

F. McILVENNA & W. P. THOMPSON.  
Drawing and Tracing Apparatus.

No. 218,893.

Patented Aug. 26, 1879.

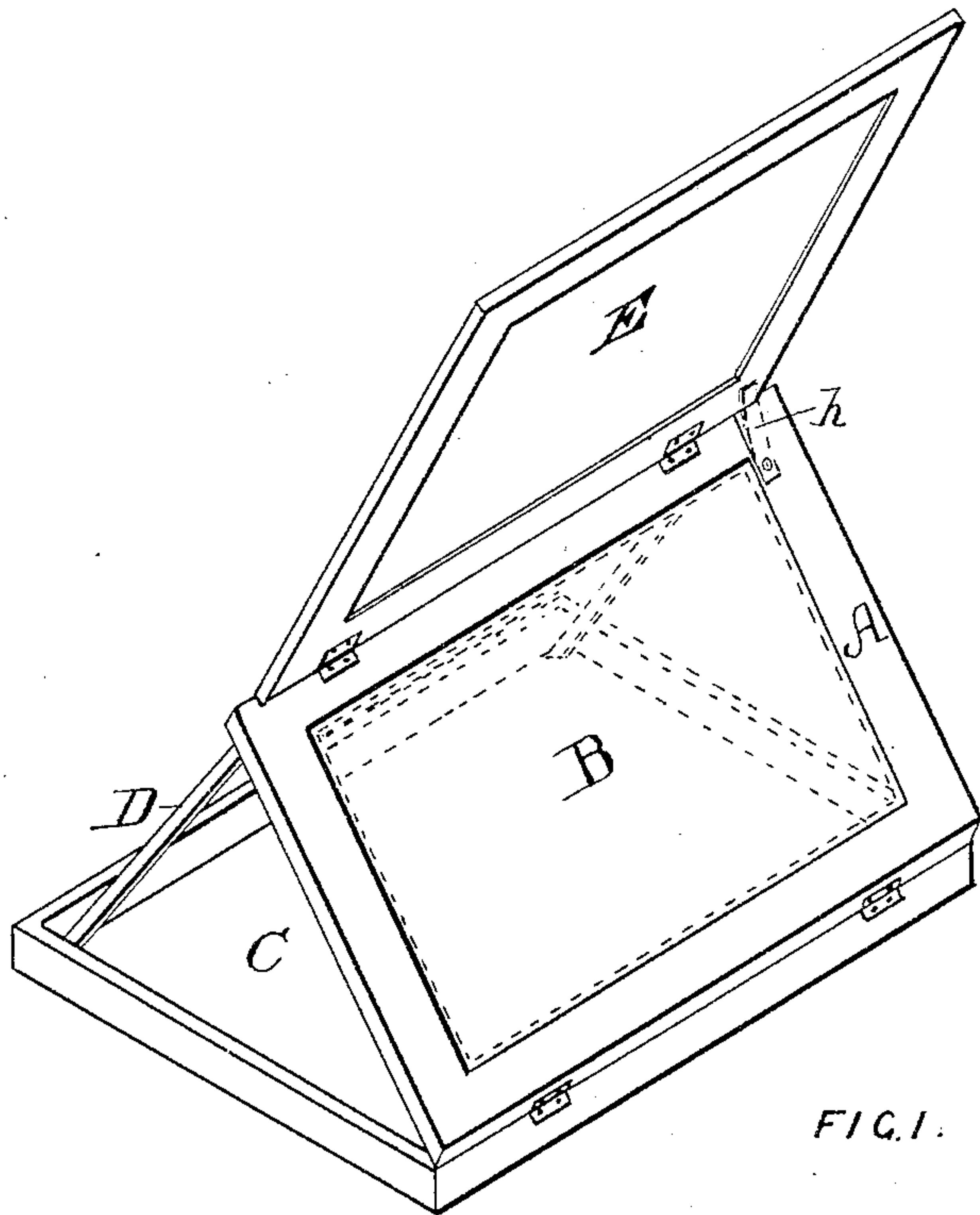


FIG. 1.

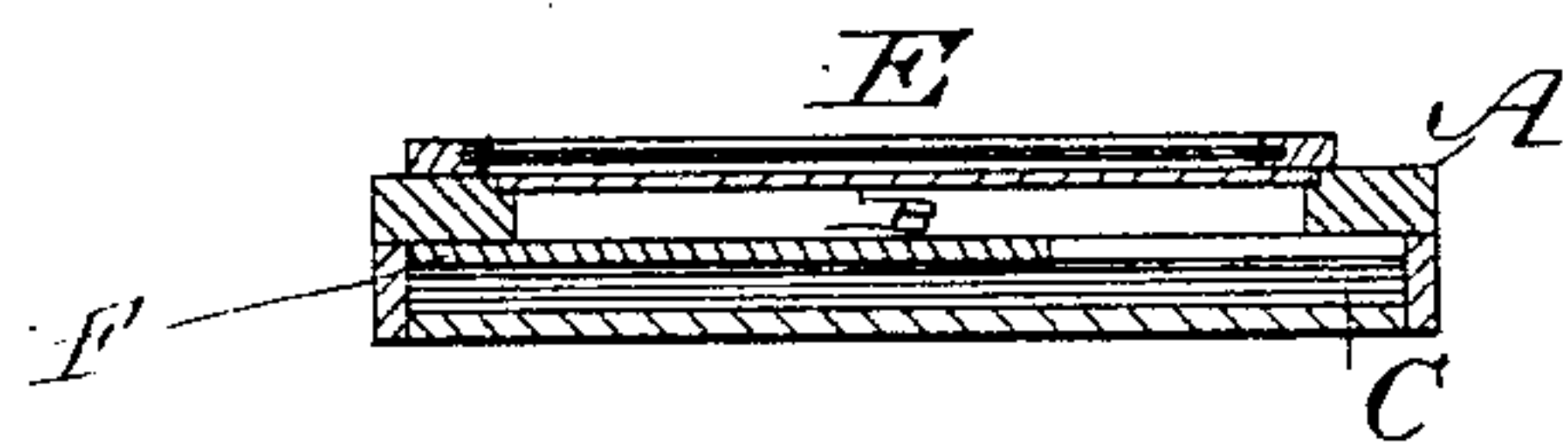


FIG. 2.

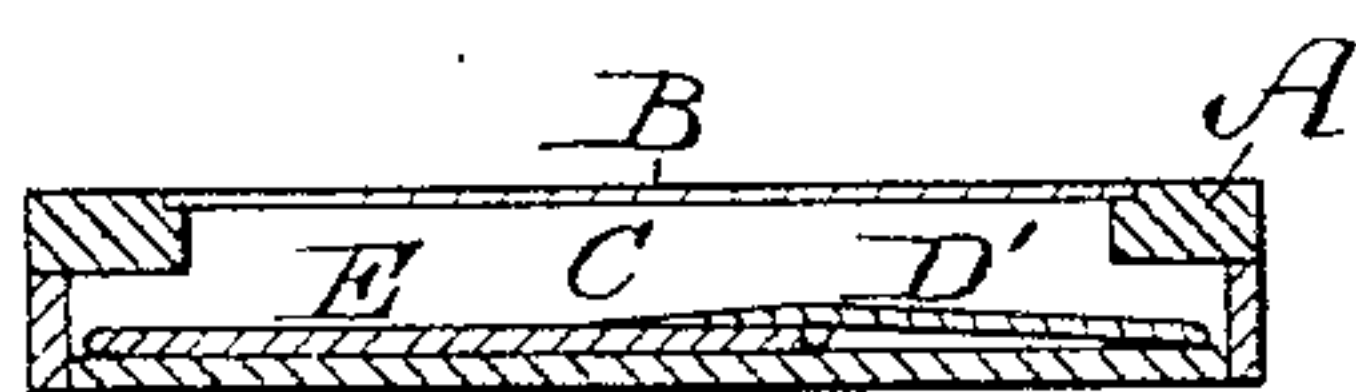


FIG. 3.

WITNESSES

*Edward Colton*  
*John C. O'Brien*

INVENTORS

*Felix McIlvenna*  
*Wm P Thompson*

# UNITED STATES PATENT OFFICE.

FELIX McILVENNA AND WILLIAM P. THOMPSON, OF LIVERPOOL, ENGLAND.

## IMPROVEMENT IN DRAWING AND TRACING APPARATUS.

Specification forming part of Letters Patent No. **218,893**, dated August 26, 1879; application filed July 9, 1878.

*To all whom it may concern:*

Be it known that we, FELIX McILVENNA, manufacturer, and WILLIAM PHILLIPS THOMPSON, civil engineer, both of Liverpool, in the county of Lancaster, England, have invented new and useful Improvements in Apparatus for Copying or Tracing Drawings, Pictures, and the like; and that the following specification is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings.

The object of this invention is to produce an apparatus for use in tracing or copying drawings, which may be folded into a compact form, and which shall be adapted to protect and carry pencils, pens, and other instruments employed by the scholar or artist; and to this end it consists in the combination of a box or tray having a reflecting-surface, a glass-supporting frame hinged to the tray, and a shield, which may also be a slate, hinged to the glass-frame.

In the accompanying drawings, Figure 1 represents a perspective view of our improved apparatus in shape for use. Fig. 2 is a transverse vertical section of the same folded or closed; Fig. 3, a similar view of a slightly-modified form of the same.

In the drawings, A represents a rigid frame, in which is seated a sheet of glass, B, the upper face of the glass being flush with that of the frame, as shown. C represents a shallow box or tray, to one side of which the frame A is hinged, as clearly shown in Fig. 1, said frame being furnished at or near its free edge with hinged supporting-legs D, by which the frame may be held at any desired angle of inclination. E represents a lid or cover, preferably hinged to the free edge of the frame A, on the upper side of the same, and serving, when turned down, to cover and protect the glass B, or work placed upon the same, and when elevated, as in Fig. 1, forming a shield or shade to shut out the light from the upper face of the glass B. This lid may be simply a thin wooden cover, or a light frame, in which may be stretched a dark-colored fabric; but in practice it is preferred to employ for this purpose simply a light drawing-slate.

F represents a light lid or cover, which closes over the tray C, below the frame A, and serves

to prevent the instruments placed in the tray from coming into contact with the glass. This cover may be of any suitable material, but should in all cases be provided with a white upper surface, in order that it may act as a reflector to throw light upward through the glass B. If parchment or paper be used, the surface will be sufficiently white without any special preparation; but if wood or metal be used, they should be painted or enameled.

In Fig. 3 there is represented a slightly-modified form of our frame, the lids or covers E and F being omitted. It is, however, essential to the proper working of the apparatus that a shield or shade be furnished to cut off the light from the upper face of the glass, and that a reflecting-surface be provided below the same; and to this end we provide a shade or shield, E, Fig. 3, which remains in the tray when not in use, and which is furnished with rigid legs D'. These legs are arranged to fit into notches in the free edge of frame A, and support the frame at any desired elevation, the shield or shade E in such case projecting above the frame the same as in Fig. 1; and to afford a reflecting-surface we paint or enamel the bottom of the tray C, or place a sheet of paper or like material therein. When the lid E is employed, as in Fig. 1, a catch or support, h, will be provided to retain the same in an elevated position.

The frame being thus constructed is adjusted as shown in Fig. 1, the drawing or other work to be copied is stretched over the glass B, and a sheet of paper or other material in turn stretched over the drawing. The light being thrown upward through the glass B and cut off from above the same by the shade or shield E, (the elevated side of the frame being turned to the light,) the lines of the drawing will be clearly visible through the paper, and may be readily traced or followed.

It is obvious that a mirror may be employed to reflect light upward through the glass; but the white surface is found to be preferable, as well as being cheaper.

We are aware that copying-frames have been made in various forms, and that the use of reflectors and shields in connection therewith is old; and we are also aware that it is old to apply a sliding tray to the under side of a com-



mon drawing-board, and hence we do not claim, broadly, such devices; but,

Having thus described our invention, what we claim is—

1. The combination of the reflecting-base C, the frame B, provided with the transparent glass and hinged to the front edge of the base, devices D, for sustaining the frame B, and the opaque shield E, hinged to the rear edge of the frame B, and arranged to fold down thereon.

2. The combination of the tray or drawer C, the hinged reflecting cover F and hinged glass-

supporting frame A, both connected to the tray, the hinged shield E, and means, substantially such as shown and described, for sustaining the frame and shield in elevated positions.

3. In a copying-frame, the combination of the glass-supporting frame and the shield E, having its upper side adapted for use as a slate.

FELIX McILVENNA.

WM. P. THOMPSON.

Witnesses:

E. GARDNER COLTON,

T. LE CLERQ.