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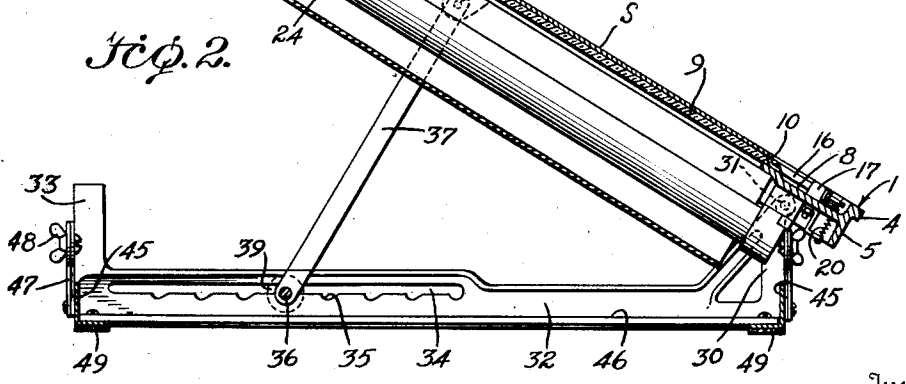
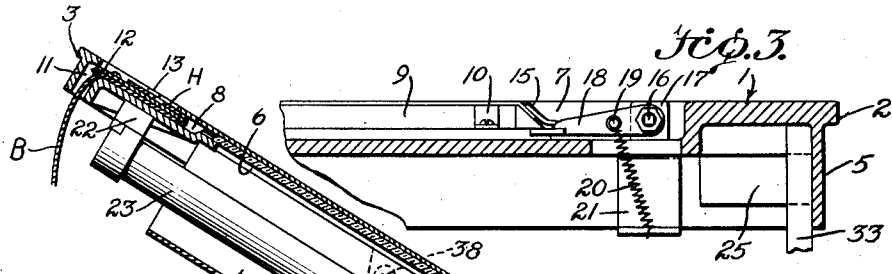
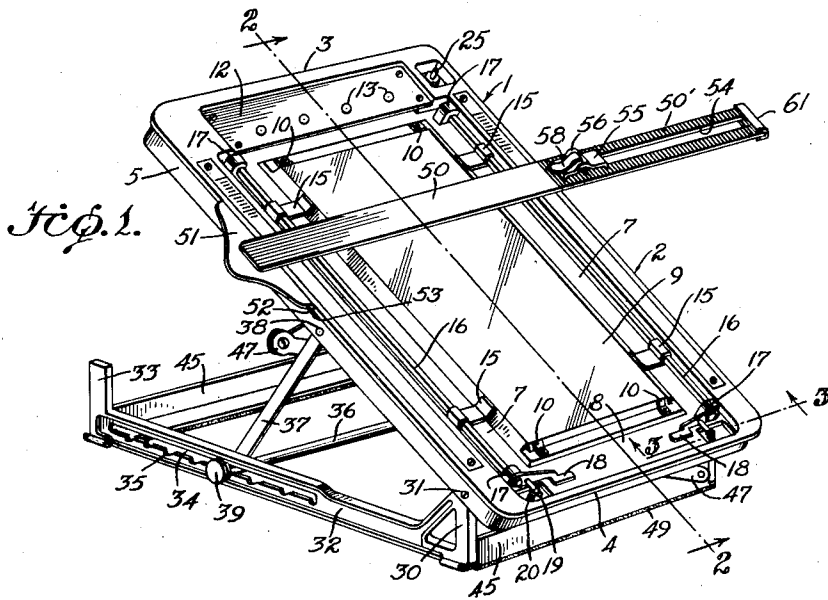
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2,328,471

DRAWING FIXTURE

Filed July 22, 1941

2 Sheets-Sheet 1



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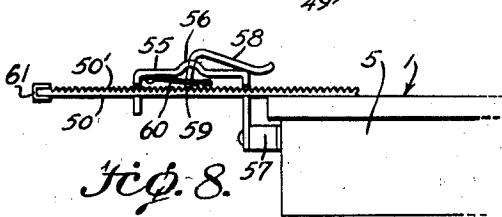
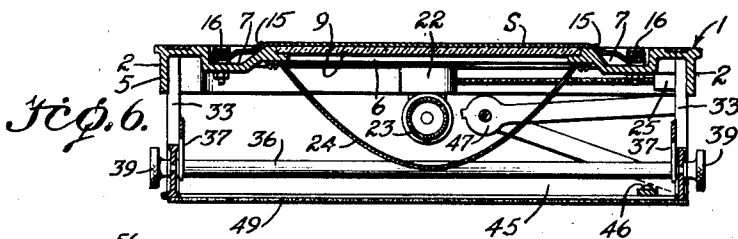
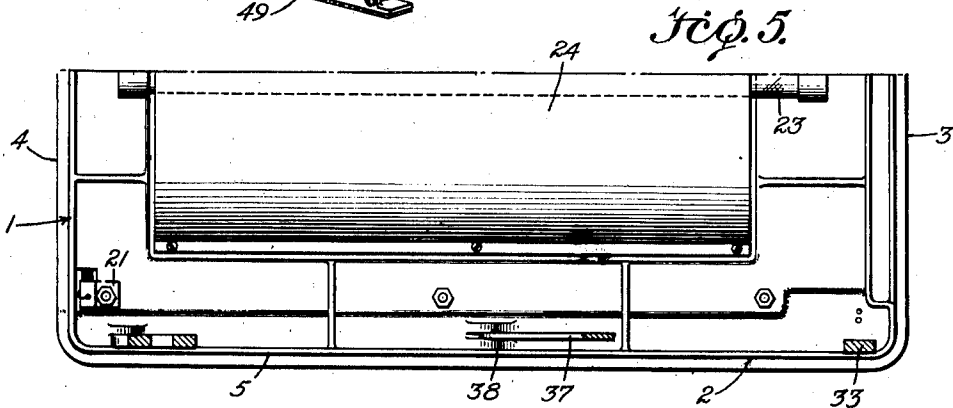
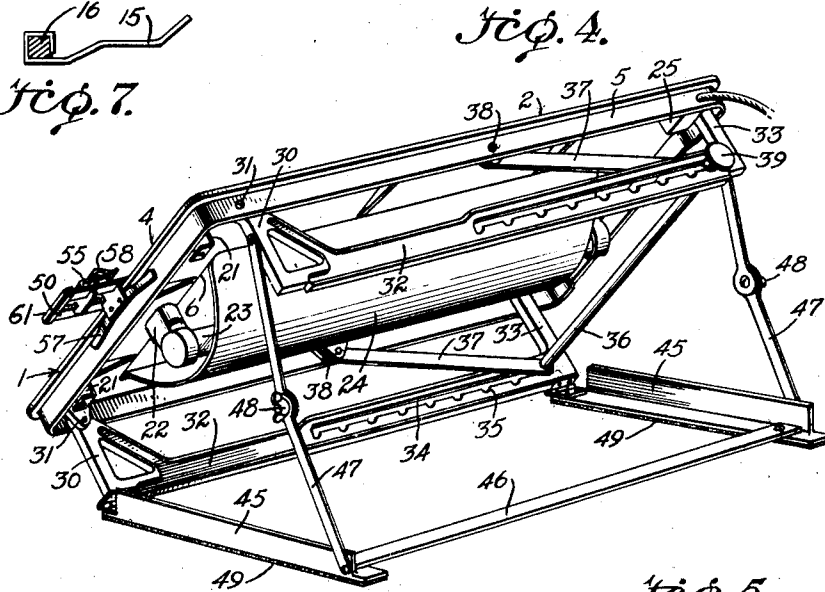
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DRAWING FIXTURE

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2 Sheets-Sheet 2



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DRAWING FIXTURE

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This invention relates to a drawing fixture or scope.

The invention provides a drawing fixture having a sheet supporting plate carried by a suitable frame structure with a supporting stand for the frame arranged to support the frame and sheet supporting plate on a desk, table or the like in a horizontal position or in various tilted positions wherein the frame is tilted upwardly from either one end or one side, as may be desired for convenience in use.

The invention comprehends a frame construction for a drawing fixture having depressed or channel portions extending about a sheet supporting plate carried thereby for receiving a sheet clamping means constructed for convenient manual operation to efficiently retain a sheet in position on the supporting plate without interfering with the use of the structure for drawing upon a supported sheet, stencil, or the like.

The invention provides a drawing fixture or scope wherein the supporting stand is formed of a two part structure providing leg and base portions having the leg portions forming one part thereof hingedly connected at one end to one end of the frame structure, while another portion of the leg structure is hinged along one side portion to the base portion, so that the frame may be supported in upwardly tilted position from either one end or one side, in order to support the sheet supporting plate upon a desk, table or the like in a tilted position for convenience in the use of the fixture for drawing upon sheets, stencils or the like.

The invention comprehends a drawing fixture or scope having a light transmitting sheet supporting plate carried by a frame provided with sheet retaining means for holding drawing sheets, stencils and the like, in position on the plate for drawing thereon; wherein the light source is mounted on the under side of the frame above a reflector, also mounted on the under side of the frame for reflecting the light through the light transmitting plate, while a suitable stand structure supports the frame in tilted position extending upwardly from either one end or one side, when desired.

The invention provides a drawing fixture or scope having a sheet supporting plate carried by a suitable frame formed to slidably mount a straight edge for sliding movement thereon and so arranged that it may be resiliently and slidably retained in position for slidable movement along the sides or the ends of the frame.

In the drawings:

Figure 1 shows the drawing fixture in perspective supported in upwardly tilted relation from one end.

5 Figure 2 is a vertical longitudinal cross section taken on line 2—2 of Fig. 1.

Figure 3 is an enlarged fragmentary cross section through one corner of the frame taken on line 3—3 of Fig. 1.

10 Figure 4 shows the drawing fixture in perspective with the frame member tilted upwardly from one side.

Figure 5 is a bottom plan view of one-half of the frame with portions of the supporting structure broken away and shown in section.

Figure 6 is a vertical transverse cross section of the drawing fixture with the frame supported on the stand structure in horizontal position.

Figure 7 is an enlarged detail cross section through a clamping finger showing how it is mounted on the rod.

Figure 8 is an enlarged detail cross section through the guide member on the straight edge.

25 A frame 1 is constructed of suitable cast material or die stamped sheet metal to provide side members 2 and end members 3 and 4 respectively. The frame has a depending marginal flange 5 spaced inwardly a slight amount from the edges of the side and end members. Flange 5 extends entirely around the side and end members 2, 3 and 4. The central portion of frame 1 is formed to provide a rectangular opening 6.

30 Side members 2 are formed to provide depressed or channel portion 7 between the inner edge adjacent opening 6 and the outer edge thereof. End members 3 and 4 are also formed with depressed or channel portions intermediate the inner and outer edges, as indicated at 8. The inner edge portions of side and end members 2, 3 and 4 respectively, are formed to provide a seat, as shown in Figs. 2 and 6, for receiving the light transmitting plate 9. The light transmitting plate is formed of suitable material such as glass or the like which may be either clear or translucent for the transmission of light from below the frame through the plate and paper sheet, stencil, or the like, supported thereon. Clips 10 are secured to end members 3 and 4 for retaining sheet supporting plate 9 in assembled position in the seat on frame 1.

45 End member 3 is formed to provide an elongated slot 11 communicating with the depressed portion 8 adjacent the outer edge portion thereof as shown in Fig. 2. A positioning plate 12 55

carrying studs 13 is detachably mounted on end member 3 in transversely extending relation, as shown in Figs. 1 and 2, over channel portion 8 in spaced relation above the channel portion of said frame member, as shown in Fig. 2 to provide a passage communicating with slot 11.

Studs 13 are provided for receiving the keyhole slots formed in a stencil heading of the present commercial types normally used for attaching the stencils to the duplicating machine in a manner well-known in the art. Plate 12 is detachable so that it may have other plates substituted therefor with a different arrangement of studs 13 or other stencil attaching means in order to mount any type of commercial stencil on the frame.

With this construction, a stencil heading H may be attached on studs 13 to position the stencil sheet S carried thereby so that it will overlie sheet supporting plate 9. The usual stencil is provided with a backing sheet B for supporting and protecting the stencil prior to its use on a duplicating machine. When it is to be cut upon a drawing fixture of the character illustrated in this application, the free end of the backing sheet B is extended through the passage under plate 12 and slot 11 in the frame so that the stencil S may be uniformly stretched over sheet supporting plate 9 and have translucent or partially transparent sheets placed thereunder with suitable designs, printing or the like to be traced upon the stencil or other sheet, in a manner well-known in the art. Stencils are made in standard sizes and usually are so arranged so that the drawing or printed matter thereon does not extend to the edge. As a result the stencil or other sheet is usually applied to the drawing fixture so that a marginal portion extends beyond the edge of sheet supporting plate 9 over the adjacent portion of the frame.

Suitable clamping fingers 15 have resilient angularly extending ends, as illustrated in Figs. 1 and 7, for engaging the marginal portions of a stencil or other sheet material placed upon the sheet supporting plate for retaining it in position against movement. These clamping fingers 15 are slidably mounted on rods 16 rotatably mounted in journals 17 secured to the side members in depressed portions 7 at opposite ends. A pair of clamping fingers are arranged at each side of sheet supporting plate 9 as illustrated in Fig. 1, a pair of the rods 16 being used, one on each side member 2. Each clamping finger has a portion folded around rod 16 for resiliently gripping the rod in slidably mounting the finger on the rod for normal retention in any position of adjustment by the gripping action thereof on the rods. An operating handle 18 is mounted on one end of each rod 16 and carries pin 19. One end of each tension spring 20 is secured to pin 19 and the other end to bracket 21 on the under side of frame 1 for normally moving clamping fingers 15 into the clamping position.

When a stencil is to be applied to the drawing fixture, manual operation of handles 18 may be utilized to move clamping fingers 15 from the position shown in Fig. 1 in a circular path with the rotation of rods 16 so as to move away from supporting plate 9. When pins 19 pass the dead center position, springs 20 will operate to move and retain clamping fingers 15 in an outwardly extending position above the outer side edges of side members 2 of frame 1. When the stencil is positioned on sheet supporting plate 9 in the manner above described for cutting or drawing purposes, the clamping fingers may be moved by

manual operation of handles 18 into the position shown in Fig. 1 where the angularly extending ends will engage the marginal portions of the stencil or other sheet and clamp it in position by reason of the fingers being held in the position shown in Fig. 1 under spring tension.

Suitable tube supporting sockets 22 are mounted on end members 3 and 4 respectively at opposite ends of frame 1 in the central portion thereof between the sides. These sockets are mounted on the under face of the end members as shown in Fig. 2 and are of standard, conventional construction for the purpose of receiving the contact members on a light bulb or tube 23 for supporting light bulb or tube 23 under frame 1 in the position shown in the drawings for illuminating the under face of sheet supporting plate 9. A reflector 24 has the central portion of curved construction as shown in Fig. 6. This curvature may be parabolical or of any other curved form of construction to obtain efficient light reflection. The side edges of this curved reflector 24 are secured to the under side edges of side member 7 along the inner edges thereof as shown in Figs. 5 and 6 by suitable screws or the like. The reflector extends below bulb 23 so as to enclose and provide efficient light reflection of the light from tube 23.

Suitable electric wiring is secured to the under face of frame 1 on the side and end members thereof, which is not shown, for the purpose of connecting the terminals of tube 23 through sockets 22 to a manually actuated switch 25 mounted in one corner of frame 1 and operable to control the electric circuit to tube 23 through a suitable electric extension cord having a suitable plug or the like of a character well-known in the art that will provide for the plug to be inserted in a wall socket or similar electrical fitting to connect bulb 23 in an electrical circuit with a source of electric power.

The illumination of supporting plate 9 may be used where it is desired to cut stencils either by tracing or by direct cutting in order that the cut portions of the stencil can be readily observed. However, there are many instances where this drawing device may be used without the light for drawing purposes.

Frame 1 is provided with a suitable supporting stand that according to the present invention is preferably formed in two parts. One of the parts of the supporting stand comprises a pair of leg members 30 hingedly secured at 31 to end member 4. These leg members have foot portions 32 arranged in spaced relation to frame 1 and terminate at the free ends in vertical projections 33 for engaging the free end of frame 1 to support it in parallel relation to foot portions 32 in one position thereof.

Foot portions 32 are provided with slots 34 and a series of notched portions 35 in the lower portion thereof opening into the slots. Cross-bar 36 connects the free ends of links 37 pivoted at 38 to the central portion on the under side of side members 2. The free ends of cross-bar 36 extend through slots 34 in foot portions 32 of the leg members at opposite sides of supporting frame 1 and receive clamping nuts 39 threaded thereon and manually operable to clamp the free ends of links 37 in adjusted position of cross-bar 36 in said leg members between said nuts and shouldered portions on said cross-bar formed by reduced ends. Notches 35 receive the ends of cross-bar 36 in order to provide nine positions of adjustment so that cross-bar 36 may seat in the notches and be firmly secured therein

by operation of clamping nuts 39. The links 37 and cross-bar 36 provide for the support of frame member 1 in upwardly inclined position from end member 4 in a manner as shown in Fig. 1.

Under some conditions it may be desirable to have the frame 1 tilted upwardly from the side portion thereof. For this purpose the second part of the supporting frame, or base structure, is provided in the form of a pair of angle members 45, each hingedly connected at one end to the opposite ends of one of the leg members 30, as shown in Fig. 4. The opposite ends of angle bars 45 are joined by connecting bar 46 to provide a substantially rigid supporting base for the drawing fixture.

A pair of toggle members 47 have the free end of one link of each toggle pivotally secured to one of the angle members 45 adjacent the free end thereof, while the opposite end of each toggle member is pivotally connected to the other leg member 30, as shown in Fig. 4. A suitable manually operated clamping or wing nut 48 is operable on a bolt to pivotally connect and control the pivotal movement of the links of each toggle member so they can be clamped together against movement relative to each other on their common pivot. Thus, frame 1 with the first part of the supporting stand comprising leg members 30 may be moved on the pivotal connection between one leg member and angle members 45 into a position where frame member 1 is inclined upwardly from one side thereof, as shown in Fig. 4, where it will be supported by manually operating the clamping nut for securing the toggle links in the adjusted position.

Any angular position can be obtained by the adjustment of the toggle links in a manner that will be obvious from the foregoing description and the illustration of the device in the drawing. The toggle links fold inwardly under frame 1 into overlapping relation adjacent angle members 45 when frame 1 is moved into the horizontal position, as shown in Fig. 6. Rubber supporting feet 49 may be applied to the bottom corners of the stand on the ends of angle members 45 to prevent marring of the surface of a desk, table or the like on which the scope is supported.

The invention provides a suitable straight edge construction. This straight edge includes an elongated strip 50 having a cross member 51 secured on one end and provided with a laterally extending guide flange 52 perpendicular to strip 50. The free edge of guide flange 52 is formed with a supplemental guide flange 53 extending toward the opposite end of strip 53 for the purpose of engaging the under side portion of the projecting edge of frame member 1 outside of depending flange 5. This provides a structure for slidably guiding one end of straight edge strip 50 along the side or end of frame 1 at the same time preventing it from slipping off the frame in the normal use of the straight edge.

The opposite end of strip 50 is slotted at 54 and formed with an upper serrated or transversely grooved face on opposite sides of the slot indicated at 50'. A guide member 55 is formed of a U-shaped strip having the legs formed with inwardly extending slots on opposite side edges in aligned relation to receive the portions of strip 50 at opposite sides of slot 54 in slidable relation. The central section of guide member 55 is indicated at 56 and is located above or on top of straight edge strip 50 while the free ends of the legs extend below the strip in the manner illustrated in Figs. 1 and 4. One of the leg portions

carries a resilient guide spring 57 formed to have the ends slidably engage the outside surface of depending flanges 5 on frame 1. A spring pressed latch member 58 is fulcrumed in the central portion 56 of guide member 55 on top of strip 50 for movement between two positions, one of which is a locking position and the other a release position.

In the locking position spring pressed latch 58 has an end portion 59 that engages in the serrations or corrugations 50' on the end of strip 50 in a position slightly inclined to a plane perpendicular to strip 50. In this position the laterally extending handle portion will engage one end of the top of said central portion 56 in the manner shown in Fig. 1 while a resilient operating spring 60 extending through a slot in end portion 59 will tend to retain the latch in this position because end portion 59 has passed the dead center position. In this position of end portion 59, it is wedged between central portion 56 and strip 50 for retaining member 55 in adjusted position to cooperate with cross members 51 to slidably mount the straight edge for parallel movement on frame 1 along side members 2. A retaining member 61 is mounted on and extends across the slotted end of strip 50 for retaining guide member 55 on the strip.

Whenever it is desired to use the straight edge to extend in an opposite or right angular direction from that illustrated in Fig. 1, this can be done by releasing latch member 58 through operating the handle on the end thereof so as to move end portion 59 about its fulcrum past the dead center position where spring 60 will move it out of engagement with the corrugated face 50' of strip 50. This guide member may then be slidably moved lengthwise of strip 50 so that the straight edge construction may be disengaged from side members 2 of the frame and applied across end members 3 and 4 thereof with the cross head and guide member positioned to retain and guide the straight edge for sliding movement along the end members. This position is shown in Fig. 4 illustrating one end of the structure overhanging the end of the frame.

The two part supporting stand for the frame with the leg structure for supporting the frame in tilted position either from one end or one side provides an economical and convenient structure for supporting stencils or drawing paper on the sheet supporting plate so that the drawing fixture may be placed on a desk, table or the like and the drawing or stencil supported at a desired inclined position by the adjustment of the stand structure in the manner shown in the drawings and described above. The straight edge construction also provides a construction that can be placed upon the frame to extend either between the sides or the ends as desired and in which the guide member carried thereon can be adjusted to the distance between the sides or the ends in such a relation that the straight edge will be accurately and efficiently guided for sliding movement on the frame. The resiliency of guide spring 57 aids in retaining the straight edge in squared relation on frame 1 for easy sliding movement.

It will also be understood that the base structure of the supporting stand can be omitted where tilting from the end only will facilitate the normal use of the device.

It is to be understood that no parts project above the surface of the sheet supporting plate and upper surface of the frame. This provides for the free unobstructed sliding movement of the

straight edge over the frame and a supported sheet between the sides and ends. At the same time, the channel portions of the frame support the clamping fingers, light switch, plate 12, with studs 13, and all other parts that aid in conveniently attaching a sheet on the sheet supporting plate below the plane of the upper surface of the sheet supporting plate in a position so they are readily and conveniently accessible for operation in the use of the scope.

The invention claimed is:

1. A drawing fixture comprising a frame having a sheet supporting plate mounted thereon, means on said frame for retaining sheets in position on said supporting plate, and a two part supporting stand for said frame, one part having one end pivotally connected to one end of said frame and one side hingedly connected to one side of the second part, means connecting the opposite side of both parts for supporting the first part and said frame in tilted position on the second part, and means connecting the free end of the frame and first part at a point remote from the pivots for supporting the frame in tilted position relative to the first part, whereby said frame may be tilted upwardly from one side or one end of said supporting stand as desired.

2. A drawing fixture comprising a frame having a sheet supporting plate mounted thereon, sheet retaining means thereon, and a supporting stand for said frame having leg members extending along the side portions of said frame and pivotally connected to said frame at one end, adjustable links connecting the free end of said frame to said leg members at a point remote from said pivoted connection operable to support said frame on said leg members tilted upwardly from said pivoted end, a base support for said leg members hingedly connected thereto at one side of said frame, and adjustable link means connecting the free side of said leg members and base support for supporting said frame tilted upwardly from one side where said leg members are hinged to said base support.

3. A drawing fixture, comprising a frame having side and end members and a central opening, said side and end members being formed above such central opening to provide a seat, a sheet supporting plate mounted on said seat, and sheet retaining means mounted on said frame having rods journaled on the side members of said frame, a plurality of clamping fingers extending laterally from said rods and terminating adjacent the side edges of said sheet supporting plate, a handle on the end of said rod for manual rotation of the rod in the journals for moving said fingers toward sheet clamping position, and resilient means connected with the handle and frame for normally operating said clamping fingers to move toward said frame to engage the marginal portion of a sheet extending beyond said sheet supporting plate for clamping it in position against movement on said frame and sheet supporting plate.

4. A drawing fixture, comprising a frame having side and end members defining a central opening and having channel portions formed in the upper face thereof between the side edges of said side and end members, a sheet supporting plate secured to the inner edges of said side and end members for support thereby on said frame, journals at opposite ends of the channel portions in said side members, a rod on each side member

rotatably mounted in said journals, a plurality of clamping fingers extending laterally toward said sheet supporting plate from said rods, and rotatable therewith, a handle on each rod extending laterally therefrom, and a tension spring connected to said handle on said frame normally operable to move said handle toward said frame and rotate said rod to retain the clamping fingers in engagement with said frame for clamping the marginal portions of a sheet mounted on said sheet supporting plate between said clamping fingers and frame against movement relative to said frame.

5. A drawing fixture, comprising a frame having a central sheet supporting plate formed of light transmitting material, said frame having an end member formed with a recess communicating with a slot extending laterally there-through, a securing plate mounted on said end member in spaced relation above the surface of the member in said recess to provide a passage between said plate and recess communicating with said first mentioned slot, and studs carried by said plate adapted to receive the sheet securing means of a stencil sheet for mounting said sheet on said plate whereby the backing sheet of a stencil can be extended through said passages to the under side of said frame member.

6. A drawing fixture, comprising a frame having a light transmitting sheet supporting plate mounted thereon over a central opening in said frame, sheet retaining means on said frame, illuminating means mounted on the under side of said frame, a curved reflector plate having the side edges secured to the side portions of said frame on opposite sides of said light transmitting sheet supporting plate, and a two part supporting stand for said frame having one part pivotally connected at one end to one end of said frame, and one side of said part hingedly connected to one side of a second part, whereby said frame may be tilted upwardly from one side or one end of said supporting stand as desired, and means remote from said pivotal connection for supporting said frame in tilted position on said stand.

7. A drawing fixture, comprising a rectangular frame having connected side and end members defining a central opening in said frame, a light transmitting sheet supporting plate mounted in said frame and extending over said central opening, sheet retaining means on said frame, a pair of tube supporting sockets mounted one on each end member in complementary relation to each other for detachably mounting a light producing tube in position to extend therebetween under said frame and across said central opening, a curved reflector plate having opposite side edges secured to the under side of said side members and a curved central portion extending between said side edges and projecting below said light producing tube for reflecting light from said tube upwardly through said central opening, a two-part supporting stand for said frame having one part pivotally connected at one end to one end of said frame, and one side of said part hingedly connected to one side of a second part, whereby said frame may be tilted upwardly from one side or one end of said supporting stand as desired, and means remote from said pivotal connection for supporting said frame in tilted position on said stand.

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