

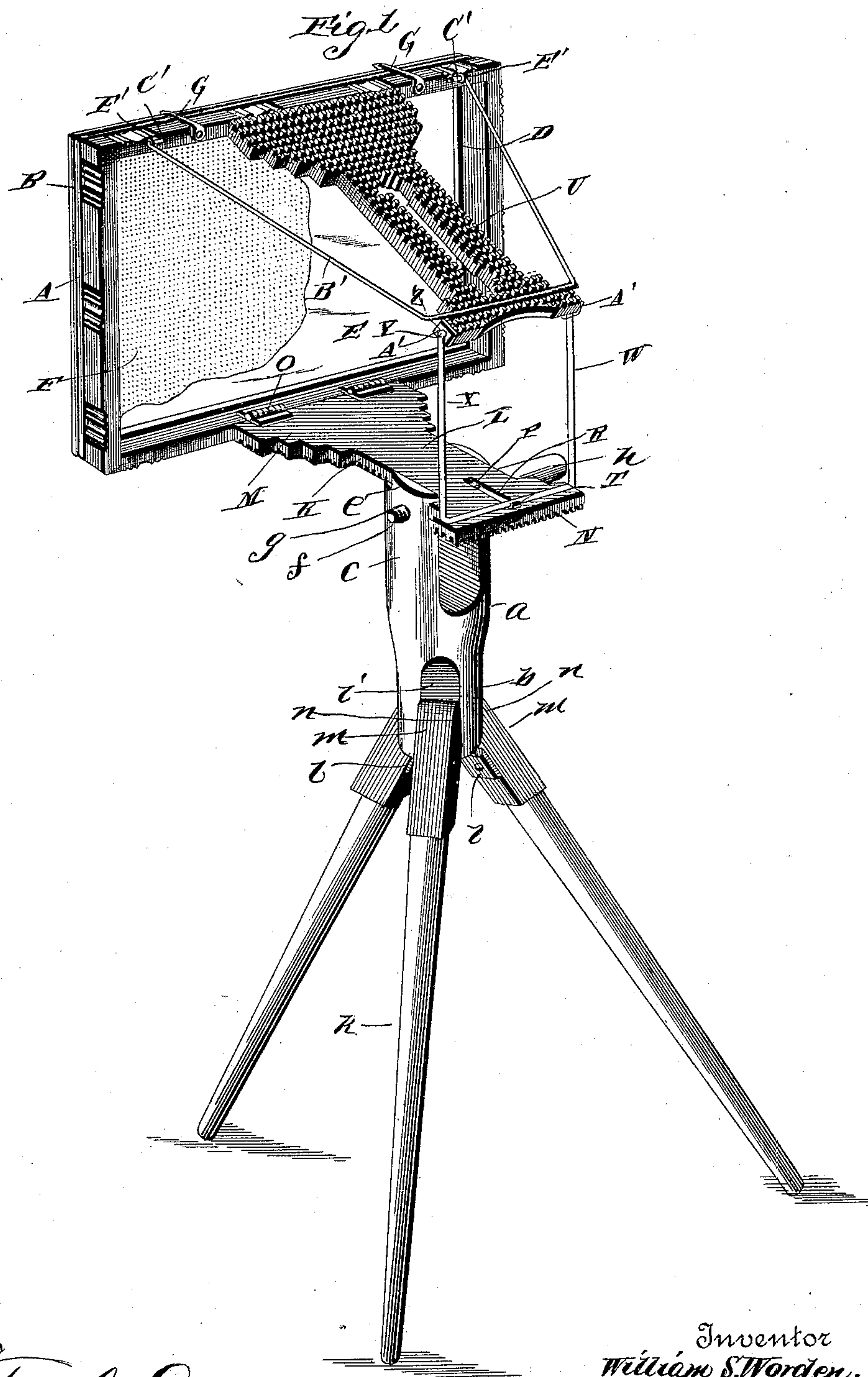
(No Model.)

2 Sheets—Sheet 1.

W. S. WORDEN.
DRAWING APPARATUS.

No. 405,386.

Patented June 18, 1889.



Witnesses
C. L. Taylor
J. W. Hanna

Inventor
William S. Worden

By *his* Attorneys
C. A. Snow & Co.

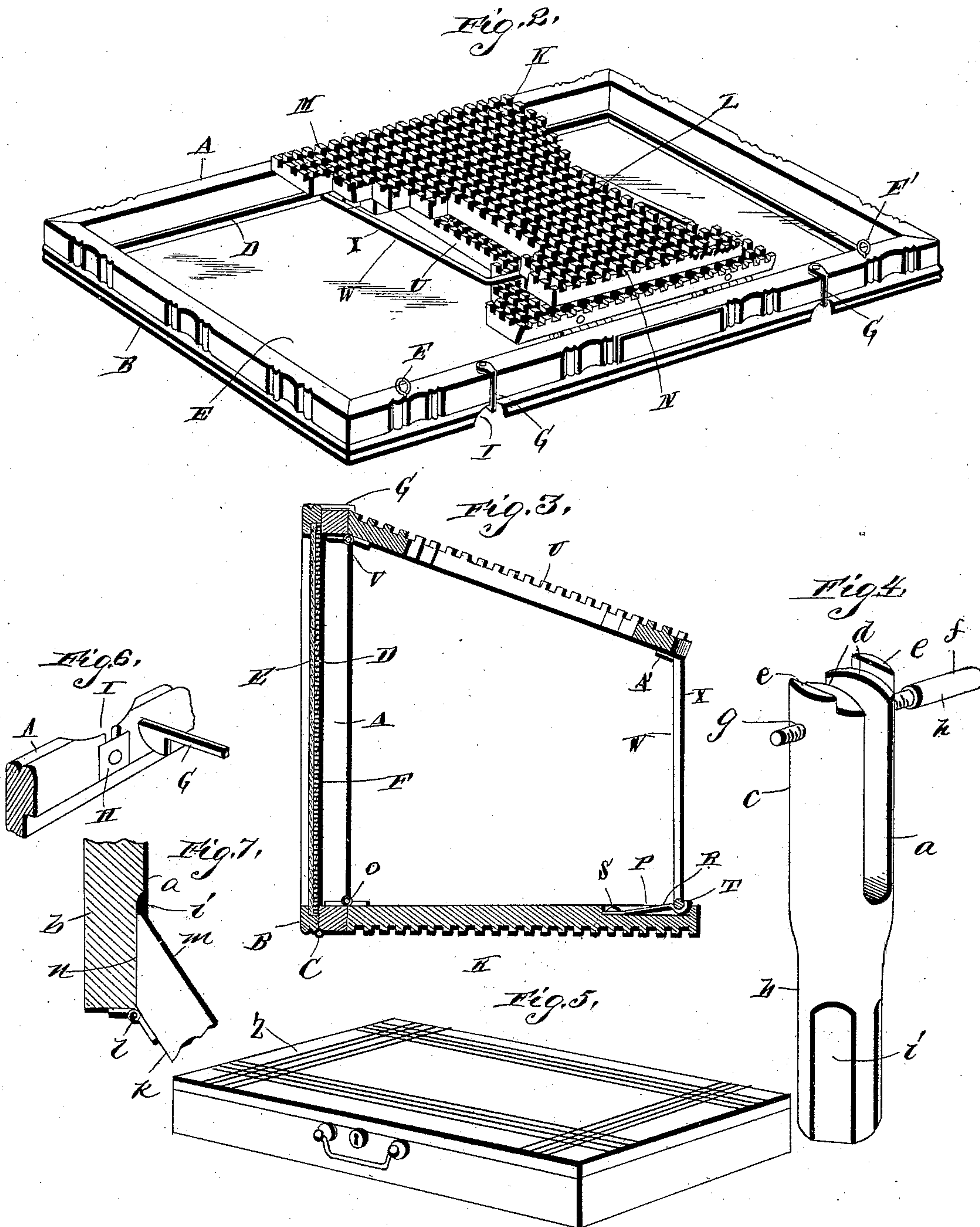
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2 Sheets—Sheet 2.

W. S. WORDEN.
DRAWING APPARATUS.

No. 405,386.

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W. B. Taylor
J. Warner

Inventor
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UNITED STATES PATENT OFFICE.

WILLIAM SWEET WORDEN, OF HOLDREGE, NEBRASKA.

DRAWING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 405,386, dated June 18, 1889.

Application filed October 3, 1888. Serial No. 287,035. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SWEET WORDEN, a citizen of the United States, residing at Holdrege, in the county of Phelps and State of Nebraska, have invented a new and useful Improvement in Apparatus for Free-Hand Perspective Drawings, of which the following is a specification.

My invention relates to an improvement in apparatus for free-hand perspective drawings; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

The object of my invention is to provide a cheap and simple apparatus which is adapted to be folded into a very small compass and readily transported, and by means of which the art of making free-hand perspective drawings may be readily acquired.

In the drawings, Figure 1 is a perspective view of an apparatus embodying my improvements, showing the same arranged in position ready for use. Fig. 2 is a similar view of the apparatus when detached from the tripod and folded compactly into a small compass and adapted to be packed in a case. Fig. 3 is a vertical transverse sectional view of my improved apparatus when arranged in operative position. Fig. 4 is a detail perspective view of the tripod-head. Fig. 5 is a detail view of the case, and Fig. 6 is a detail view of the locking devices.

A represents a rectangular frame of suitable dimensions, a convenient size being nine by sixteen inches.

B represents a similar frame of the same size, which is arranged on the outer side of the frame A, and has its lower side connected to the lower side of the latter by means of a pair of hinges C, which adapt the frame B to be folded outward and downward from the frame A, or to be folded inward and upward against the latter. The said frame B has on its inner side a groove D, which extends around its edges, and in which is adapted to be fitted a glass pane E and a sheet of perforated paper F.

When the frame B is closed against the outer side of frame A, the glass pane and sheet of paper are clamped firmly in position between the said frames. On the upper side

of the frame A, at suitable distances from the ends thereof, are secured a pair of spring-catches G, which are adapted to engage metallic plates H, that are secured to the frame B at inner sides of notches I, which are made in the upper side of said frame. The said notches have their outer ends provided with flared enlargements which adapt the thumbs or fingers of the operator to be inserted under the ends of the spring-catches, to the end that the latter may be caused to disengage the frame B.

K represents a base board or arm, which has its central portion reduced in width to form a neck L, and has its ends enlarged to form heads M N. The former bears against the lower side of the frame A at the center thereof, and is connected to the said frame by means of a pair of hinges O, which adapt the base board or arm to be folded upward on the frame. In the upper side of the arm K, near the outer end thereof, is a longitudinal recess P, in which is fitted a curved spring-detent R, the inner end of said spring-detent being secured in the bottom of the recesses, at the front end thereof, by means of screws S, and the rear end of said detent being free and provided with an open loop T, for the purpose to be hereinafter described.

U represents an arm or board, which is preferably of the same size and shape as the base arm or board K, and has one end secured to the upper side of the frame A, at the center thereof, by means of a pair of hinges V, which hinges adapt the board or arm U to be folded down upon the base board or arm K.

W represents a U-shaped open frame or bail, which is preferably made of a piece of wire or rod of suitable size bent into the required form and having the upper ends of its vertical arm X provided with inwardly-extending spindles Y, which enter openings Z on opposite sides of the arm or board U at the free end thereof, whereby the said bail or frame is pivoted to the said board or arm and is adapted to be folded inwardly against the same. A pair of right-angled re-enforcing plates A', which are made of sheet metal, are screwed to the lower side of the arm U, and bear against the side edges thereof at its outer ends, and have openings which are coincident with the openings Z, and in which

the spindles Y of the frame or bail W are journaled, the function of the said right-angled plates being to prevent wear. When the board or arm U is extended from the frame A and the lower side of the bail or open frame W bears against the outer end of the board or arm K, and is engaged by the loop T of the detent R, the apparatus is arranged in operative position.

In practice the forehead of the artist is placed against the concave outer end of the top arm or board U, and with a pencil in the right hand the landscape or object seen through the glass and paper is drawn on the latter. The landscape or object is seen in reduced true perspective, and as the eye follows the outline the pencil need only follow the eye, thus a true perspective of any object may be quickly obtained, and by altering the distance between the object and apparatus by removing the latter the size of the drawing may be increased or diminished, as desired. When one side of the perforated paper has been drawn upon, it may be turned over and the other side utilized, as the drawing on one side thereof does not in the slightest degree interfere with the drawing on the opposite side. The paper may be then separated from the frame, and, if desired, the drawing may be reproduced or enlarged on drawing-paper by means of a pantograph or other suitable means. In this manner unskilled persons can readily produce a true perspective drawing, and the eye is trained in this art.

It is essential that light be partly excluded from the face of the perforated drawing-paper when the apparatus is in use, and in order to secure this result I provide a substantially V-shaped bail B', which is bent from a single piece of wire, and has hooks C' at its ends, which are adapted to engage screw-eyes E' in the upper side of the frame A, near the corners thereof. The bail is thus pivoted to the frame and is adapted to be folded down upon the upper board or arm U, and when thus arranged serves to support a cloth, such as are used by photographers to envelop the head of the artist and the apparatus.

The bail, being made of wire and resilient, may be readily disengaged from the screw-eyes, as will be readily understood.

I will now describe my improved tripod, which is adapted to be used to support my drawing apparatus, and by means of which the utility of the latter is very materially enhanced. *a* represents a head, which is turned from a piece of wood of suitable kind and has a depending shank *b*, and has its upper end forked or bifurcated and fashioned into a pair of clamping-jaws *c*. The upper ends of the latter have rounded or convex surfaces *d*, and have vertical flanges or extensions *e* on the outer sides of said convex surfaces. *f* represents a clamping-screw, which passes loosely through an opening in one of the jaws *c*, and engages a threaded opening *g* in the opposite jaw. The head or outer end of the

screw is enlarged to form a handle *h*, which may be readily grasped by one hand in order to turn the screw. The shank *b* has vertical flattened surfaces *i* on three sides arranged at regular distances apart. *k* represents tripod-legs, which are connected to the lower end of the shank by means of hinges *l*, which adapt the tripod-legs to be folded together, and hence enable the tripod to be disposed in a comparatively small space. The heads of the tripod-legs are provided with vertical extensions *m*, which are beveled on their inner sides, as at *n*, the said beveled sides of the heads being adapted to bear against the flattened surfaces *i* of the shank when the tripod-legs are adjusted to the position represented in Fig. 1.

The neck portion L of the base arm or board K of the drawing apparatus is adapted to fit between the vertical flanges or extensions *e* of the tripod-head, and to bear upon the convex surfaces *d* of said head. The latter adapt the drawing apparatus to be tilted to any desired inclination, and by turning the screw the jaws of the tripod-head may be clamped against opposite sides of the board K to secure the drawing apparatus firmly in position when adjusted and enable the process of tracing the object on the paper to be proceeded with without fear of the adjustment of the apparatus becoming deranged.

When the drawing apparatus is removed from the tripod and folded, the same is adapted to be packed in a case *z*, which is illustrated in Fig. 5.

Having thus described my invention, I claim—

1. In a drawing apparatus, the combination of a main frame, a folding frame hinged to the lower front edge of the same and having a groove to receive a glass plate and a drawing-sheet, and suitable locking-catches, and a head-rest hinged to the upper rear edge of said main frame, substantially as set forth.

2. The combination, in a drawing apparatus, of the frame A, the board or arm K, hinged to the lower side thereof, the board or arm U, hinged to the upper side of the frame, and the frame or bail W, hinged or pivotally connected to the outer end of one of said boards or arms and adapted to be secured to the other, for the purpose set forth, substantially as described.

3. The combination, in a drawing apparatus, of the frame A, the arms or boards hinged to the lower and upper sides thereof, one of said arms or boards having a catch or detent, a frame or bail W, hinged or pivoted to the other arm or board and adapted to be engaged by said catch or detent, for the purpose set forth, substantially as described.

4. The combination, in a drawing apparatus, of the frame A, the arm or board K, hinged to the lower side thereof, the arm or board U, hinged to the upper side of said frame, the right-angled plates secured on opposite sides of the free end of arm U, and the frame

or bail W, having the spindles or pintles engaging openings in the right-angled plates and in the arm U, substantially as described.

5 5. The combination, with a drawing apparatus comprising the frames A and W and the connecting-arms between the upper and lower sides thereof, of the bail hinged or pivoted to the frame A and adapted to fold upon the upper arm, for the purpose set forth, substantially as described.

10 6. The combination, with the drawing apparatus having the base arm or board K, of the tripod or support having the clamping-arms adapted to engage the said board and 15 the screws to compress the said arms or jaws thereon, substantially as described.

20 7. The combination, with a drawing apparatus having the base board or arm K, of the tripod or support having the clamping-jaws, the latter having their upper ends rounded or convexed and provided with the vertical extensions or flanges, for the purpose set forth, substantially as described.

25 8. In a drawing apparatus, the combination of the main frame, the clamping-frame hinged thereto, the base-board hinged to said main frame, hinged frames to support the main frame in an upright position, and the tripod or support having the clamping-arms adapted 30 to engage the said base-board, substantially as set forth.

9. The combination, with a drawing-frame,

of a head-rest hinged to the upper edge of said drawing-frame and a supporting-frame connected pivotally to the free end of said head-rest, substantially as set forth. 35

10. In a drawing apparatus, the front frame carrying the glass plate and drawing-sheet, the top arm or board U, bottom arm or board K, and rear end piece W, all of said parts 40 being hinged or pivoted together so as to fold one upon the other, as set forth.

11. The combination, with a drawing-frame, of a hinged head-rest, a supporting frame connected pivotally to the free end of 45 the latter, and a bail pivoted to the drawing-frame and resting with its free end upon the head-rest, substantially as set forth.

12. The combination of the drawing-frame, the hinged head-rest, the supporting-frame 50 pivoted to the free end of the latter, the hinged base-board, a bail pivoted to the drawing-frame and adapted to rest upon the head-rest, and a tripod having clamping-jaws adapted to engage the base-board, substan- 55 tially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM SWEET WORDEN.

Witnesses:

P. O. HEDLUND,
T. J. CARTER.