Oct. 21, 1924. 1,512,015

O. BUTZ ET AL

DRAWING INSTRUMENT

Filed Nov. 8, 1921 2 Sheets-Sheet 1

Fig. 1

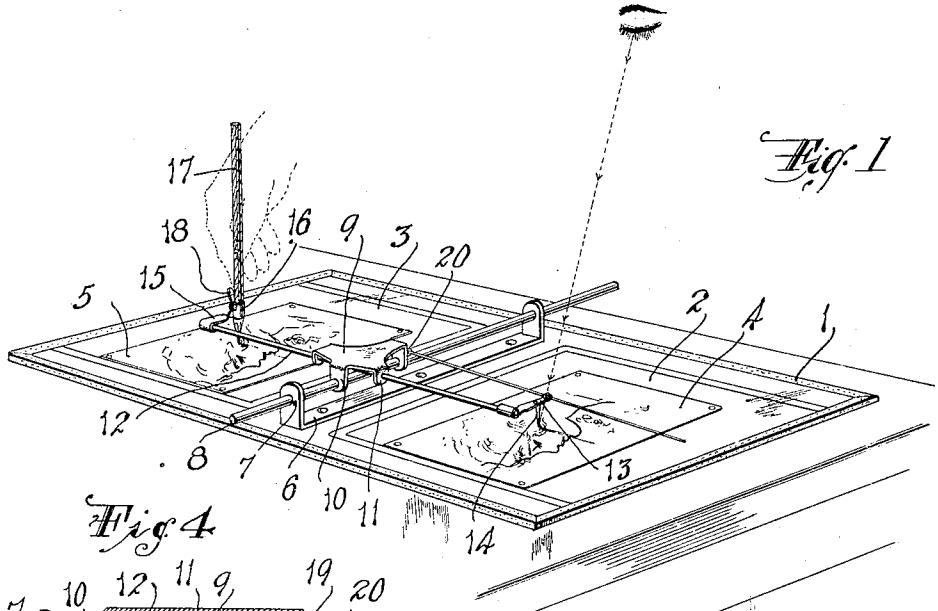


Fig. 4

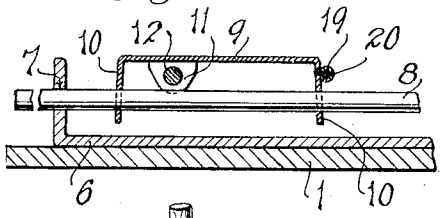


Fig. 5

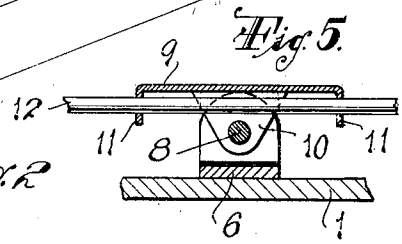
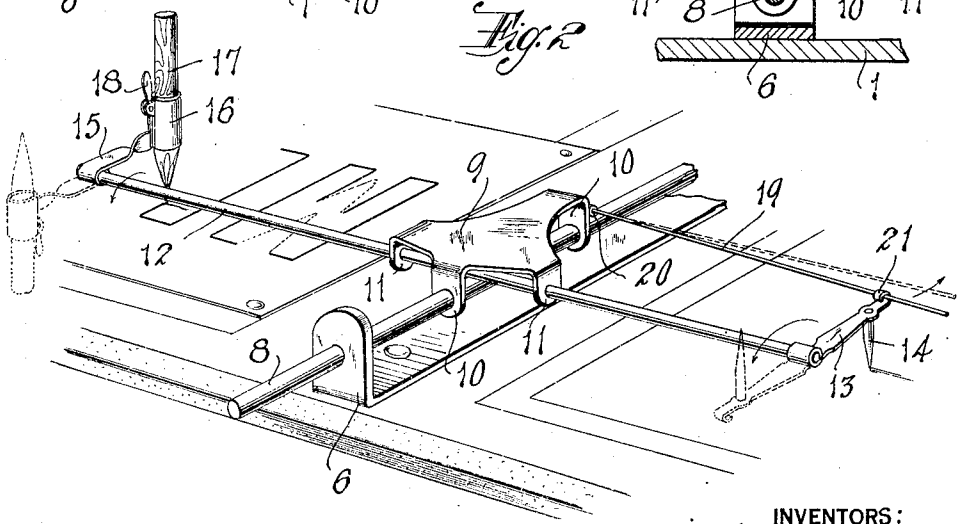


Fig. 2



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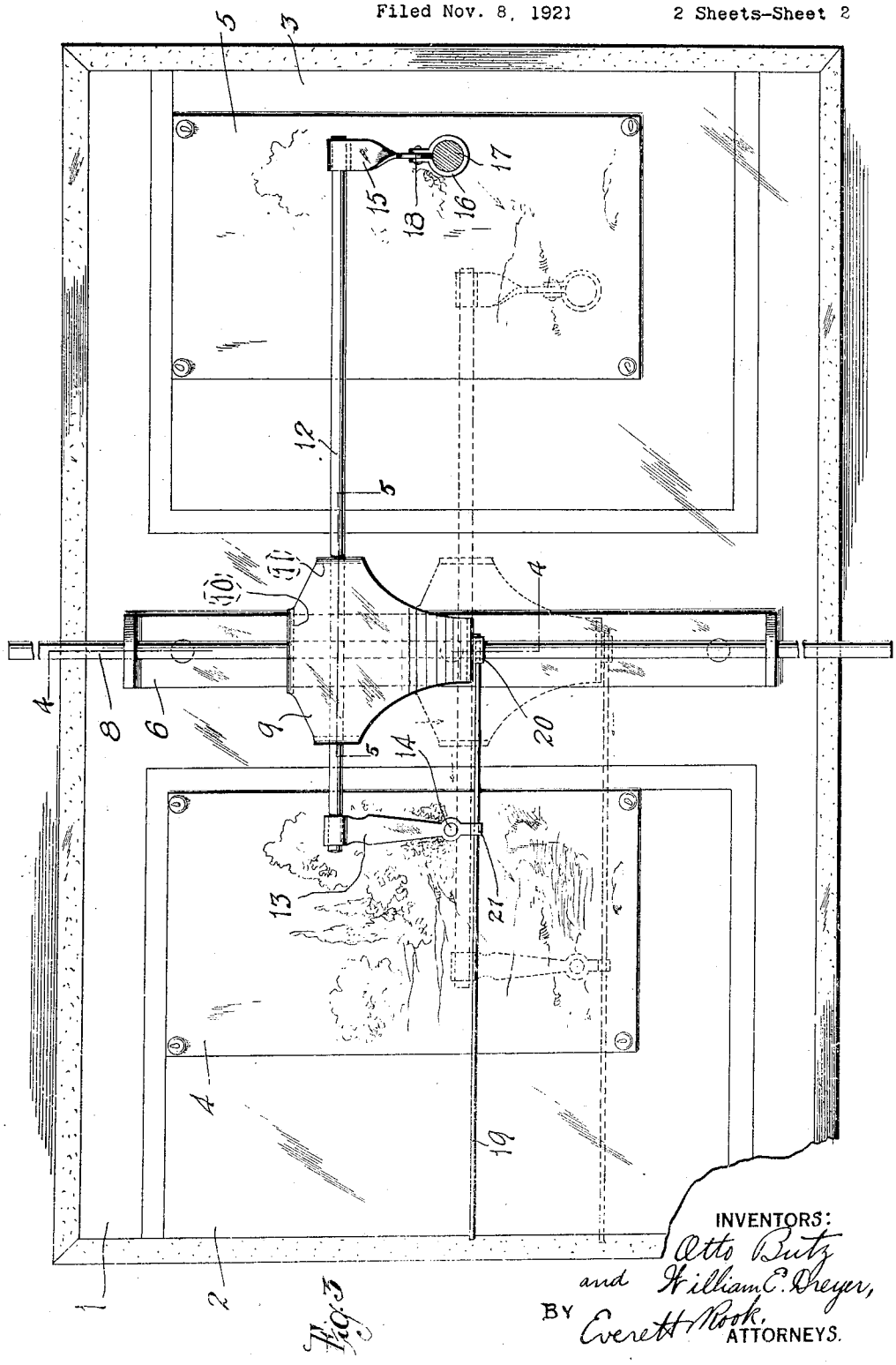


Fig. 3

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UNITED STATES PATENT OFFICE.

OTTO BUTZ AND WILLIAM E. DREYER, OF NEWARK, NEW JERSEY.

DRAWING INSTRUMENT.

Application filed November 8, 1921. Serial No. 513,781.

To all whom it may concern:

Be it known that we, OTTO BUTZ and WILLIAM E. DREYER, both citizens of the United States, and residents of Newark, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Drawing Instruments, of which the following is a specification.

This invention relates in general to drawing instruments and more particularly to an instrument of the nature of the pantograph for copying drawings and the like.

The objects of the invention are to provide an instrument of the character described embodying novel features of construction and which comprises a minimum number of simple parts whereby a drawing or the like can be easily and accurately copied without complicated adjustments; to provide such an instrument including a tracing element and a scribing element, and improved means for mounting said elements on a board or support so as to be movable in all directions and positively guided in two directions at right angles to each other; to provide in such an instrument means for adjusting said tracing and scribing elements relatively to the board or support to accommodate different sizes of drawings; to provide an instrument of this character including means for yieldingly holding said tracing and scribing elements against the drawing surface. and to obtain other results and advantages as may be brought out by the following description.

Referring to the accompanying drawings, in which like numerals of reference indicate the same parts throughout the several views.

Figure 1 is a perspective view of a drawing instrument constructed in accordance with our invention showing the same in operation in copying a drawing;

Figure 2 is an enlarged fragmentary perspective view showing the manner of using the instrument as a parallel ruler for forming letters;

Figure 3 is a plan view of the instrument;

Figure 4 is a fragmentary longitudinal sectional view of the member for supporting the scribing instrument on the drawing board, taken on the line 4—4 of Fig. 3, and

Figure 5 is a transverse sectional view through the same, taken on the line 5—5 of Fig. 3.

In the embodiment of our invention shown in the drawings, the reference character 1 designates a drawing board which may be formed of any suitable material, and which is divided transversely into two similar spaces 2 and 3 to receive respectively a drawing or the like 4 to be copied and the paper 5 upon which the copy is to be made, said spaces being formed with corresponding squaring lines for properly positioning the copying paper relative to the drawing to be copied.

A substantially U-shaped bracket 6 is rigidly secured transversely of the board between the said spaces 2 and 3, the arms of said bracket being formed with alined openings 7 in which is freely longitudinally slidably mounted a rod 8. A bridge-like member 9 is mounted on the rod 8 by means of depending ears 10 formed with openings which receive the rod 8, said member having frictional engagement with said rod so as normally to move therewith, but being forcibly movable longitudinally of the rod for the purpose of adjustment. The bridge-like member 9 is also formed with a second pair of ears 11 arranged at substantially right angles to the ears 10 and provided with alined openings having freely and longitudinally slidably mounted therein a second rod 12, the said rod extending transversely of the rod 8 at substantially right angles thereto. The end of the rod 12 overlying the space 2 is formed with a laterally projecting arm 13 in which is rigidly mounted a tracing point 14 to engage the drawing to be copied, and the opposite end of said rod 12 is formed with a laterally projecting arm 15 having a vertically disposed sleeve 16 to receive a pencil or other scribing element 17, the said scribing element being removably clamped in said sleeve by suitable clamping means 18. A spring wire 19 has one end thereof rigidly secured to the member 9 at 20 and the other end thereof removably received within the returned hooked end 21 of the tracing point arm 13, as clearly shown in Figure 2, the said wire serving to maintain the tracing point and scribing element in yielding engagement with the drawing and copying paper.

In the operation of the device in copying a drawing, the scribing element is grasped by the operator and the rod 12 moved longitudinally and laterally to cause the tracing point to follow the lines of the drawing to be copied. The scribing element 17 is positively guided in directions at right angles to each other by means of the ears 11 on the

member 9 and the rod 8, and both the rods 8 and 12 are longitudinally movable simultaneously, as shown by dotted lines in Figure 3, so as to enable a curved or inclined line to be traced. When it is desired to move the scribing element from one point on the paper to another point without making a line, the scribing element is lifted from the paper against the influence of the spring wire 19. When it is desired to apply the drawing and copying paper to the board 1 the spring wire 19 can be slipped from the hooked end 21 of the tracing arm 13, and the said arm and the arm 15 swung backwardly off of the spaces 2 and 3 into the position shown in dotted lines in Figure 2. The instrument can also be used as a parallel ruler, so as to enable vertical parallel lines to be drawn, as shown in Figure 2, this function of the instrument being particularly adaptable for forming plain letters. In such an operation the scribing element 17 is forced laterally so as to move only the rod 8, the rod 12 being moved longitudinally only to space the parallel lines.

While we have shown one possible embodiment of our invention, it will be understood that this is only for the purpose of illustrating the principles of the invention, and that many modifications and changes can be made in the detail construction of the instrument without departing from the spirit or scope of the invention.

Having thus described the invention, what we claim is:

1. An instrument of the character described including a support, a rod longitudinally slidable in said support, a member mounted on said rod normally movable therewith and adjustable longitudinally thereof, a second rod longitudinally slidable in said member transversely of said first-mentioned rod, a tracing element carried at one end of said second-mentioned rod, and a scribing element mounted at the other end of said second-mentioned rod.

2. An instrument of the character described including a support with spaced bearings, a rod longitudinally slidable in said support, a member between said bearings having a pair of spaced depending ears formed with alined openings to frictionally receive said rod so as to be movable normally therewith and adjustable longitudinally thereof, said member being also formed with another pair of ears having alined openings arranged at right angles to said first-mentioned openings, a second rod longitudinally slidably mounted in said second-mentioned openings transversely of said first-mentioned rod, and tracing and scribing elements carried by said second-mentioned rod.

3. An instrument of the character described including a support, a tracing element, means for mounting said tracing element in said support so as to be movable in all directions and positively guided in directions at right angles to each other, a scribing element movable with said tracing element, and means for yieldingly holding said tracing element in engagement with the drawing surface.

4. An instrument of the character described including a support, a tracing element, means for mounting said tracing element in said support so as to be movable in all directions and positively guided in directions at right angles to each other, a scribing element movable with said tracing element, and means for yieldingly holding both said tracing element and said scribing element in engagement with the drawing surface.

5. An instrument of the character described including a support, a rod longitudinally slidable in said support, a member mounted on said rod and movable therewith, a second rod rotatable and longitudinally slidable in said member transversely of said first-mentioned rod, a tracing element rigidly mounted on one end of said second-mentioned rod, a scribing element rigidly mounted on the other end thereof, and yielding means engaging one of said elements to hold both in engagement with the drawing surface.

6. An instrument of the character described including a support, a rod longitudinally slidable in said support, a member mounted on said rod and movable therewith, a second rod rotatable and longitudinally slidable in said member transversely of said first-mentioned rod, a lateral arm rigidly connected to each end of said second-mentioned rod, a scribing element mounted on one of said arms, a tracing element mounted in the other of said arms, and yielding means engaging one of said arms to hold both said scribing and tracing elements in engagement with the drawing surface.

OTTO BUTZ.
WILLIAM E. DREYER.