B. ANDERSON.

PANTOGRAPH.

APPLICATION FILED JULY 19, 1912.

1,079,910.

Patented Nov. 25, 1913.

2 SHEETS—SHEET 1.

Fig 1

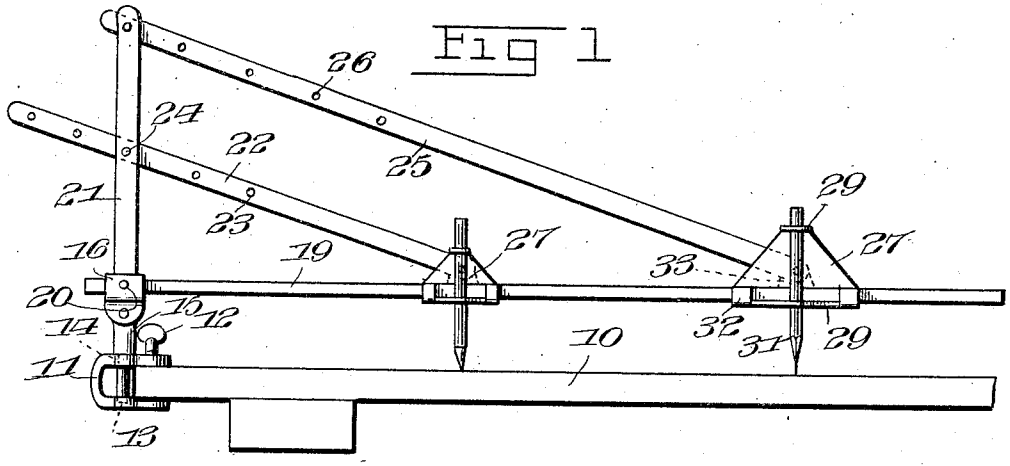


Fig 2

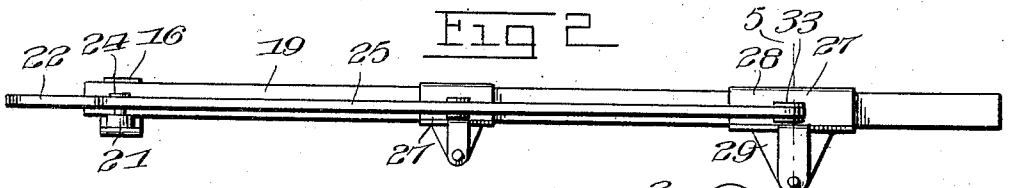


Fig 5

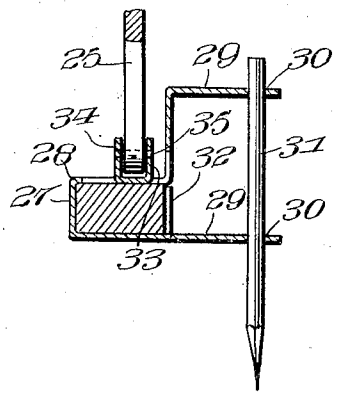
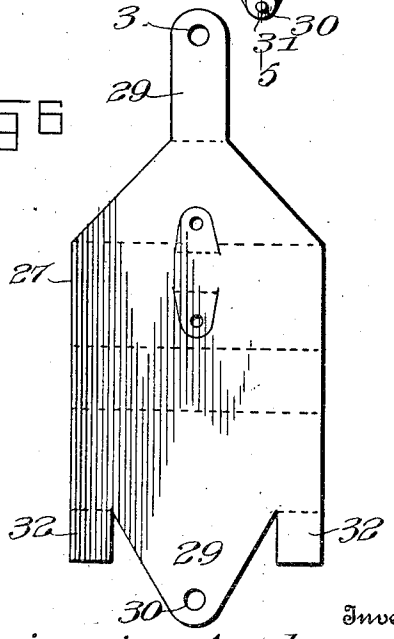


Fig 6



Witnesses

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2 SHEETS—SHEET 2.

Fig 4

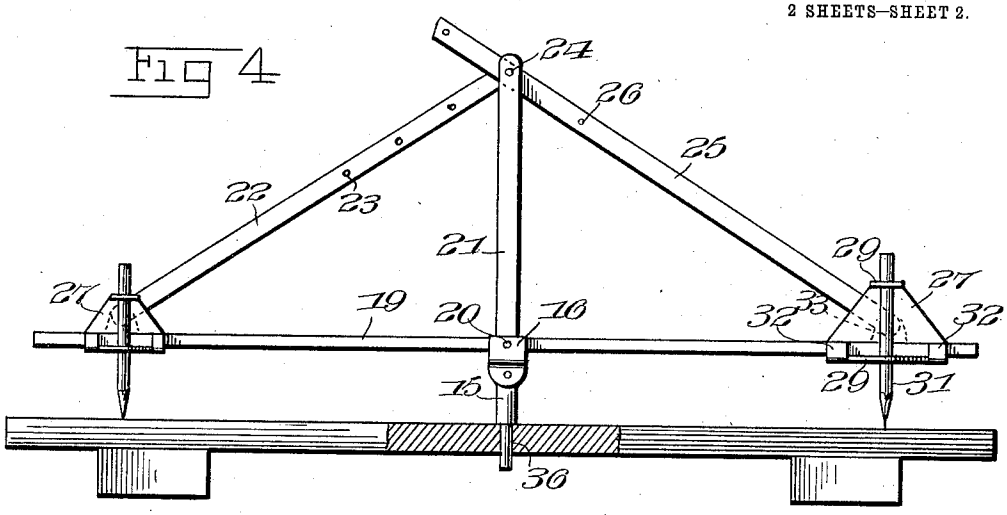


Fig 3

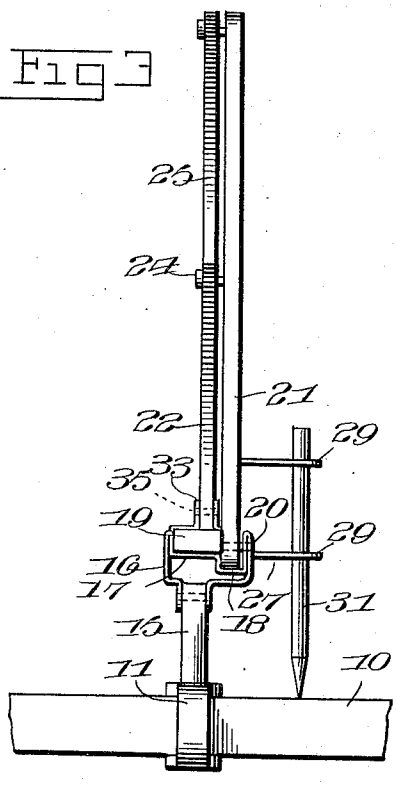
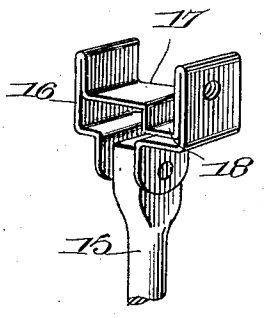


Fig 7



Witnesses

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UNITED STATES PATENT OFFICE.

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PANTOGRAPH.

1,079,910. Specification of Letters Patent. Patented Nov. 25, 1913.

Application filed July 19, 1912. Serial No. 710,447.

To all whom it may concern:

Be it known that I, BENJAMIN ANDERSON, a citizen of the United States, residing at Gebo, in the county of Bighorn and State of Wyoming, have invented new and useful Improvements in Pantographs, of which the following is a specification.

The general object of this invention is the provision of a pantograph which is simple in construction and effective in use and to this end the invention consists in providing a standard which is adapted to be rotatably connected to a drawing board, said standard having swingingly connected thereto a plurality of levers adapted to be used for reproducing an original drawing, print or the like, the device being so constructed so as to make the reproduction either larger, smaller, or the same size.

In carrying out the objects of the invention generally understood, it will be understood, of course, that the essential features thereof will be susceptible of changes in details and structural arrangements, one preferred and practical embodiment being shown in the accompanying drawings, wherein:—

Figure 1 is a side elevation of the pantograph showing the same attached to a drawing board and in a position whereby the reproduction will be made larger than the original. Fig. 2 is a top plan view thereof. Fig. 3 is an end elevation. Fig. 4 is a side elevation of the device showing the same in position whereby the reproduction will be of the same size as the original. Fig. 5 is a section on the line 5—5 of Fig. 2. Fig. 6 is a plan view of one of the slides used in connection with the invention. Fig. 7 is a detail perspective of a bracket carried by the standard.

Referring more particularly to the accompanying drawings in which like reference characters designate similar parts, 10 indicates a drawing board adapted to have the device connected thereto by means of a U-shaped clamp 11 when the pantograph is in the position shown in Fig. 1, or in other words, when it is desired to make the reproduction larger than the original. The clamp 11 is secured to the drawing board adjacent one edge thereof by means of a set screw 12 and said clamp is provided in one limb thereof with a socket 13 which is in alinement with a transverse opening 14 formed in the other limb of said clamp. The opening 14 and socket 13 are adapted to receive the standard 15 whereby the latter will be rotatably mounted therein. The upper end of the standard 15 is adapted to have secured thereto a bracket 16 which is preferably made from a single length of suitable material and bent to provide a seat 17 which extends for a major portion of the width of said bracket, the remaining portion of said seat being bent to provide a recess 18.

Secured in the seat 17 of the bracket 16 in any suitable manner is a laterally extending beam 19 and pivotally mounted in the recess 18, by means of a pivot 20 is a vertical swinging arm 21. The arm 21 has pivotally connected thereto intermediate its ends a lever 22, said lever being provided with a plurality of apertures 23 whereby the length of the same may be adjusted, it being understood that a detachable pivot pin 24 is used for connecting said lever to the arm. The arm 21 has also pivotally connected thereto a second lever 25 which is greater in length than the lever 22 and which is also provided with a plurality of apertures 26 thus rendering the same adjustable in length. Each of the levers 22 and 25 have pivotally connected thereto at one end thereof a slide 27, the slide connected to the lever 22 being preferably made smaller than the one connected to the lever 25 so that the former will in no way interfere with the adjusting of the lever 25 should it be desired to make the reproduction only a trifle larger than the original.

The slides 27 are identical in construction and each comprises a single length of suitable material such as brass, said material being bent to provide a substantially U-shaped beam engaging portion 28, said portion having its ends tapered or reduced to provide offset extensions 29 having alined openings 30 therein for the reception of a tracing or reproducing pencil 31 as the case may be. The portion 28 is provided contiguous to one of the extensions 29 thereof with oppositely disposed lugs 32 which are adapted to be bent into engagement with one side of the beam 19 whereby the displacement of the slide will be prevented. The upper portion of the slide has stamped therefrom a pair of spaced pivot ears 33 having alined openings 34 therein for the reception of a pivot pin 35 which is adapted

to engage the adjacent end of the lever whereby the latter will be pivoted to the slide.

When it is desired to make a reproduction of the same size as the original, the device is placed in the position shown in Fig. 4 by mounting the standard 15 in a suitable opening 36 formed approximately in the center of the drawing board thus obviating the use of the clamp 11. The lever 25 is then swung to the opposite side of the arm 21 after first removing the slide 27 from engagement with the beam 19, said lever being then adjusted to the same length as the lever 22 or if it is desired to make a reproduction smaller than the original, the lever 25 may be made shorter in length than the lever 22. The slide 27 is disengaged from the beam 19 by first removing the pencil 31 and then bending the lugs 32 from engagement with said beam after which the pivot pin 35 is removed thus permitting the slide to be detached and again secured to said beam after the latter has been adjusted in its seat so that the portions thereof will extend upon each side of the bracket 16.

It will thus be seen from the foregoing description that the tracing pencil may be grasped and moved in any direction and owing to the various connections between the levers 22 and 25, the arm 21 and standard 15, the lever 25 will be caused to move in unison with the lever 22 thus insuring an inverted reproduction of the original drawing, print or the like in any desired style.

What is claimed is:—

1. A pantograph comprising a standard adapted to be rotatably connected to a support, a laterally extending beam connected to said standard, a vertically swinging arm pivotally connected to said standard, and a plurality of levers adjustably connected to said swinging arm and slidingly connected to said beam.

2. A pantograph comprising a standard adapted to be rotatably connected to a support, a laterally extending beam connected to said standard, a vertically swinging arm pivotally connected to said standard, a plurality of levers adjustably connected to said swinging arm and slidingly connected to said beam, and a slide made of a single length of material pivotally connected to one end of each of said levers and adapted for engagement with said beam.

3. A pantograph comprising a standard adapted to be rotatably connected to a support, a laterally extending beam connected to said standard, a vertically swinging arm pivotally connected to said standard, a plurality of levers adjustably connected to said swinging arm and slidingly connected to said beam, a slide made of a single length of material pivotally connected to one end of each of said levers and adapted for engagement with said beam, said slide comprising a beam engaging portion having reduced offset extensions, and pivot ears carried by the beam engaging portion and adapted for connection with the end of the lever.

4. A pantograph comprising a standard adapted to be rotatably mounted in a support, a vertical swinging arm pivotally connected to said standard, a lever pivotally and adjustably connected to said swinging arm intermediate the ends thereof, a tracing pencil carrying means connected to said lever, a second lever pivotally and adjustably connected to said swinging arm adjacent the outer end thereof, and a reproducing pencil carrying means connected to said second lever.

5. A pantograph comprising a standard adapted to be rotatably mounted in a support, a beam extending laterally from said standard, a vertically swinging arm connected to the standard, a lever pivotally and adjustably connected to the swinging arm intermediate the ends thereof, a tracing pencil carrying means connected to said lever, a second lever pivotally and adjustably connected to said swinging arm adjacent the outer end thereof, and a reproducing pencil carrying means connected to said second lever, the respective pencil carrying means being slidably connected to the beam.

6. A pantograph comprising a rotatable standard, a bracket pivotally connected thereto and bent to provide a seat and a recess, a beam mounted in said seat, a vertically swinging arm pivoted in said recess, tracing pencil carrying means movably mounted on the beam, a connection between said means and the arm, reproducing pencil carrying means movably mounted on the beam, and a connection between said latter means and the arm.

7. A pantograph comprising a beam, a swinging arm tracing pencil carrying means slidably mounted in the beam, an adjustable connection intermediate said means and the arm, reproducing pencil carrying means slidably mounted on the beam and an adjustable connection intermediate said latter means and the arm.

8. A pantograph comprising a beam, a swinging arm, a tracing pencil carrying slide mounted on the beam, a reproducing pencil carrying slide mounted on the beam, and independent levers pivotally connected to said slides respectively and adjustably connected to the arm.

9. A pantograph comprising a standard adapted to be rotatably connected to a support, guiding means connected to said standard, a vertically swinging arm connected to said standard, a tracing pencil carrying slide mounted on the beam, a reproducing pencil carrying slide mounted on the beam and independent levers pivotally connected

to said slides respectively and adjustably connected to the arms.

10. A pantograph comprising a standard adapted to be rotatably connected to a support, guiding means connected to said standard, a swinging arm connected to said standard, a tracing pencil carrying means including a slide and a lever, and a reproducing pencil carrying means including a slide and lever, and the slides of each of said means being removably mounted on the guiding means and the levers of each of said means being adjustably connected to the swinging means.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN ANDERSON.

Witnesses:
GEO. F. RAE,
J. ASHBY HOWELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."