Nov. 7, 1939. O. M. JOHNSON 2,178,755

CASTER PENHOLDER

Filed Oct. 29, 1937

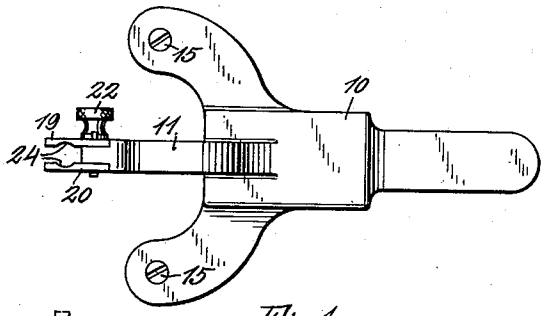


Fig.1.

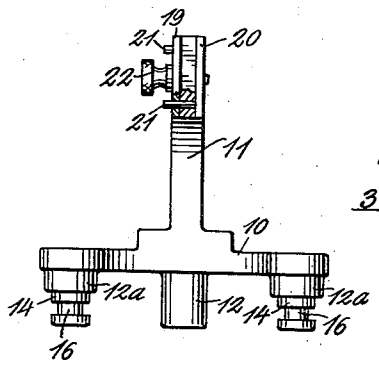


Fig.3.

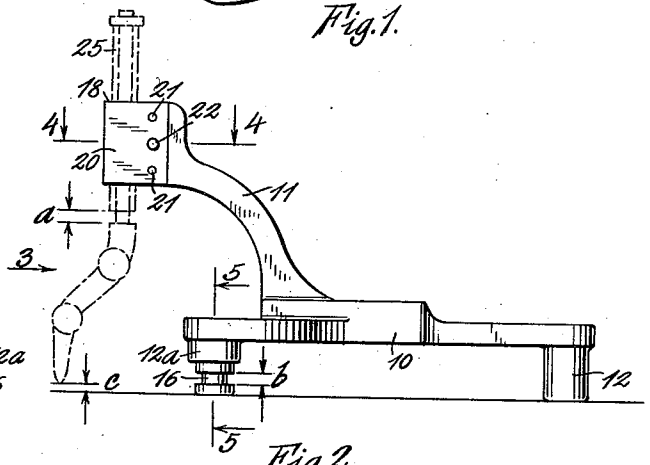


Fig.2.

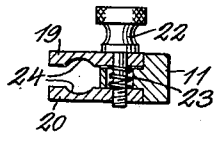


Fig.4.

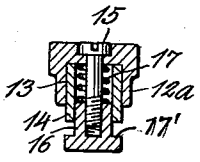


Fig.5.

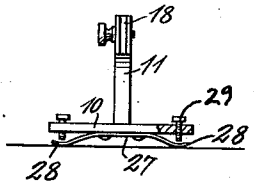


Fig.6.

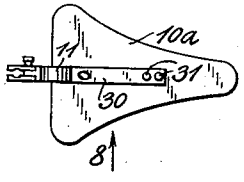


Fig.8.



Fig.7.

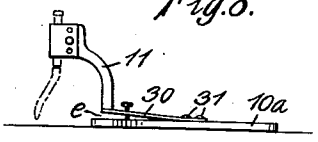


Fig.9.

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CASTER PENHOLDER

Oscar M. Johnson, Denver, Colo.

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18 Claims. (Cl. 120—107)

This invention relates to improvements in holders for caster or contour pens.

In making maps of many kinds, but more particularly in the making of contour maps, it is necessary to draw a large number of crooked lines and for this purpose special pens are employed, which are sometimes called "caster pens" and sometimes contour pens.

Such pens are connected to the handle by a swivel joint and are offset in the manner of an ordinary roller caster and a great amount of skill is required to properly handle and operate such pens.

It is the object of this invention to produce a support for holding a caster pen during operation, so that it will always remain in the most desirable position, and by means of which the draftsman can guide it over the paper.

Another object is to provide a support, of the type mentioned, that will automatically raise the pen from the paper when it is released by the draftsman.

Another object is to provide a support that will support the handle of the pen at the proper elevation to permit the floating action of the pen that is so essential to its successful operation.

A further object is to produce a pen support or holder that can be manufactured at a moderate cost, either from metal, some phenolic condensation product, or other mouldable material.

The above and other objects that may appear as the description proceeds are attained by means of a construction and an arrangement of parts that will now be described in detail and for this purpose reference will be had to the accompanying drawing in which the invention has been illustrated and in which:

Figure 1 is a plan view of the holder;

Figure 2 is a side elevation thereof;

Figure 3 is a front elevation of the holder;

Figure 4 is a section taken on line 4—4 Fig. 2 and shows the means employed for clamping the pen in position;

Figure 5 is a section taken on line 5—5 Fig. 2 and shows the construction of the resilient supports;

Figure 6 is a front elevation of a modified form of construction;

Figure 7 illustrates a modified pen clamp;

Figure 8 is a top plan view of a modified form of pen holder; and

Figure 9 is a side elevation of the modification illustrated in Fig. 8.

In the drawing reference numeral 10 designates a base which may be made from Bakelite, Celluloid, metal or any other suitable material. Extending upwardly from the base is a bracket 11, that is preferably curved in the manner shown in Figs. 2 and 9, but which may be of any shape desired.

The base is preferably, but not necessarily provided with three supporting lugs or feet 12 and 12a, the latter may be resilient or yielding and may be constructed as shown in Fig. 5, or they may be solid and unyielding, the same as lug 12. The reason for using three supporting lugs is to prevent the base from rocking if it is employed on a curved or uneven surface.

If lugs like that illustrated in Fig. 5 are used, the lugs 12a are provided with upwardly extending openings 13 in which short metal bushings 14 are inserted. Instead of employing such bushings the lugs may be longer and extend to the level of the lower ends of the bushings. A small hole is provided in the base, concentric with the opening in bushing 14, for the reception of a screw 15 whose lower end is threadedly connected with the plug 16. A spring 17 is positioned between the bottom of the opening and the inner end of the plug and serves to hold it normally in the position shown in Fig. 5. The plug has a flange 17' that serves as a limit stop and determines the minimum distance from the base to a supporting surface. The screw 15 can be rotated in the plug and in this way the distance between the upper surface of the flange and the lower end of the tube 14 can be adjusted. Plug 12 is preferably solid or it may be hollow and weighted with lead. Attached to the bracket 11 (Figs. 1 to 4) or formed integral therewith (Fig. 7) is a clamping device, indicated in its entirety by numeral 18, which has been illustrated as consisting of two plates 19 and 20 that are positioned on opposite sides of the bracket. Plate 20 is held in place by two screws or pins 21 that pass entirely through the plate 19 and project beyond the outer surface of the same, as shown in Fig. 3. Plate 19 is slidable on the pins 21. A clamping screw 22 is rotatably connected with plate 19 and threadedly connected with plate 20 and passes through an enlarged opening in the bracket in which a helical compression spring 23 is positioned. When the screw is rotated in one direction it permits the spring 23 to move the plates apart and when it is rotated in the other direction it moves the plates towards each other. The adjacent surfaces of the plates are provided with elongated recesses 24 that serve to receive the handle 25 of a caster pen

(shown dotted in Fig. 2) and hold it firmly in a position substantially vertical to the plane of the base. From Fig. 2 it will be seen that the pen is offset from the handle and is rotatably connected with the latter. The pen is attached to the handle in such a way that it has a longitudinal as well as a rotary movement relative thereto, the extent of the longitudinal movement has been indicated by letter *a* and the movement of the base **10**, vertically, with respect to the supporting surface **26**, is indicated by letter *b*. The distance from the supporting surface to the tip of the pen, when the parts are in inoperative position, has been designated by reference letter *c* which distance must be less than distance *b* so that when the draftsman presses the base down as far as it can go, the point of the pen will rest on the surface of the paper. The distance *b*—*c* must be less than the distance *a* so that there will be no pressure tending to move the pen downwardly except that due to the weight of the pen. When the draftsman removes his hand from the holder, springs **17** immediately raise the pen from the paper.

The clamping device **18** can, of course, be replaced by any equivalent means and in Fig. 7 an example of another means has been shown. In this embodiment the upper end of the bracket **11** is formed with a tubular portion **19***a* through which the handle **25** extends. A screw **26** serves to force the handle against the concave wall of the opening.

In Fig. 6 a modified form of resilient support has been shown. In this embodiment the lugs **12***a* have been replaced by a flat spring **27** having downwardly convex ends **28** that yield when pressure is applied to the base. Screws **29** limit the extent of the flexure of the spring.

It is not necessary that the base shall be supported on lugs because a drafting board is usually flat and even and in Figs. 8 and 9 a modification has been shown in which the base **10***a* is a flat and somewhat triangular shaped piece of Bakelite or other suitable material. The bracket **11** is attached to the front end of the flat spring **30**, which is attached at one end to the base by means of screws **31**. The spring is bent so that at the end to which the bracket is attached it is separated from the upper surface of the base by a space *e*. The spring is very flexible and when the holder is in operation it is forced against the upper surface of the base by the hand of the draftsman. The construction illustrated in Figs. 8 and 9 is very simple and can be more cheaply made than the other embodiment and when used on a flat even surface it holds the pen steady.

From the above it will be seen that the holder that forms the subject of this invention is simple and substantial and serves to hold a caster pen in proper operative positions, leaving for the draftsman only the work of guiding the pen.

It is evident that the holder may be constructed in other specifically different ways, and be of different design than shown. The essential feature of the holder is that it must have a base that can slide over the surface of a drawing and which is provided with means for holding a contour pen in freely floating position with respect to its handle. The holder must also automatically raise the pen from the paper when the draftsman releases it.

Having described the invention what I claim as new is:

1. A caster pen support comprising, in combination, a base adapted to slide on a flat supporting surface, a bracket attached to the base and extending upwardly therefrom adjacent an edge thereof, means, comprising a clamp, carried by the bracket, adjacent its upper end for attaching a caster pen handle and for holding it in a position substantially vertical with respect to the plane of the under surface of the base and to one side of the base, and a resilient member interposed between the clamping means and the surface on which the base rests for yieldingly holding the clamping means a predetermined distance above the supporting surface.

2. A caster pen support comprising, in combination, a base adapted to slide on a flat supporting surface, a bracket attached to the base and extending upwardly therefrom adjacent an edge thereof, means carried by the bracket for clamping a caster pen handle and for holding it in a position substantially vertical with respect to the plane of the under surface of the base and outside of the boundary lines of the base, the under surface of the base having three spaced supports serving to engage the supporting surface, two of said supports, being symmetrically positioned relative to the upwardly extending bracket, and resiliently yieldable means between the pen clamping means and the under surfaces of the two symmetrical supports, whereby the distance from the clamping device to the supporting surface can be varied when pressure is applied.

3. A caster pen support comprising, in combination, a base adapted to slide on a flat supporting surface, a bracket attached to the base and extending upwardly therefrom adjacent an edge thereof, means carried by the bracket for attaching a caster pen handle and for holding it in a position substantially vertical with respect to the plane of the under surface of the base, the under surface of the base having a plurality of spaced supports serving to engage the supporting surface, two of said supports being symmetrically positioned relative to the bracket, the two last mentioned supports being resiliently yieldable whereby the distance from the clamping device to the supporting surface can be varied when pressure is applied to the base, and means for adjustably limiting the distance that the base can move in response to pressure exerted thereon.

4. A device for slidably supporting a caster pen on a supporting surface, comprising, in combination, a base having three spaced supports extending downwardly therefrom for engaging the supporting surface at three spaced points, two of the supports being resilient and yieldable when pressure is applied to the base, means for limiting the extent of said yielding, a bracket carried by the base and extending upwardly therefrom, the bracket being positioned between the yieldable supports, and a device carried by the bracket and positioned above the base for holding the handle of a caster pen in a substantially perpendicular position relative to a plane determined by the bottoms of the three supports.

5. A device for slidably supporting a caster pen on a supporting surface comprising, in combination, a base having three spaced lugs extending downwardly from its lower surface for engaging the supporting surface at three spaced points, two of the lugs being formed by telescopically connected members, having resilient means tending to extend them and means for limiting such extension, a bracket projecting upwardly from the base, said bracket being positioned between the extensible lugs, and means

carried by the bracket for attaching the handle of a caster pen thereto.

6. A device for slidably supporting a caster pen on a supporting surface, comprising in combination, a base having three spaced supports on its under surface, for engaging the supporting surface at three spaced points, a bracket attached to the base at a point substantially on the bisector of one angle of the triangle formed by joining the three supports, and extending upwardly therefrom near one edge of the base, a clamping device carried by the bracket near its upper end for holding a caster pen in vertical position, outside of the boundary of the base, and a resilient yielding member between the clamping device and the under surfaces of the supports, whereby the distance from the clamping device to the supporting surface can be varied when pressure is exerted on the bracket.

7. A device for slidably supporting a caster pen on a plane surface, comprising in combination, a base adapted to rest on and to be freely moved over the supporting surface, a bracket extending upwardly from the base adjacent the edge thereof, resilient means, comprising a spring between the bracket and the supporting surface whereby pressure exerted on the bracket will alter the distance from the bracket to the supporting surface, two relatively movable clamping jaws carried by the bracket near its upper end, and means for positively moving the jaws so as to decrease the distance between them, the jaws being provided with means for engaging and holding a caster pen handle in a predetermined position relative to the plane of the base, and outside of the boundary line of the base.

8. A device for slidably supporting a caster pen on a supporting surface comprising, in combination, a base having three spaced lugs for engaging the supporting surface at three spaced points, a bracket projecting upwardly from the base, said bracket being positioned between two of the lugs, means carried by the bracket for attaching a caster pen thereto, and a resilient yieldable device between the pen attaching means and the supporting surface, whereby the distance from the attaching means to the supporting surface can be varied in response to pressure.

9. A pen guide comprising a frame member, pen supporting means carried by said member, supporting means carried by said member for supporting said member for movement over a plane surface, and means carried by said frame member engageable with said supporting means to adjust said frame member relative to the plane surface.

10. A pen guide comprising a frame member, pen supporting means carried by said member, a plurality of supporting members carried by said frame member for supporting said frame member for movement over a plane surface, and means carried by said frame member engageable with at least one of said supporting members to adjust said supporting means relative to the plane surface.

11. A pen guide comprising a frame member, a combined pen clamping and supporting means carried by said member, a plurality of supporting members carried by said frame member for supporting said frame member for movement over a plane surface, and adjustable means operable to adjust the position of said pen clamping and supporting means relative to the plane surface.

12. A pen guide comprising a frame member, a combined pen clamping and supporting means carried by said member, a plurality of supporting members carried by said frame member for supporting said frame member for movement over a plane surface, and yieldable means interposed between said frame member and at least one of said supporting members to yieldably support a portion of said frame member whereby a pen engaged with said clamping and supporting means will be automatically lifted from the plane surface upon removal of pressure from said frame member.

13. A pen guide comprising a frame member, a combined pen clamping and supporting means carried by said member, a plurality of supporting members carried by said frame member for supporting said frame member for movement over a plane surface, yieldable means secured to at least one of said supporting members and the frame member to yieldably support a portion of said frame member, and means carried by said frame member to limit the movement in one direction of said one supporting member.

14. A pen guide comprising a frame member, a combined pen clamping and supporting means carried by said member, a plurality of supporting members carried by said frame member for supporting said frame member for movement over a plane surface, and threaded means carried by said frame member engageable with one of said supporting members to adjust said one member relative to the frame member.

15. A pen guide comprising a frame member, a combined pen clamping and supporting means carried by said member, a plurality of sockets disposed beneath said frame member, means fixedly securing certain of said sockets to said frame member, and yieldable means connecting one of said sockets to said frame member.

16. A pen guide comprising a frame member, a combined pen clamping and supporting means carried by said member, a plurality of sockets disposed beneath said frame member, means fixedly securing certain of said sockets to said frame member, yieldable means connecting one of said sockets to said frame member, and means carried by said frame member limiting the movement of the frame member relative to said one socket.

17. A pen guide including a T shape frame, bearing means mounted on the T adjacent the ends of the latter, bearing means mounted on the body of the T frame and adjustable with respect to the writing surface, and pen supporting means mounted on the arm of the frame.

18. A pen guide including a circular frame, a plurality of bearing members mounted on one face of the frame, one of said members being adjustable with respect to the writing surface, and a pen supporting means extending upwardly from the opposite face of said circular frame.

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