April 18, 1939. W. MOSES 2,155,169

ADJUSTABLE DRAWING CURVE

Filed April 1, 1937

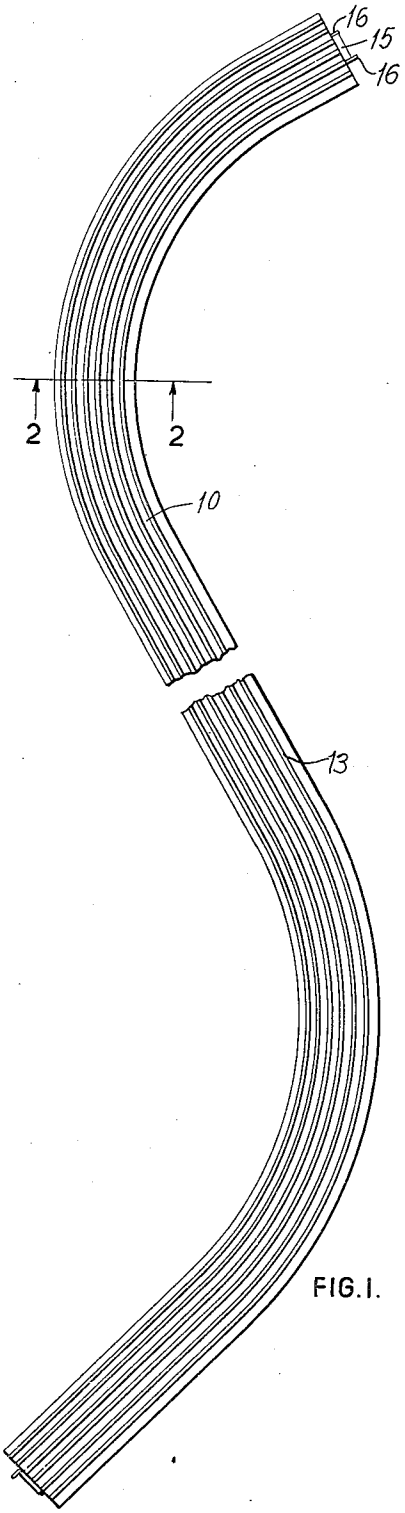


FIG. 1.

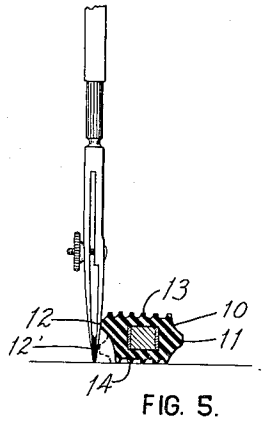


FIG. 5.

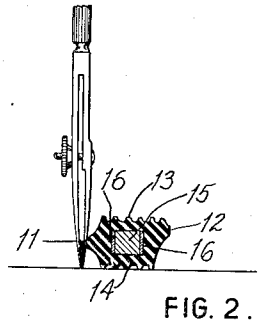


FIG. 2.

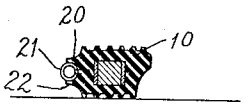


FIG. 3.

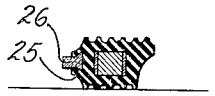


FIG. 4.

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Patented Apr. 18, 1939 2,155,169

UNITED STATES PATENT OFFICE

2,155,169

ADJUSTABLE DRAWING CURVE

Wade Moses, Cleveland, Ohio; Madeline B. Moses, owner by decree of court

Application April 1, 1937, Serial No. 134,353

6 Claims. (Cl. 33—177)

This invention relates to drawing instruments having a ruling edge adapted to be adjustably curved and more particularly to an instrument of this type having an improved surface construction.

I am familiar with prior drawing instruments adapted to be adjusted to provide curved ruling surfaces of varying contours comprising a hollow body of flexible material such as rubber having a core of lead or similar material and a strip of spring metal. However, the material in these prior devices has been formed of relatively stiff rubber with the drawing edge abutting the surface upon which the curved line is to be drawn and it has been necessary to separate the material into segments to permit proper bending. Additionally, rubber has a tendency to smear or erase graphite and due to its affinity for ink, has a tendency to smear an ink line.

Other prior devices of this general type with which I am familiar have attempted to incorporate a flexible ruling surface with the rubber body but due to the difference in bending characteristics of such material and rubber body, together with the difference in expansion characteristics under thermal change, they have been unsatisfactory after a short period of use.

I have devised an adjustably curved drawing instrument of this general type wherein a ruling surface is provided on each edge of the body and spaced from contact with the surface upon which a line is to be drawn and wherein the entire surface of the body is coated with a stretchable metallic substance overcoming the natural tendency of a rubber surface to impede passage of a pencil or ruling pen drawn therealong due to minimizing the frictional resistance. This protective coating largely eliminates any tendency to erase or smear pencil lines already drawn and across which the instrument may be moved. I have further provided a corrugated bearing surface for the instrument preventing any tendency to slip during use and a corrugated top surface providing a firm gripping surface for the draftsman.

It is an object of my invention, therefore, to provide an improved, adjustably curved drawing instrument comprising a rubber body having a metallic surface.

Another object of my invention is to provide a drawing instrument of the above type having dual ruling edges, each ruling edge being spaced from contact with the surface upon which the instrument rests, and one ruling edge being spaced a greater distance from the surface than the other.

Another object of my invention is to provide a drawing instrument of the above type which offers relatively little resistance to the passage of a pencil or ruling pen drawn along a ruling edge portion.

Another object of my invention is to provide a drawing instrument of the above type having a corrugated top to form a gripping surface.

Another object of my invention is to provide a drawing instrument of the above type which is economical to manufacture and assemble.

Other objects of my invention and the invention itself will become increasingly apparent from a consideration of the following description and drawing wherein:

Fig. 1 is a plan view of an adjustably curved drawing instrument embodying my invention;

Fig. 2 is a transverse sectional view taken along the lines 2—2 of Fig. 1 illustrating the manner of using the low drawing edge;

Fig. 3 is a transverse sectional view showing a modification of my invention;

Fig. 4 is a transverse sectional view showing a further modification of my invention, and

Fig. 5 is a view similar to Fig. 2 showing the manner of using the high drawing edge.

Referring now to the drawing, I have indicated generally at 10, a hollow body of flexible material, preferably formed of extruded or molded rubber which is generally rectangular in cross-section and is provided with a longitudinally extending low ruling edge 11 and a high ruling edge 12. The top and bottom surfaces of the body 10 are preferably corrugated as indicated at 13 and 14 respectively. Inserted within the body is a core 15 formed of lead or similar material which may be bent to a desired form and which will retain such form, the lead core preferably being substantially square in cross-section. Also disposed within the body 10 and on each side of the core 15, are flexible strips 16—16 which permit the core 15 to easily move therebetween and resist any tendency to bend the instrument other than in one plane.

Additionally, the strips 16 insure a smooth curve and prevent a sharp irregular bend which might otherwise occur.

The material of body 10 is preferably prepared in lengths such as 3 and is then dipped in a solution containing a metallic powder, preferably aluminum. Various solutions, well known in the art are available but I preferably employ a clear vehicle having a nitro-cellulose base combined with a plasticizer and solvent suitable for aluminum powder. The material is then suspended

and allowed to dry for a period such as 24 hours and it will be found that a smooth uniform coating results which is yieldable with the rubber and has no tendency to crack or peel despite long and severe usage. The material is then cut into a desired length and core **15** and strips **16** are inserted therein with the material ends of the body **10** extending somewhat beyond the ends of the core and the strips.

Although I preferably employ aluminum powder, I contemplate that various other finely divided metals or hard material might be employed which would adhere to and yield with the material.

These materials may be applied in either powder or flake form, mica being an example of a flake form material having suitable protection properties and providing a smooth surface. The flake material need not entirely cover or coat the material surface but should cover a major portion of the surface.

I have found that when rubber material is treated as above described, that a pencil or ruling pen may be drawn easily therealong making a smooth curved line and since the point of the pencil or pen is maintained out of contact with the rubber body there is no danger of smearing a drawn line. However, since the rubber surface illustrated has little affinity for ink and will not tend to erase or smear graphite, inadvertently drawing the instrument across a line or projecting the ruling pen point inwardly to contact the body will not cause the ink to run as normally occurs.

It will be apparent that if an extra low drawing edge is desired that the position of the instrument may be reversed and the drawing edge **12** will occupy the position **12'**, indicated in dotted lines in Fig. 5.

Referring now to Fig. 3, I have shown a modification of my invention wherein the body **10** is provided with a longitudinally extending groove **20** within which is inserted a closely coiled spring **21**. The groove **20** is formed to provide overhanging edge portions **22** engaging spring **21** and maintaining it in assembled relation and I contemplate that the spring ends may be anchored to the body in any suitable manner as by forming a straight portion at each end projected through the body walls and bonded therein. Additionally, I may secure the spring **21** to the body at spaced points intermediate the ends by clip members bonded to the body walls. The spring is easily bendable with the body and provides a ruling edge over which a pen or pencil may be easily drawn.

Referring now to Fig. 4, I have shown a further modification of my invention generally similar to that illustrated in Fig. 3 but wherein a dove-tail groove **25** is provided in the body and a flexible ruling edge element **26** is inserted therein. The element **26** is preferably formed of Celluloid but any suitable similar material may be used.

Although I have only illustrated one insert in the modifications of Figs. 3 and 4, I contemplate that both ruling edge portions may be provided by inserts, if desired.

Although I have shown and described a preferred embodiment of my invention, I contemplate that numerous and extensive departures may be made therefrom without departing from the spirit of my invention or the scope of the appended claims.

Having thus described my invention, what I claim is:

1. An adjustably curved drawing instrument comprising a rubber body having a longitudinally extending hole therethrough, the outer surface of the body having a coating containing a metallic powder, a lead or the like rod within the body hole, a pair of metal strips one on each side, of the rod, limiting bending of the rod and body to a given plane, and a ruling edge portion extending longitudinally of the body spaced from the base of the body.

2. An adjustably curved drawing instrument comprising a rubber body, having a longitudinally extending hole therethrough, a lead or the like rod inserted in the hole, a metal strip on each side of the rod limiting bending of the body to a given plane, and the base of the body being corrugated to provide a plurality of longitudinally extending supporting ribs.

3. An adjustably curved drawing instrument comprising a rubber body having a longitudinally extending aperture therethrough, a lead or the like rod within the aperture, a pair of resilient metal strips one on each side of the rod limiting bending of the instrument to a given plane, the outer surface of the body having a coating containing a metallic powder whereby a drawing instrument may be easily drawn therealong, and each side of the body being provided with a longitudinally extending ruling edge spaced at different distances from the base of the instrument.

4. An adjustably curved drawing instrument comprising a rubber body having a longitudinally extending aperture therethrough, a lead or the like rod inserted in the aperture, a pair of metallic strips one on each side of the rod limiting bending of the body to a given plane, and the top and bottom surfaces of the body being provided with longitudinally extending ribs forming gripping surfaces.

5. An adjustably curved drawing instrument comprising a rubber body generally square form in cross-section, having a longitudinally extending aperture therethrough, a lead or the like rod within the aperture generally square-form in cross section, a pair of metallic strips one on each side of the rod limiting bending of the instrument to a given plane, a longitudinally extending flexible element within a lateral wall of the body and projecting therefrom to provide a ruling edge, the opposite lateral wall being formed to provide a longitudinally extending rib forming a second ruling edge, and each ruling edge being spaced a different distance from the base of the body.

6. An adjustable curve drawing instrument comprising an elongated rubber body, a soft metallic core within said body, a comparatively hard metal strip on each side of said core for confining the bending of said body to a given plane, a coating containing a metallic powder on the outer surface of said body and a bendable ruling edge extending longitudinally of said body.

WADE MOSES.