E. LAWRENZ.

SCRIBING INSTRUMENT.

APPLICATION FILED NOV. 19, 1915.

1,284,372. Patented Nov. 12, 1918.

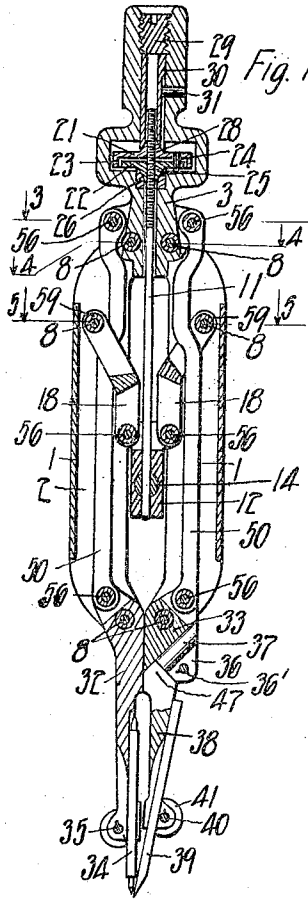

Fig. 1.

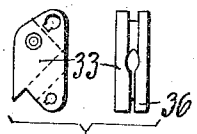

Fig. 10.

Fig. 8.

Fig. 2.

Fig. 9.

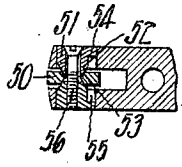

Fig. 3.

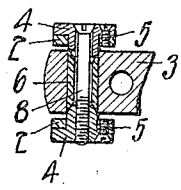

Fig. 4.

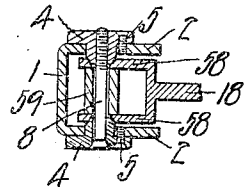

Fig. 5.

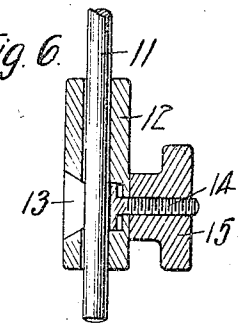

Fig. 6.

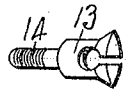

Fig. 7.

Witness

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UNITED STATES PATENT OFFICE.

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SCRIBING INSTRUMENT.

1,284,372. Specification of Letters Patent. Patented Nov. 12, 1918.

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To all whom it may concern:

Be it known that I, EMIL LAWRENZ, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Scribing Instrument, of which the following is a specification.

The present invention has reference to a scribing instrument such as is used by draftsmen, pattern makers and machinists, and among its important features are the following: Means whereby the lower sections of the legs of the instrument may be maintained in parallel relation to each other at all times; means whereby they may be easily adjusted toward or from each other; means whereby they may be readily clamped in adjusted relation; slow motion means for adjusting the clamping means to afford an accurate or micrometer adjustment of the legs themselves; means for varying the amount of resistance which is offered to movement by the slow motion means; means for accurately controlling the amount of frictional resistance offered to relative movement of parts at the several points. The invention also consists in the details of construction shown, described and claimed.

Figure 1 is a central longitudinal section showing one embodiment of my invention. Fig. 2 is a side view corresponding thereto, the legs being opened. Figs. 3, 4 and 5 are sections on the lines 3—3, 4—4 and 5—5 of Fig. 1. Fig. 6 is a section on the line 6—6 of Fig. 2. Fig. 7 is a perspective view of one element of the clamping means. Fig. 8 is a section on the line 8—8 of Fig. 2. Fig. 9 is a perspective view of one of the equalizing links. Fig. 10 is a detail of the upper section of the member to which the scriber is attached.

The upper sections of the legs are substantially channel-shape in cross-section and have their webs 1 cut away at both top and bottom, the flanges 2 being continued and preferably bent inwardly to form bearing ends that are joined to a handle or thumb piece 3 by pivots best shown in Fig. 4. As indicated therein, hollow tapered nuts 4 having conical inner ends are inserted through alined holes in the flanges 2 and are held from rotation therein by screws 5. A hollow sleeve 6 having flaring outer ends is inserted through a corresponding hole in the thumb piece and receives the tapered ends of the nuts as well as a screw 8 (which passes through one of the nuts and is threaded into the other) whereby the parts are drawn together until the pressure of the nuts on the sleeve causes the latter to expand and bear upon the handle piece with the required amount of friction.

The handle is centrally bored out or otherwise perforated longitudinally and is slotted transversely at 10, and seated in the longitudinal perforation is a guide rod 11 the lower end of which passes through a movement equalizing block 12 provided with a transverse conical passage that receives the split conical guide-rod embracing and gripping head 13 of a clamping bolt 14. A nut 15 constitutes means for drawing the bolt to the right (Fig. 6) which squeezes the split faces of the head 13 together and clamps the equalizing block 12 against movement in respect to the guide. From the block links 18 extend to corresponding points on the leg sections 1—2 and are joined thereto by pivots that will be hereinafter described.

It will thus be seen that the angular movements of the sections 1—2 about their pivots are equal, and that they may be swung freely in respect to the handle upon loosening the nut 15.

The end of the guide rod is threaded at 20 and passes through an adjusting nut preferably formed of the opposed sections 21 and 22, the former of which has an annular flange 23 whereby the latter is inclosed. One (or more) keys 24 fixed in one of the sections and received in a perforation in the other transmits rotative movement but allows relative movement of the nut sections longitudinally of the guide rod. The section 22 has a conical centering projection 25 that is received in a corresponding shaped bearing 26 rigid with the handle, and the section 21 has a similar projection 28 upon which pressure is exerted by a screw 29 (preferably slotted to receive a screw driver) through the medium of a hollow sleeve 30 held from rotation in the handle by a key 31. When pressure is exerted upon the sleeve the nut-sections are forced together, thus increasing the friction on the threads and offering any desired

resistance to the rotation of the nut as a whole, and consequently to the displacement of the legs from a position in which they may have been set (the equalizing block being clamped to the guide-rod): when, however, the nut is rotated as a whole the guide-rod is drawn in or thrust out to swing the legs about the handle in an obvious manner. The nut 21—22 also renders it possible to eliminate back lash and lost motion.

The lower or outer ends of the sections 1—2 have connected thereto by pivots (the details of which are preferably the same as those of the pivots whereby the upper ends of the sections are joined to the handle) a center carrying section 32 and a scriber carrying section 33, to the former of which a point or center 34 is secured by a clamping screw 35 in a well known manner. The section 33 has a split-lower end forming ears 36 connected by a screw 36′ and clamping nut 36″ and is shaped to form a seat for the inclined shank 37 (preferably cylindrical) of a point carrying member 38 to which a scribing point 39 is secured in any desired way—for example, by the clamping screw and nut 40—41. The joint between the sections is stiffened by tapering the upper end of the point carrying section in the manner indicated at 47—it will be seen that the shank 37 is parallel to one surface of the tapering end.

For the purpose of maintaining the center and point carrying sections constantly in parallel relation they are joined to the handle by controlling links 50, the pivots whereby the links are connected to the sections 3—32—33 having the same relation throughout to the pivots, whereby the leg-sections are connected to the same sections. A typical pivot for the link is shown in Fig. 3 and consists in the perforated friction members 51 having conical inner ends 52 arranged to bear in corresponding seats 53 formed in the link. The members 51 are held from rotation in the section 3, 30 or 31, as the case may be, by key projections 54 received in slots 55, and are drawn together by screws 56. The same joint is used between the equalizing links and the block 12. The joint between the equalizing links and the leg sections 1—2 is shown in Fig. 5 and differs from that indicated in Fig. 4 merely in that the bifurcated ends 58 of the equalizing links, together with a sleeve or spacer 59 are substituted for the sleeve 6.

It will be seen that each of the pivots affords a broad bearing between the parts which it connects, and that the degree of frictional resistance to relative movement may be accurately determined. This, together with the ready capacity for accurate adjustment by means of the nut 21—22, renders the instrument capable of a wide variety of use. While a pencil point is shown, it is of course understood that a pen or other scriber may be substituted therefor.

The details of the construction may obviously be varied without departing from the spirit of my invention; and I do not, therefore, wish to be limited otherwise than as indicated by the subjoined claims.

I claim:

1. A scribing instrument comprising a handle, leg sections pivoted thereto, a guide rod carried by the handle, an equalizing block slidable on the guide-rod, means for securing said block to the rod at will, a pair of links pivotally connected to the block and to the corresponding leg sections, and a slow motion device including a screw having an axis that substantially bisects the angle between the leg sections for causing movement of the block along the axis of the guide rod when the block and the guide-rod are secured together.

2. A scribing instrument comprising a handle, leg sections pivoted thereto, a guide rod carried by the handle, an equalizing block slidable on the guide-rod, means for securing said block to the rod at will, a pair of links pivotally connected to the block and to the corresponding leg sections, a slow motion device for causing movement of the block along the axis of the guide rod when the block and the guide rod are secured together, a center carrying section pivoted to one of the leg-sections, a scriber carrying section pivoted to the other leg section, and a pair of links pivoted to the handle and to the corresponding scriber carrying and center carrying section, whereby the two sections last named are maintained in parallel relation to each other.

3. A scribing instrument comprising a handle, leg sections pivoted thereto, said handle being chambered longitudinally and slotted transversely, a guide rod having a threaded end received in the chamber, a nut located in the transverse slot, said end passing through the nut, said guide rod having an end projecting from the handle on a line centrally between the leg sections, an equalizing block on the projecting end of the guide rod, and symmetrically arranged links connecting the equalizing block to the leg sections.

4. A scribing instrument comprising a handle, leg sections pivoted thereto, said handle being chambered longitudinally and slotted transversely, a guide rod having a threaded end received in the chamber, a nut located in the transverse slot, said end passing through the nut, said guide rod having an end projecting from the handle on a line centrally between the leg sections, an equalizing block slidable on the projecting end of the guide rod, means for clamping the block to the guide rod at will, and sym-

metrically arranged links connecting the equalizing block to the leg sections.

5. A scribing instrument comprising a handle, leg sections pivoted thereto, said handle being chambered longitudinally and slotted transversely, a guide rod having a threaded end received in the chamber, a sectional threaded nut through which the end of the guide rod passes, said nut being located in the transverse slot in the handle, means for preventing relative rotation of the nut sections, one of said nut sections being movable in respect to the other longitudinally of the rod to compensate for wear, and means for causing said relative longitudinal movement of the nut section whereby the friction of the nut on the rod is determined, said guide rod having an end projecting from the handle on a line centrally between the leg sections, an equalizing block on the projecting end of the guide rod, and symmetrically arranged links connecting the equalizing block to the leg sections.

6. A scribing instrument comprising a handle, leg sections pivoted thereto, said handle being chambered longitudinally, a rod having an end located in said chamber, movable slow motion means for moving the rod longitudinally of said chamber and for preventing such movement, means independent of the rod offering a predetermined resistance to movement of the slow motion means whereby accidental displacement is largely avoided, an equalizing block on the rod, and symmetrically arranged links connecting the equalizing block to the leg sections.

7. A scribing instrument comprising a handle, leg sections pivoted in symmetrical relation thereto, said handle being chambered longitudinally, a rod having a threaded end located in said chamber, a threaded nut on the rod, means whereby the nut is prevented from moving longitudinally in respect to the axis of the rod and whereby it is caused to offer a desired degree of frictional resistance to rotation about the rod, an equalizing block on the rod, and symmetrically arranged links connecting the equalizing block to the leg sections.

8. A scribing instrument comprising a handle, leg sections pivoted in symmetrical relation thereto, said handle being chambered longitudinally, a rod having a threaded end located in said chamber, a threaded nut on the rod, said nut having central conical projections on opposite sides thereof, said handle having a conical seat for receiving one of the projections, a sleeve movable longitudinally in the handle, said sleeve having a conical seat in which the other conical projection is received, said seats and projections together alining the rod in respect to the handle, and means connected to the rod whereby, when the nut is rotated, the legs are caused to open or close at equal rates.

9. A scribing instrument comprising a handle, leg sections pivoted in symmetrical relation thereto, said handle being chambered longitudinally, a rod having a threaded end located in said chamber, a threaded nut on the rod, said nut having central conical projections on opposite sides thereof, said handle having a conical seat for receiving one of the projections, a sleeve movable longitudinally of but non-rotatable in respect to the handle, threaded means for moving the sleeve longitudinally, said sleeve having a conical seat in which the other conical projection is received, said seats and projections together alining the rod in respect to the handle, and means connected to the rod whereby, when the nut is rotated, the legs are caused to open or close at equal rates.

10. A scribing instrument comprising a handle, leg sections pivoted in symmetrical relation thereto, said handle being chambered longitudinally, a rod having a threaded end located in said chamber, a threaded nut on the rod, means whereby the nut is prevented from moving longitudinally in respect to the axis of the rod and whereby it is caused to offer a desired degree of frictional resistance to rotation about the rod, an equalizing block slidable on the rod, means for clamping the block to the rod at will, and symmetrically arranged links pivotally connecting the equalizing block to the leg sections.

11. A scribing instrument comprising a handle, leg sections pivoted in symmetrical relation thereto, swing about points fixed in relation to the handle, said leg sections being U-shaped in cross-section, a center carrying section pivoted to the end of one of the leg sections remote from the handle, a scriber carrying section pivoted to the corresponding end of the other leg section, and a pair of controlling links pivotally connected to the handle and also pivotally connected, respectively, to the center carrying section and to the scriber carrying section whereby the last mentioned sections are maintained in parallel relation as the legs are opened, said controlling links being received in the channels of U-shaped leg sections when the latter are closed.

12. A scribing instrument comprising a handle, leg sections symmetrically pivoted thereto, a guide rod carried by the handle, an equalizing block slidable on the guide rod, a pair of pivoted links symmetrically joining the block to the leg sections, means for securing the block to the guide rod at will, said means comprising a bolt having a split tapered head through which the guide rod passes, the block having a seat for the tapered head, and means for mov-

ing the bolt to force the head to the seat and cause the head to clamp the rod, and a slow motion device for causing movement of the block along the axis of the guide rod when the block and the guide rod are secured together.

13. A scribing instrument comprising a handle having spaced ears, a leg section pivoted to the handle, said leg section being U-shaped in cross-section, a second section pivoted to the end of the leg section remote from the handle, said second section also having a pair of spaced ears, the flanges of the U-shaped leg section embracing the handle and the second section, and a controlling link arranged between the ears and pivotally connected to the leg section and the second section, said link lying between the flanges of the leg section when the latter is in one position.

14. A scribing instrument comprising a member having spaced ears, a controlling link between the ears, means for pivotally connecting the link to the ears, said means comprising a pair of perforated tapered members, one passing through each ear, and each being non-rotatable in respect to the corresponding ear, one of the tapered members being threaded, the link having conical alined seats, one for each tapered member, and a screw passing through one of the tapered members and threaded in the other for establishing a desired amount of friction between the tapered members and the first mentioned member.

15. A scribing instrument comprising a leg section U-shaped in cross-section, a member embraced by the flanges of the leg section, means for pivotally connecting the leg section to the member, said means comprising a pair of perforated tapered members, one passing through each flange of the leg section and being non-rotatable in respect to the corresponding flange, one of the tapered members being threaded, a perforated sleeve passing through the first named member, said sleeve having flaring ends forming seats for the tapered members, and a screw passing through the sleeve and through one of the tapered members, said screw being threaded in the other tapered member, whereby a desired amount of friction may be established for checking relative movement between the leg section and the first mentioned member.

16. In a scribing instrument, a scriber carrying section having a tapered upper end, and a shank projecting therefrom, said shank being parallel to one face of the tapering end, a second section having a seat corresponding to the tapered upper end and also having a pair of spaced ears between which the shank is received, and means for drawing the ears together to clamp the parts in fixed relation to one another.

17. A scribing instrument comprising two members swingable in reference to one another about a common axis, one member embracing the other, a pair of opposed perforated nuts fixed in one of the members, said nuts having conical ends, the other member having a perforation in alinement with said nuts, and a screw passing through the perforations in the nuts and in the member whereby said conical nuts may be drawn toward one another and into frictional engagement with opposite faces of the member other than that by which they are carried to vary the resistance to relative swinging movement of the members and to maintain proper relative alinement of the parts in respect to the common axis.

18. A scribing instrument comprising two members swingable in reference to one another about a common axis, one member embracing the other, a pair of opposed perforated nuts fixed in one of the members, said nuts having conical ends, the other member having a perforation in alinement with said nuts and having alined conical seats for the conical ends of said nuts, and a screw passing through the perforations in the nuts and in the member whereby said conical nuts may be drawn toward one another to engage the corresponding seats to vary the resistance to relative swinging movement of the members and to maintain proper relative alinement of the parts in respect to the common axis.

19. A scribing instrument comprising two members swingable in reference to one another about a common axis, one member embracing the other, a pair of opposed perforated nuts fixed in one of the members, said nuts having conical ends, the other member having a perforation in alinement with said nuts, opposed conical seats for the conical ends of said nuts, said seats being non-rotatable in respect to the last mentioned member, and a screw passing through the perforations in the nuts and in the member whereby said conical nuts may be drawn toward one another to vary the resistance to relative swinging movement of the members and to maintain proper relative alinement of the parts in respect to the common axis.

In testimony whereof I have signed this specification.

EMIL LAWRENZ.