

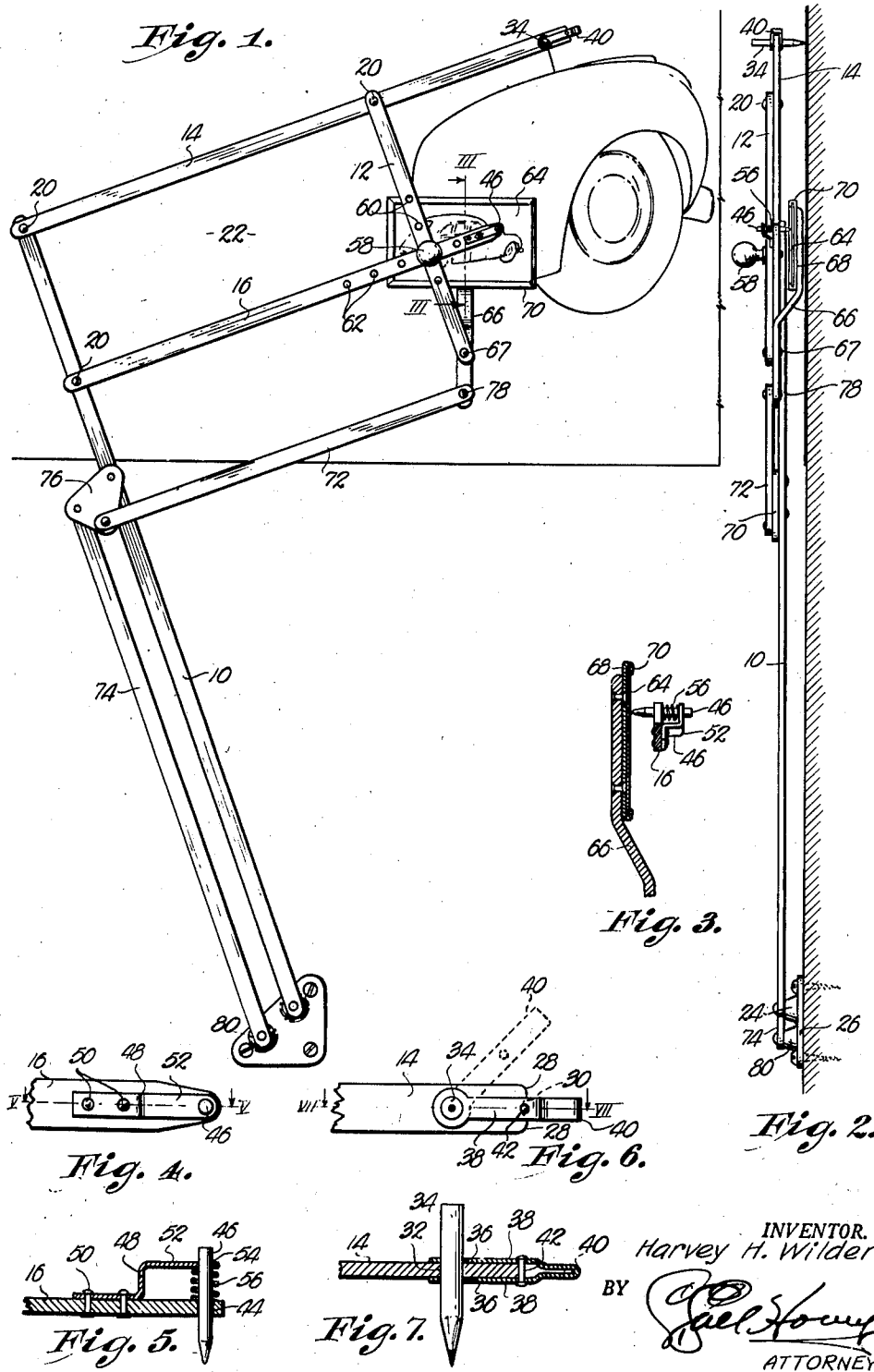
Oct. 26, 1943.

H. H. WILDER

2,332,880

PANTOGRAPH

Filed Feb. 22, 1943



Patented Oct. 26, 1943

2,332,880

UNITED STATES PATENT OFFICE

2,332,880

PANTOGRAPH

Harvey H. Wilder, Kansas City, Mo.

Application February 22, 1943, Serial No. 476,752

4 Claims. (Cl. 33-25)

This invention relates to drawing instruments and particularly to pantographs of the character for making copies from master drawings or pictures.

Pantographs are commonly used for reproducing drawings or the like on enlarged or reduced scales. Much difficulty has been encountered however, in making very greatly enlarged copies from originals, as for example, in increasing small copies to billboard size.

When making copies on a greatly enlarged scale with pantographs now available, the spread between the tracing pencil and tracing point often becomes so great that a single operator is unable to manipulate both. It becomes necessary therefore, that two operators coordinate their efforts, one guiding the tracing point, while the other guides the pencil. The results are often unsatisfactory, due to the difficulty on the part of the operators to maintain proper coordination of their movements.

An important aim of the instant invention is the provision of a pantograph constructed in a manner to enable a single operator to make greatly enlarged copies from small master drawings.

More particularly, it is the object of this invention to provide a pantograph with a holder for the master copy, adjacent the tracing point, and to embody means in the instrument for maintaining the holder in its initially oriented position.

Other objects of the invention are to provide improved locking mechanism for holding the tracing point and tracing pencil in adjusted positions.

Further aims of the invention will become apparent during the course of the following specification, referring to the accompanying drawing wherein:

Fig. 1 is a plan view of a pantograph constructed in accordance with this invention.

Fig. 2 is an edge elevational view of the pantograph.

Fig. 3 is an enlarged fragmentary sectional view of the copy holder taken on line III—III of Fig. 1.

Fig. 4 is an enlarged fragmentary plan view of a bar end and locking member supporting the tracing point in adjusted position.

Fig. 5 is a sectional view taken on line V—V of Fig. 4.

Fig. 6 is an enlarged fragmentary plan view of the end of the bar carrying the tracing pencil

and of the clamping member for retaining the pencil in adjusted condition; and

Fig. 7 is a sectional view taken on line VII—VII of Fig. 6.

5 In the drawing, the numerals 10, 12 and 14, 16 designate respective pairs of parallel bars comprising the frame of the pantograph. These bars are movably connected together by rivets 20 or the like in a manner to produce the usual parallelogram 22.

10 Bars 10 and 12 are relatively long, bar 10 being pivotally secured at one end to the upset boss 24 of a bearing plate 26. The free end of bar 14 is provided with opposed cam faces 28 joining in a depression 30. An opening 32 in the bar 14 adjacent said cam faces is adapted to slidably receive a tracing pencil 34 and is aligned with similar openings 36 formed in the legs 38 of a yoke 40 astride the end of bar 14.

20 When yoke 40 is moved from its dotted position (Fig. 6), to the full line position, a cross pin 42 provided therein rides over cam face 28 to impart a slight shearing action on the tracing pencil, thereby locking it in adjusted position. Formed in the free end of bar 16 is an opening 44 for slidably receiving a tracing point 46. A flexible blade 48 secured by means such as rivets 50 to bar 16, is provided with an offset portion 52 having an aperture 54 in alignment with opening 44. A spring 56 positioned between bar 16 and blade 48, and surrounding point 46, tends to force the offset portion of blade 48 outwardly, thereby locking the tracing point in a selected adjusted position.

35 Bars 10 and 14 are relatively long, bar 10 being of intersection by a removable pivot pin 58. Series of spaced apertures 60 and 62 in bars 12 and 16 respectively, provide for adjusting the pantograph to obtain the desired ratio of enlargement.

40 In order to support a master copy 64 on the pantograph adjacent tracing point 46, an arm 66 is pivotally connected intermediate its ends to the free end of bar 12 as at 67. Riveted or otherwise secured to one end of arm 66 is a holder 68, preferably provided with rebent flanges 70 along three of its edges for retaining the master copy in place.

50 It is evident that holder 68 should maintain a definite relation to the surface whereon the copy is made irrespective of the movements of the pantograph. This is accomplished by providing bars 72 and 74 which are interconnected to each other and to bar 10 by a plate 76. Bar 72 is movably joined to arm 66 by a rivet 78 and bar

74, in parallel relation with bar 10, is pivoted on an upset boss 80 of bearing plate 26.

The operation of the pantograph will be clear from the foregoing. A single operator can move the tracing point along the outlines of the master copy and simultaneously guide the tracing pencil, since the distance between the pencil and tracing point is never exceedingly great.

It will be apparent from Fig. 1 that the traced drawing is as many times larger than the master copy as the distance from points 24 to 36 is greater than the distance from points 46 to 67. The scale of enlargement may be varied in the usual manner, i. e., by engaging the pin 58 with other of the openings 60 and 62 in bars 12 and 16 respectively. Pin 58 preferably has screw-threaded engagement with openings 62 of bar 16.

From the foregoing description, it will be seen that the objects of this invention have been accomplished and since it is possible that various modifications might be made without departing from the spirit of this invention, it is desired to be limited only by the scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a pantograph, a plurality of bars movably connected together; a tracing point on one of the bars; a holder pivotally mounted on said pantograph for supporting a master copy adjacent said tracing point; and means operably connecting said holder with the pantograph for maintaining the holder in its initially oriented position during the tracing process.

2. In a pantograph, a plurality of bars movably connected together; a tracing point on one of the bars; a bearing plate on another of said bars; a holder pivotally mounted on said pantograph for supporting a master copy adjacent said tracing point; and linkage connecting the holder with the pantograph and said bearing plate for maintaining the holder in its initially oriented position during the tracing progress.

3. In a pantograph, a plurality of bars movably connected together; a tracing point on one of the bars; and means for adjustably supporting the point on said bar comprising a flexible blade fixed to said bar and having a free end portion in offset relation with the said bar, said bar and free end portion having aligned openings for slidably receiving the tracing point; and a spring positioned between the free end portion and bar and surrounding the tracing point for urging said free end portion of the blade into binding engagement with said point for holding the point in adjusted position.

4. In a pantograph, a plurality of bars movably connected together; a tracing pencil on one of the bars; and means for holding the pencil in adjusted position relative to the bar comprising a yoke having spaced legs for receiving an end of said bar therebetween, said bar and legs having aligned openings for slidably receiving the tracing pencil, said end of the bar having a cam face and the legs of said yoke having a cross pin therethrough for riding over the cam face to lock the pencil in adjusted position.

HARVEY H. WILDER.