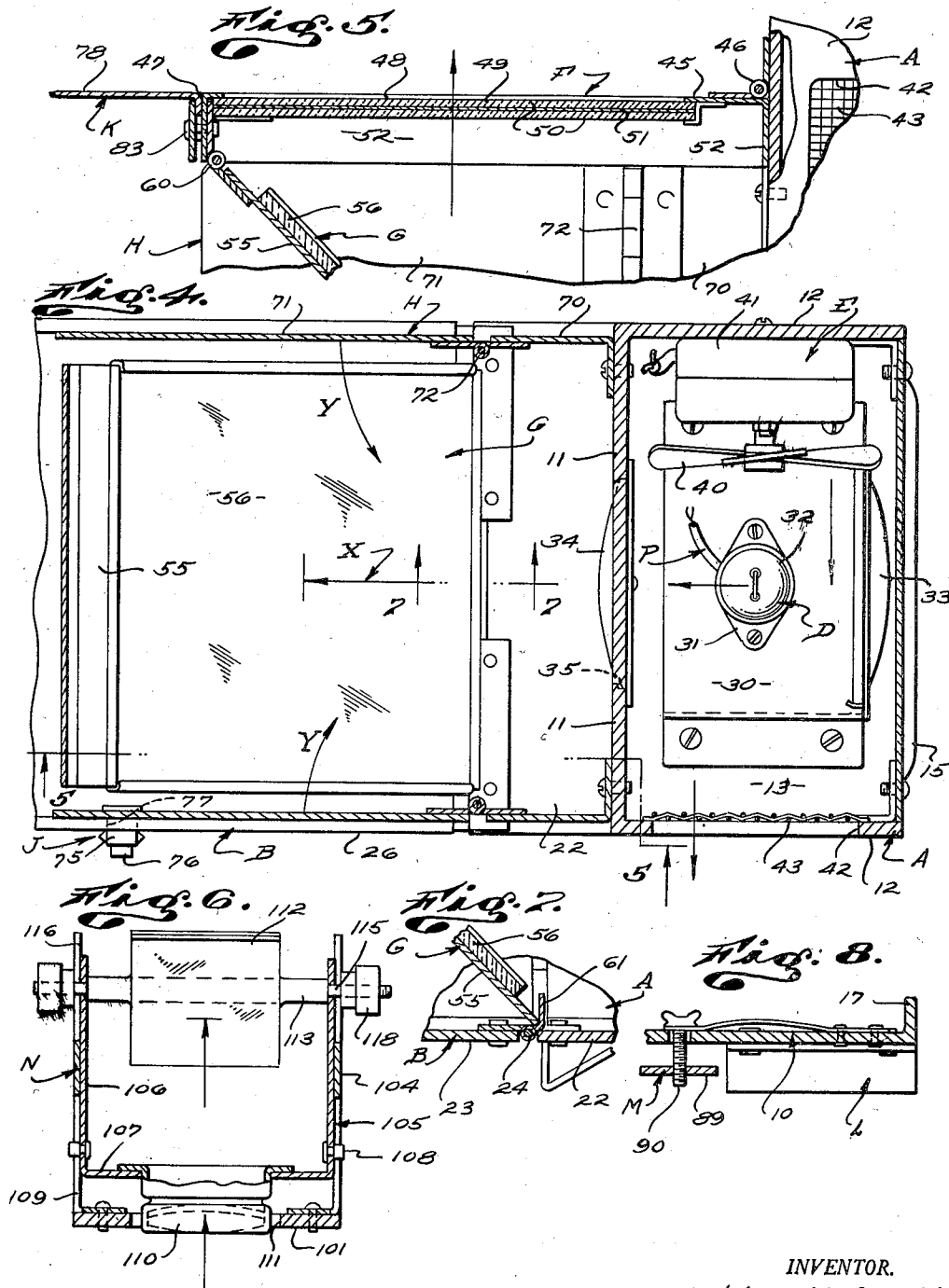
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3 Sheets-Sheet 2



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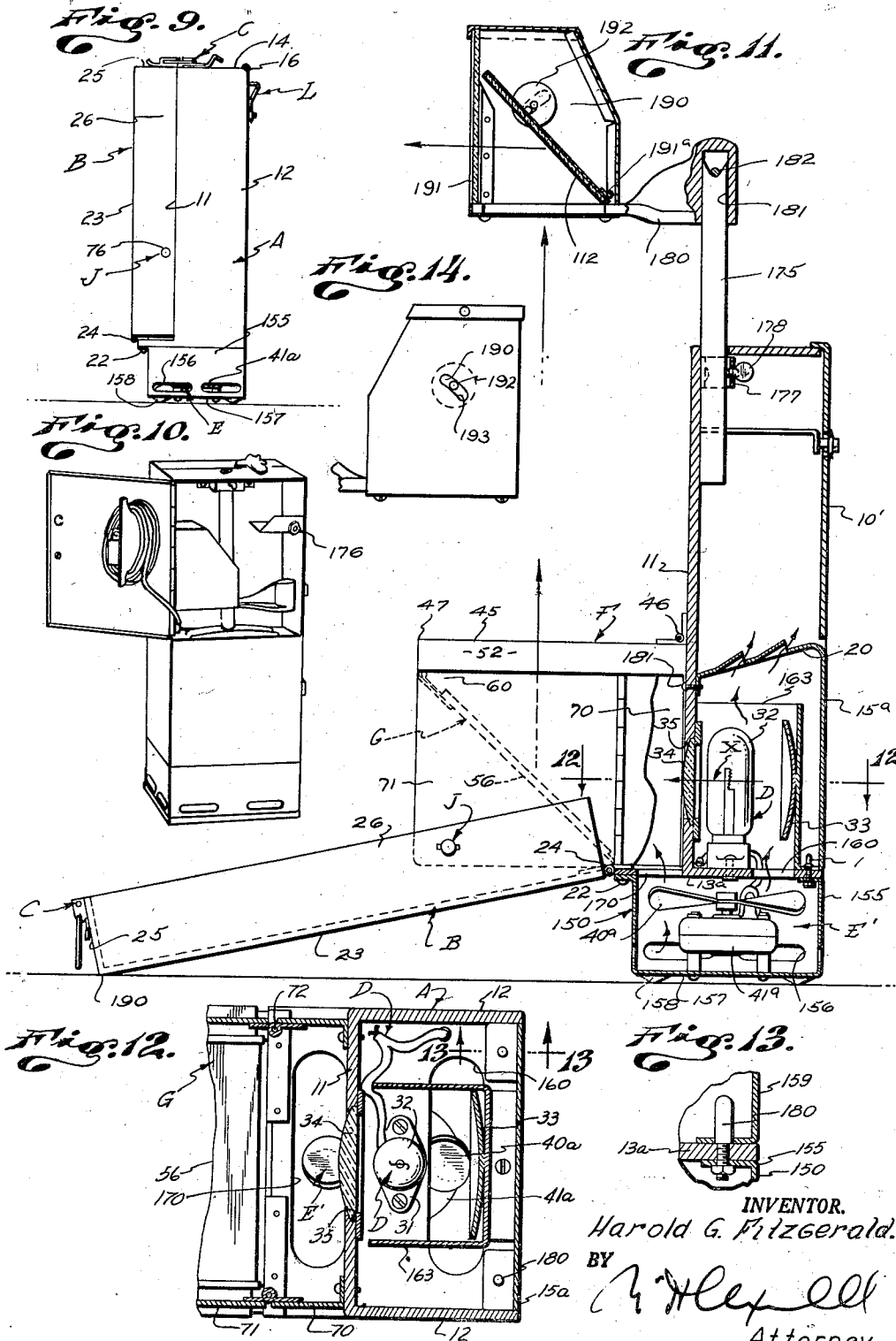
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3 Sheets-Sheet 3



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2,767,611

COLLAPSIBLE PORTABLE IMAGE PROJECTING APPARATUS

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15 Claims. (Cl. 88—24)

This invention relates to a collapsible portable image projecting apparatus, that is, to an apparatus particularly useful for the projection of images from transparencies or the like, and it is a general object of the invention to provide such an apparatus which is of simple, compact construction, and which is effective in operation and simple and convenient to handle.

A general object of the present invention is to provide apparatus of the general character referred to which when collapsed or folded is essentially a rectangular unit of limited size and having a handle whereby it can be conveniently transported from place to place, as circumstances require.

Another object of this invention is to provide apparatus of the general character referred to which when open or in operating condition is neat, convenient for use, and stable when applied to a support, such as a table or the like.

Another object of the invention is to provide a structure, of the general character referred to, characterized by a body of simple, practical improved construction and which is such as to effectively house and protect the various other elements when the device is folded and which serves as a practical, dependable carrier for the other parts, supporting them in working position when the structure is open for operation.

Another object of the invention is to provide apparatus, of the general character referred to, characterized by a projecting head of simple, practical improved construction, the head being a unit of compact form and particularly practical for incorporation in a folding apparatus of the type provided by this invention.

Apparatus embodying the invention includes, generally, a body operable between a folded or collapsible position where it houses the other elements of the apparatus in an extended or working position where it supports said other elements in working position. The body is characterized by a main box-like housing section and a closure section pivotally connected to the housing section and projecting therefrom and forming an element of support when the apparatus is in use. A releasable fastening means holds the closure in position adjacent the main section or housing when the structure is collapsed.

A light generating means is carried by the body, preferably in the lower portion of the main section or housing and may include a lamp, reflector, condensing lens, and other elements serving to direct a beam of light horizontally from the lower end portion of the housing section when that section is in working position. A cooling means is provided so that air is circulated to carry away heat generated by the lamp of the light generating means. A platform is provided and is preferably hinged to the housing section of the body, and when the apparatus is in operation the platform extends horizontally at a point midway between the ends of the body. The platform has a light passing aperture provided with a transparent plate forming an element on which a slide or transparency can be arranged as desired. A light re-

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flector receives light from the light generating means and directs it up through the platform and preferably includes a mirror pivotally supported and extending at a suitable angle beneath the platform when in operating position.

A light shielding means is provided to confine light beneath the platform, and a lock means is provided between the light shielding means and the closure to set the parts rigidly in the operating position. A platform extension, preferably a folding structure, is preferably carried by the closure of the body and when in operating position projects from and forms an extension of the platform.

When the structure is in operating position, a portion of the rear wall of the body section of the housing is positioned to extend upwardly and forwardly from the upper end of the housing and a stop means locates this element in a predetermined position while an anchoring means releasably secures it in that position.

A light projecting head is provided and is carried by the upwardly forwardly projecting portion of the housing or by a post projecting up from the housing and is adapted to receive light projecting vertically through the platform and to direct such light horizontally and in a focused beam. The head is characterized by a base plate hinged to the element of the housing, side plates projecting upward from the base plate, a U-shaped carrier slidably supported by the side plates, a projecting lens carried by the carrier, and a reflector supported by the carrier and pivotally mounted for adjustment.

The various objects and features of my invention will be fully understood from the following detailed description of typical preferred forms and applications of the invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a perspective view of the apparatus, showing it in the folded or collapsed position with the elongate body horizontally disposed and the handle on the body at the upper side thereof, making the structure convenient for handling. Fig. 2 is a side elevation of the apparatus, showing the apparatus in a folded or collapsed position and standing on end, ready to be unfolded or extended to the operating position. Fig. 3 is a view of the structure shown in Fig. 2, showing it opened or extended to be in working position, which hereinafter will be termed "normal position" of the apparatus. Fig. 4 is an enlarged plan view of a portion of the apparatus, being a view as indicated by line 4—4 on Fig. 3. Fig. 5 is a detailed sectional view taken substantially as indicated by line 5—5 on Fig. 4. Fig. 6 is an enlarged detailed sectional view taken as indicated by line 6—6 on Fig. 3. Fig. 7 is an enlarged detailed sectional view taken as indicated by line 7—7 on Fig. 4. Fig. 8 is an enlarged detailed sectional view taken as indicated by line 8—8 on Fig. 3. Fig. 9 is a view similar to Fig. 2 of a slightly different form of construction. Fig. 10 is a perspective view of the structure shown in Fig. 3, showing the structure with a part in open position. Fig. 11 is a view similar to Fig. 3 showing the structure of Fig. 9 in operating position and with parts in section. Fig. 12 is an enlarged detailed section taken as indicated by line 12—12 on Fig. 11, and Fig. 13 is an enlarged detailed section taken as indicated by line 13—13 on Fig. 12, and Fig. 14 is a side elevation of the uppermost part shown in Fig. 11.

The apparatus embodying the present invention, being provided as a folding or collapsible structure, can be considered either when in the folded or collapsed position, or when in the open or working position. For purpose of reference and to facilitate an understanding of the invention, the open or extended position will be referred to as the normal condition or position of the apparatus.

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The structure embodying the invention as it is illustrated on sheets 1 and 2 of the drawings includes, generally, an elongate rectangular box-like body characterized by a main section or housing A and a shiftable section or closure B. A releasable fastening means C is adapted to releasably hold the body sections A and B combined, as shown in Figs. 1 and 2. A light-generating means D is carried by the housing section A of the body and a cooling means E is provided to dissipate or handle heat that occurs incidental to operation of means D. A platform F is combined with the body and is adapted to project horizontally forward from the housing section A at a point spaced above the projecting closure section B when the apparatus is in the normal position. A light reflector G is provided to handle light from the generating means D and it directs the light upwardly through the platform F. Light shielding means H occurs to prevent escape of light laterally from between the platform F and the reflector G. A lock means J is provided to releasably connect elements of the shielding means and closure section B of the body when the apparatus is in the normal working position. A platform extension K is provided and is preferably a folding structure. A shiftable or pivoted element 10 of housing section A is adapted to be held in that position by an anchoring means M. A light projecting head N is carried by the element 10, being preferably hinged thereto, and when in operating position it is above the platform and handles the light passed through the platform.

The main or housing section A of the body of the structure is preferably an elongate box-like unit and, considering the housing in its normal position, it has a flat vertical front wall 11, flat vertical side walls 12, a flat horizontal bottom wall 13, a flat horizontal top wall 14 having a back wall formed by a lower portion or louvered element 15, and an upper portion or element 10 hereinabove referred to. In a typical construction the parts 11, 12, 13, and 14, of the housing A are preferably permanently joined or rigidly secured together as a unit, whereas it is preferred that the louvered element 15, forming a part of the back, be detachable to provide a means of access to the light generating means herein-after described.

In accordance with the present invention, the element 10 of the housing section A is pivotally connected by a hinge 16 to the permanent or rigid structure of the housing, preferably on an axis extending transversely of the housing at the upper rear corner thereof as clearly illustrated in Fig. 3 of the drawings. The element 10 may be in the form of a simple flat plate, and since it serves as a carrier for the head N it is preferably provided at its side or longitudinal edges with reinforcing flanges 17.

In accordance with the invention it is preferred to provide the housing A with a partition 20 and also with a partition 21. Partition 20 is, in its preferred form, a simple flat horizontal partition or divider located vertically where the elements 10 and 15 adjoin when element 10 is in the down or folded position, such as is shown in Fig. 2. Partition 21 is a simple flat horizontal plate located a short distance below the top 14 of the housing. The partitions as above described divide the housing section A of the body into a lower chamber which receives and houses the means D, a middle chamber which receives and houses the head N when the structure is folded, and an upper chamber which can be used as a storage space for the power line P, as indicated by dotted lines in Fig. 2 of the drawings.

The closure section B of the body is preferably a shell-like structure and in its preferred form it includes, generally, a flat horizontal bottom 22 joined to and projecting forward from the bottom 13 of housing A. A front wall 23, which is flat and joined by a hinge 24 to the body 22 is horizontally disposed when in the normal position, as shown in Fig. 3. The closure B has a top 25 and parallel sides 26. The front 23, top 25, and sides

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26 are preferably rigidly joined into a unitary element, and when the structure is folded, as shown in Fig. 2; the top 25 is preferably flush with and projects forwardly from top 14 of housing A while the sides 26 are flush with and project forward from the sides 12 of housing A.

The releasable fastening means C is provided to releasably hold the closure B folded against or in the closed position relative to housing A, and in the preferred form of the invention it is a releasable latch mechanism the elements of which are carried by the top walls 14 and 25 of the body sections, as shown throughout the drawings. It will be apparent that any suitable latch mechanism may be employed as the means C, as circumstances require, and if desired a key actuated or locked latch can be employed.

The light generating means D is provided in the lower chamber of housing A, and as shown in the drawings it may include a base 30 carried by the bottom 13 of housing A and supporting a socket 31 which carries a lamp 32. The power line P is carried by and preferably arranged in the housing A to supply current to the socket 31 by means of a circuit under the control of a switch S accessible in the front wall 11 of the housing A.

The means D preferably includes a suitable reflector 33 arranged back of the lamp 32 or adjacent the louvered element 15 of housing A, and further includes a light condensing lens 34 mounted in an aperture 35 provided in the front wall 11 of housing A so that the means D delivers a shaft of light horizontally from the lower portion of housing A, as indicated by the arrow X in Fig. 3.

The cooling means E provided by the invention preferably includes an air circulating mechanism, and in the case illustrated this includes a suitable fan 40 driven by an electric motor 41 which may be connected in series with the socket of the lamp so that air is circulated when the lamp is on. In the form of the invention under consideration the motor 41 is located at or may be mounted on one of the side walls 12 of housing A at the inner side thereof and opposite the lamp 32. The fan 40 when thus disposed handles air admitted to the lamp carrying chamber through the louvered element 15 of housing A, and the air is discharged from the chamber through a suitable opening 42 provided in the side wall 12 opposite that at which the motor and fan are located. Opening 42 is preferably provided with a suitable screen 43 or the like.

The platform F is preferably a rigid element or unit with a flat top 45 and it is joined or connected by a hinge 46 to the front side wall 11 of housing A at a point between the top and bottom of the housing. In the preferred construction the parts are proportioned so that the platform can be folded to a position such as is indicated in Fig. 2 in which position the outer or terminal edge portion 47 of the platform occurs somewhat below the top 14 of housing A. When the platform is in the normal or working position such as shown in Figs. 3, 4 and 5, it extends horizontally from the housing section A at a point spaced a substantial distance above the horizontally projecting closing section B of the body.

In accordance with the invention the platform F has an opening 48 in its flat top 45 and a transparent plate 49 is provided at the opening and preferably includes layers or plates of glass 50, or the like, and an intervening layer in the form of a light condenser 51. In the preferred form of the invention the platform F is provided with depending edge or marginal flanges 52 which serve to materially strengthen the platform and give or lend rigidity to it. In the case illustrated one of the flanges 52 engages the front wall 11 of housing A and stops the platform F in the working or horizontal position, as clearly shown in Fig. 5 of the drawings.

The light reflector G is shown as involving a flat carrier or plate 55 supporting a mirror 56, and in the normal

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or working position the reflector is located between the platform F and the closure section B of the body and extends at an angle of 45 degrees between the outer end portion of the platform and a point at or close to the point where the wall 23 of closure section B is hinged to the bottom 22 thereof. In the preferred form of the invention one of the horizontal edge portions of the reflector is pivotally secured, and in the case illustrated a hinge 60 is shown pivotally connecting the upper edge portion of reflector G to the flange 52 at the outer or terminal end of the platform F. In the particular structure illustrated a lip 61 projects from the hinge 24 connecting wall 23 and bottom 22 of closure section B so that the lower edge portion of the reflector G is stopped in a predetermined position when in the normal position, as shown in Fig. 7.

The light shielding means H is provided to confine light between the reflector G and the platform F, and in its preferred form it involves like opaque shields at the sides of the structure formed by the platform and reflector. In the preferred form of the invention each shield of the means H includes a rigid or fixed inner section 70 vertically disposed and projecting forward from the wall 11 of housing section A and a forward section 71 connected to the forward edge of section 70 by a hinge 72. When the structure is in the normal position shown in Figs. 3, 4 and 5, of the drawings the forward sections 71 of the light shields are parallel with the sections 70 and with the side walls 12 of housing section A so that the reflector G occurs between the shields. To fold the structure the sections 71 are swung in the directions indicated by the arrows Y in Fig. 4 until they are substantially parallel and in overlapping engagement.

The lock means J is preferably provided to releasably secure the parts in the position shown in Fig. 3 and in the drawings is indicated as a latch type lock 75 having an operating button 76 and carried by one of the sections 71 of means H to be engaged through an opening 77 provided in the adjoining side 26 of closure section B. If desired, a like locks means or mechanism can be carried by each section 71 of the means H.

The platform extension K is shown as a folded or collapsible structure characterized by a top section 78 and a brace 79. In the particular case illustrated the sections 78 and 79 are joined by a hinge 80 and the section 79 is connected by a hinge 81 to the wall 23 of the closure section B. The brace 79 can be swung as indicated by the arrow Z to a position where it is flush with the wall 23, and in that case the top section 78 can be folded down and into engagement with section 79. When the extension K is in operating position, the top section 78 is releasably secured to the outer or terminal end portion of the platform F as by a releasable fastener or catch 83. With the parts thus positioned the top section 78 extends horizontally and is flush with the top 45 of the platform F and the brace 79 forms an effective support for the top 78.

The element 10 of the housing section A of the body when in the normal or working position extends upward and forward, as shown in Fig. 3. The stop means L is provided to stop element 10 in the normal position and in the drawings is shown as including stop lugs 85 carried by and projecting from what may be termed the outer side 86 of element 10. The stops 85 are adapted to engage or stop against the top 14 of the housing section A. The anchoring means M is provided for releasably securing element 10 in the normal or working position. In the form illustrated the means M includes a bracket 89 projecting from the top 14 of housing section A and a screw 90 carried by the element 10 to be opposite to and engageable with the bracket 89 when element 10 is in the position shown in Fig. 3.

The light projecting head N is a unit carried at the upper or outer end of element 10 where it is preferably

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connected to element 10 by a hinge 100. In accordance with the present invention the head N includes a base plate 101 joined to the element 10 by the hinge 100 and the hinge 100 is provided with stops 102 which engage and stop the plate 101 in a horizontal position as shown in Fig. 3. The head N includes side plates 104 that are flat parallel plates spaced apart and projecting up from the base plate 101. A U-shaped carrier 105 is supported by and between the side plates 104 and is shown as including spaced parallel arms 106 that fit against the inner sides of the plates 104 and a web 107 connecting the lower end portions of the arms 106. Guide pins 108 project from the arms and operate in vertical guideways 109 provided in the plates 104.

A projecting lens 110 is carried by the web 107 of carrier 105 to register with or possibly extend through an opening 111 provided in the base plate 101.

The head N includes a reflector 112 carried by a rod 113 which is horizontally disposed and which extends between the arms 106 at their upper end portions. End or trunnion portions 115 of the rod extend through bearing openings in the arms 106 and extend through and are carried in vertical notches 116 that enter the plates 104 from their upper ends and which are parallel with the guide openings 109. Clamp means or nuts 118 are provided and threaded on the trunnions 115 and are adapted to be tightened so that the rod 113 is set in the desired rotative position fixing the reflector or mirror 112 at the desired angle.

Through the construction just described the reflector 112 is located immediately above the projecting lens 110 which in turn is in vertical alignment with the platform F so that light from the means D directed up through the platform and through any transparency that may be located on the platform is received by the projecting lens and is then directed horizontally by the reflector 112 to be cast upon a vertical screen, or the like.

When the structure is in the normal or working position shown in Fig. 3 the platform F is accessible and convenient for the reception of transparency bearing images to be projected, and as the light generating means operates the means E operates to prevent overheating of the parts. When it is desired to store or transport the apparatus the projecting head N is preferably swung in the direction indicated by the arrow X in Fig. 3 until the rod 113 of the head is received and releasably held by a spring catch 125 provided at the inner side of element 10. With the head N thus folded back against element 10 the anchoring means M can be released freeing the element 10 so that it can be swung in the direction of the arrow Y—Y in Fig. 3 until it reaches the position indicated in Fig. 2 where the head N is in the middle compartment or chamber of housing A.

It is preferred to provide a suitable lock or latch 130 to releasably hold the element 10 in the folded or collapsed position shown in Fig. 2, and in the case illustrated this retaining device is carried by partition 21 and involves an operating button 131 controlling the latch elements or dogs, the element 10 being provided with an opening through which the device 130 is engaged.

It is to be understood that prior to folding or closing the element 10 the power line P may be wrapped or collapsed to occupy the upper chamber of the housing section A.

To complete the folding of the apparatus the catch or latch 83 connecting the platform extension to the platform is released and the sections 78 and 79 of extension K are folded together and against the wall 23 so that they are within the closure section of the body. Latch or lock means K is released allowing the pivoted or folding sections of the means H to be folded in, or into overlapping relation, and the platform F is swung or folded up to a position such as is indicated by dotted lines in Fig. 2. The final operation may be the swinging of the closure section B of the body from the normal or

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open position shown in Fig. 3 to the up or closed position shown in Figs. 1 and 2. The means C is engaged to retain the closure section in the folded position.

In the form of the invention described it is preferred to provide suitable legs 135, or the like, on the elements of the body so that when the structure is in the normal working position as shown in Fig. 3 it is supported with the sections A and B spaced above the supporting table, or the like.

In the form of the invention illustrated on sheet 3 of the drawings the various elements of the structure may be substantially the same as those hereinabove described. However, in this case the structure is shown as being without the platform extension K and the element 15^a of the rear wall of the housing section A is plain and imperforate instead of being louvered as shown in Fig. 3, while the partition 20 instead of being plain as shown in Fig. 3 is louvered as shown in Fig. 10.

The cooling means E instead of being as shown in Fig. 4 includes a case 150 carried by and depending from the bottom of the body formed by sections A and B. The motor 41^a is located in the case 150 as is the fan 40^a operated by the motor. The case 150 has walls 155 defining a rectangular box-like structure. The walls 155 have openings 156 that admit air into the case. The bottom 157 of the case is flat and has depending legs 158.

An air inlet opening 160 is provided in the bottom 13^a of body section A so that air circulated by the fan 40^a flows up in or through the compartment carrying the light generating means. The air that flows up around the lamp 32 passes out of the body section of housing A through the louvered partition 21. In the preferred construction a suitable air directing element or flue 163 is provided in the chamber carrying the lamp so that the stream of air circulated by the fan is effectively directed relative to the lamp. In the particular case illustrated the reflector 33 is shown carried by the flue 163.

In this form of the invention it is advantageous to provide an air inlet opening 170 in the bottom 22 of the body section B so that some of the air circulated by the fan 40^a is directed into the space between the reflector G and the platform F so that these parts are maintained at a suitable temperature.

In the form of the invention shown on sheet 3 the element 15^a and partition 21 are formed of a single sheet of material such as metal, and guide pins 180 projecting from the bottom 13^a receive the lower end portion of element 15^a while releasable fasteners 181 connect the partition 21 to the wall 11 of housing section A. In this form of the invention the cover section B of the body is without a leg and when the apparatus is in the normal position the outer lower corner 190 of the closure B rests upon or engages the surface of the table or other support employed to carry the structure.

In this form of construction an element 10' is hinged to a side wall 12 and normally forms a closure held in closed position by a releasable fastener 170. When element 10' is open, air is free to flow from within the housing. A post or standard 175 is slidably carried by a bracket 177 located in the upper portion of the housing and is adapted to be set against movement by means of a clamp screw 178. The post may be lowered to a position where it is wholly within the housing or it may be raised to a position where it projects up through an opening in the top of the housing as shown in Fig. 11. The head N' in this case has a mounting bracket 180 projecting from it. The bracket has a socket 181 in it to slidably receive the upper end of the post and a pin 182 in the socket cooperates with a notch in the upper end of the post to establish the bracket in a predetermined position on the post.

The head N in this case includes a box-like case 190 with its bottom open to receive light and with one side open or provided with a transparency 191 to pass light

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horizontally. A reflector 112' is mounted in the case 190 on a pivotal support 191. Friction plates 192 on the reflector engage the sides of the case 190 while pins 192 operate in slots 193 to limit pivotal movement in the reflector.

The bracket 180 is detachable from the post 175 and with the head to which it is attached it can be stored in the housing as shown in Fig. 10. When the structure is to be stored or transported, the post can be lowered into the housing and the bracket and head can be located in the housing and the element 10' can be closed and secured in that position by the fasteners 176.

Having described only typical preferred forms and applications of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but with to reserve to myself and variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims.

Having described my invention, I claim:

1. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a unitary closure section pivoted to the housing section and adapted to swing between a working position where it projects horizontally from the lower end portion of the housing section and a closed vertical position where it is adjacent and parallel with the housing section, a flat light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be vertically disposed and confined between the body sections when the closure section is closed, a light generating means in fixed position in the housing section adapted to generate light for passage upwardly through the platform, a light projecting head, and means pivotally supporting the head above the platform when the apparatus is in working position, the head including a light projecting lens.

2. A collapsible portable image projecting apparatus including, an elongate vertically disposed box-like body having a housing section with an element pivoted thereto and adapted to rest on a support to extend vertically and having a unitary closure section pivoted to one side of the housing section and adapted to swing between a working position where it projects horizontally from the lower end portion of the housing section and a closed portion where it is adjacent and parallel with the vertical side of the housing section, a light passing platform carried by the said side of the housing section of the body and adapted to extend horizontally above the closure section when in working position and to extend vertically and be confined between the body sections when the closure section is closed, a light generating means in the housing section adapted to generate light for passage upwardly through the platform, and a light projecting head pivotally carried by said element and adapted to be positioned above the laterally projecting platform when the apparatus is in working position and including a light projecting lens.

3. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a working position where it projects horizontally from the lower end portion of the housing section and a closed position where it is vertically disposed and occurs adjacent and parallel with the housing section, a flat light passing platform carried by the housing section of the body and adapted to extend horizontally from the housing section and above the closure section when in working position and to be vertically disposed and confined between the body sections when the closure section is closed, a light generating means in the housing section adapted to generate light for passage upwardly through the platform, a light projecting head, and means

shiftable supporting the head above the platform, the head including a light projecting lens, the housing section having a partition therein establishing a chamber carrying the light generating means and a chamber adapted to receive the head when the head is demounted.

4. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to extend vertically and be confined between the body sections when the closure section is closed, a light generating means in the housing section adapted to generate light for passage upwardly through the platform, a light projecting head, and means demountably supporting the head above the platform, the head including a light projecting lens, the housing section having a partition therein establishing a chamber carrying the light generating means in fixed position and a chamber adapted to receive the head when the head is demounted, the light generating means being adapted to direct light horizontally from the housing section below the platform, and the said element being movable to a folded position where it closes the last mentioned chamber and supports the head therein.

5. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by one section of the body and adapted to project laterally from the body and extend horizontally above the closure section when in working position and to extend vertically and be confined between the body sections when the closure section is closed, a light generating means carried by the housing section and adapted to direct light horizontally therefrom, a reflector below the platform and in the path of light from said means to direct the light up through the platform, a light projecting head, and shiftable mounting means supporting the head above the platform, the head including a light projecting lens.

6. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a longitudinal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform carried by the housing section of the body and adapted to project laterally from the housing section to extend horizontally above the closure section when in working position and to extend vertically and be confined between the body sections when the closure section is closed, a light generating means carried by the housing section and adapted to direct light horizontally therefrom, a reflector below the platform and in the path of light from said means to direct the light up through the platform, a light projecting head, and shiftable mounting means supporting the head above the platform, the head including a light projecting lens, the reflector being pivotally mounted to shift relative to one of the body sections and adapted to occur adjacent to the platform and be confined between the body sections when its closure section is closed.

7. A collapsible portable image projecting apparatus

including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means carried by the housing section in fixed position therein and adapted to direct light horizontally therefrom, a reflector between the closure section and the platform and in the path of light from said means to direct the light up through the platform, a light projecting head, and means shiftable supporting the head above the platform, the head including a light projecting lens, the reflector being pivotally supported by the platform and adapted to be confined between the sections when its closure section is closed.

8. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means carried by the housing section in fixed position therein and adapted to direct light horizontally therefrom, a reflector pivotally carried by the platform to occur below the platform and in the path of light from said means to direct the light up through the platform, light shields pivoted to the housing section to occur at the sides of the reflector and below the platform, a light projecting head, and means demountably supporting the head above the platform, the head including a light projecting lens.

9. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by one section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means carried by the housing section in fixed position therein and adapted to direct light horizontally therefrom, a reflector pivoted to the platform below the platform and in the path of light from said means to direct the light up through the platform, light shields at the sides of the reflector and below the platform, each shield being pivoted to the housing section and including a portion adapted to fold in from a laterally projecting working position to a position between the body sections when the closure section is closed, a light projecting head, and means demountably supporting the head above the platform, the head including a light projecting lens.

10. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing

platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means fixed in the housing and adapted to generate light for passage upwardly through the platform, a platform extension pivotally carried by the closure section and including a top adapted to be releasably engaged and positioned flush with the platform, a light projecting head, and means pivotally supporting the head above the platform, the head including a light projecting lens.

11. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means fixed in the housing section and adapted to generate light for passage upwardly through the platform, a platform extension including a top adapted to engage and be positioned flush with the platform, and a brace supporting the top and pivotally carried by the closure section, a light projecting head, and means pivotally supporting the head above the platform, the head including a light projecting lens.

12. A collapsible portable image projecting apparatus including, a box-like body having a housing section with an element pivoted thereto and adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means fixed in the housing section and adapted to generate light for passage upwardly through the platform, and a light projecting head pivotally carried by said element and adapted to be positioned above the platform and including a light projecting lens, the said element of the housing section being pivoted to the housing section and adapted to extend upward and forward therefrom and the head being pivotally carried by the terminal end of said element to be above the housing section and forward thereof.

13. A collapsible portable image projecting apparatus including, a box-like body having a housing section with an element pivoted thereto and adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means fixed in the housing section and adapted to generate light for passage upwardly through the platform, a light projecting head pivotally carried by said element and adapted to be positioned above the platform and including a light projecting lens, the said element of the housing section being pivoted to the upper end of housing section and adapted to extend upward and forward therefrom and the head being pivotally carried by the terminal end of said element to be above the housing section and forward thereof, stop means on the element adapted to engage the housing section to stop said element in said position, and lock means between the element and the housing section adapted to secure said element in said position.

14. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical portion where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means fixed in the housing section and adapted to generate light for passage upwardly through the platform, a light projecting head, and means shiftably supporting the head above the platform, the head including a light projecting lens, an apertured base plate with side plates projecting therefrom, a carrier supported by the side plates, a reflector pivotally carried by the carrier, and a projection lens carried by the carrier in register with the aperture of the base plate.

15. A collapsible portable image projecting apparatus including, a body having a housing section adapted to rest on a support to extend vertically and having a closure section pivoted to the housing section and adapted to swing between a horizontal working position where it projects laterally from the lower end portion of the housing section and a vertical closed position where it is adjacent and parallel with the housing section, a light passing platform pivotally carried by the housing section of the body and adapted to extend horizontally above the closure section when in working position and to be confined between the body sections when the closure section is closed, a light generating means fixed in the housing section and adapted to generate light for passage upwardly through the platform, a light projecting head, a part adapted to be confined in the housing section and to be extended to project upward from the top of the body, and means releasably mounting the head on the part so it is above the platform, the head and the last mentioned means being adapted to be arranged in the housing section of the body and that section of the body having a pivoted member forming a closure, adapted to enclose the head and said last mentioned means when in the body.

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