No. 897,794. PATENTED SEPT. 1, 1908.

G. S. SMITH.

SKETCHING OUTFIT.

APPLICATION FILED NOV. 9, 1907.

Fig. 1.

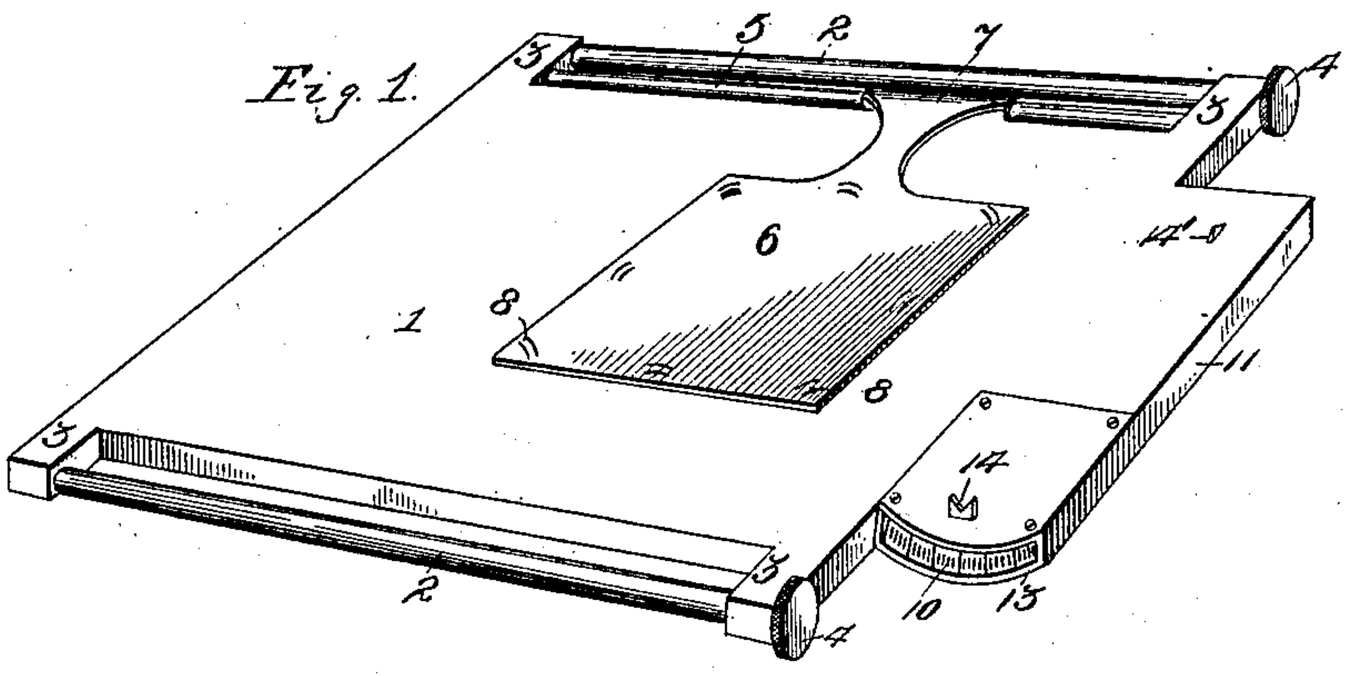


Fig. 2.

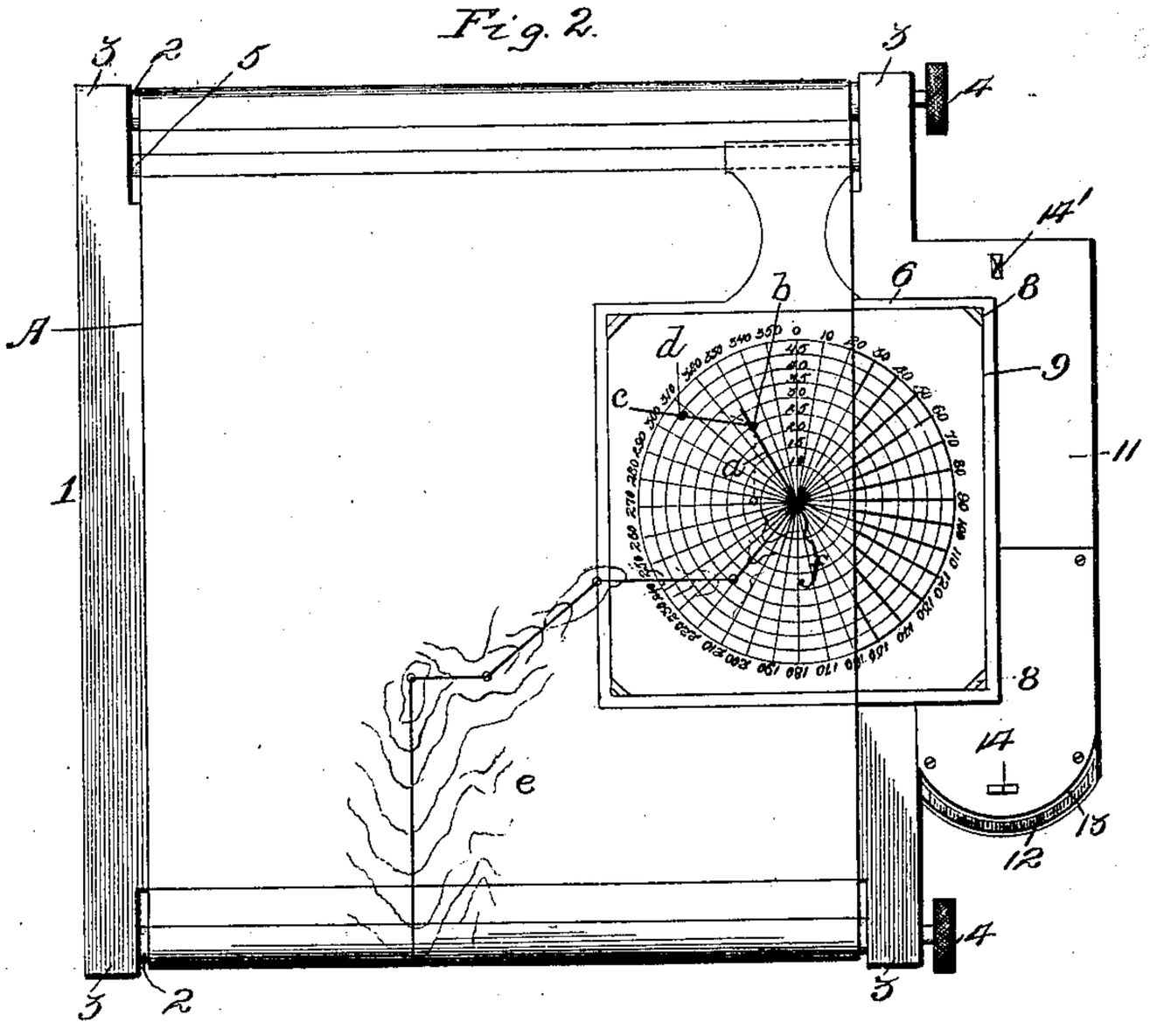
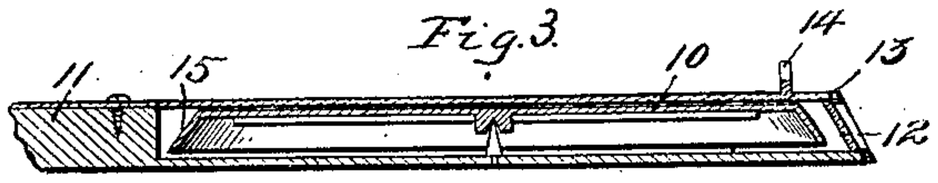


Fig. 3.



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SKETCHING OUTFIT.

No. 897,794. Specification of Letters Patent. Patented Sept. 1, 1908.

Application filed November 9, 1907. Serial No. 401,428.

To all whom it may concern:

Be it known that I, GLENN S. SMITH, a citizen of the United States, residing at Washington, District of Columbia, have invented new and useful Improvements in Sketching Outfits, of which the following is a specification.

My invention relates to a sketching case or outfit adapted to be used in the sketching of or making road or field maps and for similar purposes.

Its object is to provide an article that is simple in construction and of such nature that it can be rapidly used, and that by one unskilled in the use and handling of instruments of precision, and by means of which very accurate work can be done in the way of map making.

In the accompanying drawings,—Figure 1 is a perspective view of a sketching board or case embodying my improvements. Fig. 2 is a plan view illustrating the method of using the sketching board. Fig. 3 is a vertical section through the compass and the adjacent parts of the board taken on the line between the sights.

In the drawings, 1 indicates a board or frame of suitable size and having a plane upper surface. At its opposite ends are mounted rollers 2, 2, supported in suitable bearings provided therefor in the bracket portions 3, 3, of the board. Upon these rollers is supported the strip of paper or other fabric A, upon which the map or sketch is to be made, the strip being carried over the face of the board from one roll to the other. The shafts of the rolls are provided with milled heads 4 or other means for turning them so that the strip can be readily wound from one to the other.

5 indicates a rod supported between the brackets 3 at the far or upper end of the board.

A thin flat plate 6, preferably formed of metal, lies upon the upper face of the sketching board 1, and is connected with a sleeve 7 that encircles the rod 5. In the plate 6 are formed a number of slits 8 into which may be inserted the corners of a card 9 upon the face of which are indicated, by printing or otherwise, a series of concentric circles and radiating lines. The radiating lines are numbered to indicate in degrees the direction of each line from a base line, designated O and constitute a protractor; and the circles are marked in suitable manner, according to the particular scale that may be adopted, to designate distance from the center of the card.

At one side of the board, preferably the right hand side, is a projection 11, which may be and preferably is integral with the main portion thereof. A magnetic compass 10 is mounted in a recess provided therefor in the projection 11, and this is arranged to be read from the front through an opening 12 formed in a face plate 13 secured to the edge of the projection.

The compass is preferably of the floating card type, that is, the card moves with the needle, to which it is secured and is provided with a beveled or inclined edge 15 upon which are secured the degree graduations employed in making readings.

14, 14′, indicate a pair of sights mounted upon the upper surface of the board and preferably located so that the line connecting them crosses the pivotal line of the compass needle, and is parallel with the line O° on the card 9, when that is placed as indicated in Fig. 2, and with one edge of the board. This line of sight must have fixed relations with, or it may itself be part of, the line from which all angles, indicating direction of the line sight relative to magnetic north, are read in using the instrument. For convenience in using, this line of sight is located as just described with reference to the compass as a whole and to the side of the board.

The instrument may be provided with any suitable means for carrying it, or supporting it while in use.

In using the instrument thus described, a card like that indicated at 9, Fig. 2, is first secured in the plate 6. The strip of paper or linen upon which the map is to be drawn, is then wound upon the rolls, being drawn across the face of the board and over the plate 6 and card supported thereby. The plate is then moved to bring the center of the card beneath a point *f* on the strip that is to be taken as the starting point in the sketch or map to be produced. The observer then, taking the instrument in his hand, or resting it upon a suitable support, takes an observation on a distant object, using the sights 14, 14′, and having done this properly, reads the compass, which is conveniently located with reference to the near sight 14. A line *a* is then drawn from the point *f* along that radiating line of the protractor that is marked to correspond with the reading of the compass

just made, which we will suppose to be 330°. The length of the line drawn may be indefinite, care being only necessary to see that it is given the proper direction and is of ample length. The distance between the station from which the observation is made and the distant one is then measured and this distance laid off on the line *a* and the position of the second station indicated thereon by the point *b*, the scale formed by the concentric circles on the card being employed to assist in the location of this point.

The strip of paper or linen and the plate 6 are then shifted until the point *b* comes directly over the center of the protractor, when a second observation is taken and a second reading of the compass made, which let it be supposed is 280°. The line *c* is then drawn from the point *b* in the direction of the line on the card designated 280°; the distance from the second station to the third is then measured, and a point *d*, on the line *c* indicating the location of the third station is marked. The paper and the plate are then shifted to bring the point *d* over the center of the card, and the operations just described are repeated, and so on indefinitely.

In Fig. 2 I have indicated on the strip A, a partially completed map *e*, upon which a previously plotted line appears, following which certain topographical features have been sketched in, this much of the map having been made, it is supposed, at some previous time. The start on the new work is supposed to have been begun at the terminal point *f* of the previously plotted work.

It will be observed that in using this apparatus it is not necessary to orient the instrument at each station, it only being necessary to sight it, accurately read the compass, draw a line in a direction indicated by the compass reading, and then by measurement and the use of the scale on the card 9, locate the position of the second or distant station.

If the general direction of the line to be plotted is known in advance to be north and south, then the card 9 is placed upon the board as indicated in Fig. 2, that is, with the zero line pointing toward the far edge of the board; but if the general direction be east and west, then the card is preferably turned one-fourth around, so that the 90° line points toward the upper edge of the board, this arrangement being for the purpose of keeping the sketch as far as possible within the limits of the strip of paper or linen employed.

It will be understood that the instrument can be used in making intersections as is done with a plane table or transit.

It will also be understood that a telescope might be mounted upon the board to be used in place of the sights 14, 14′, when found desirable.

The plate 6 and the card which it carries are so thin that the strip A may be readily drawn over them without interfering with its proper movements from one roll to the other. It will be seen that the sighting means and the protractor are so related that they turn together and with the board, and that the latter is moved to bring the sights in line with the object on which the observation is being taken. In this respect my instrument differs from the ordinary plane table and from other sketching boards or cases with which I am acquainted in which the sighting instrument or alidade is movable independently of the board, which latter has to be carefully set up or oriented whenever an observation is being made.

I do not in this application claim the protractor herein shown and described; nor the combination of the board or frame, supports for a sheet of transparent paper or linen and the movable protractor arranged to lie between the face of the board and the sheet, as such subject-matter forms the basis of my pending application No. 444,664, filed July 21, 1908.

What I claim is:—

1. In a sketching outfit, the combination with a board, of a movable protractor, a compass, sights mounted on the board in fixed relation to the line from which angles indicating direction of the line of sight relative to magnetic north are read in using the instrument, and means for preventing the protractor from turning relative to the line between the sights, substantially as set forth.

2. In a sketching outfit, the combination of a board, a compass mounted upon the board, sights also mounted on the board and having fixed positions relative to the line from which the angles indicating direction of the line of sight relative to magnetic north are read, and means for supporting a protractor on the board and maintaining the base line thereof in definite angular relations to the line between the sights, substantially as set forth.

3. In a sketching outfit, the combination of a board, supports for a strip of paper or linen upon which the map is to be drawn adapted to pass over the face of the board, a compass, means for taking a sight on a distant object, and a holder for a protractor arranged between the said strip and the face of the board, whereby the markings on the protractor may be read through the strip, substantially as set forth.

4. In a sketching outfit, the combination of a board, supports for a strip of paper or linen at the opposite edges of the board, the strip being arranged to pass over the face of the board, a compass, means for taking a sight on a distant object, a holder for a protractor arranged to lie between the strip and the face of the board, and means for guiding the protractor holder in its movements and

maintaining it in fixed angular relations to the line of the sighting means, substantially as set forth.

5. In a sketching outfit, the combination of a board, a compass supported thereby, means for taking a sight on a distant object having its axial line crossing the pivot of the compass needle, a movable protractor, means for guiding the protractor on right lines and maintaining it in fixed angular relations with the axis of the sighting means, and supports for a strip of material upon which the sketch is to be done, the strip being movable across the face of the protractor, substantially as set forth.

6. In a sketching outfit, the combination of a board, rollers at the opposite ends of the board for supporting a strip of material upon which the sketching is to be done, a compass at one side of the board, sights at one side of the board fixed relative thereto, a flat movable frame adapted to receive a protractor and to lie close to the surface of the board, and a rod parallel with the strip-supporting rollers adapted to guide the frame for the protractor, substantially as set forth.

7. In a sketching outfit, the combination of a board, sights on the board, a graduated magnetic compass by which the direction of an object from a point of observation may be ascertained, and a protractor movable over the board and independent of the sights by means of which the reading of the compass may be plotted or sketched on the board, substantially as set forth.

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