(No Model.)

E. UPTON.

SURFACE GAGE.

No. 441,812. Patented Dec. 2, 1890.

Fig. 1.

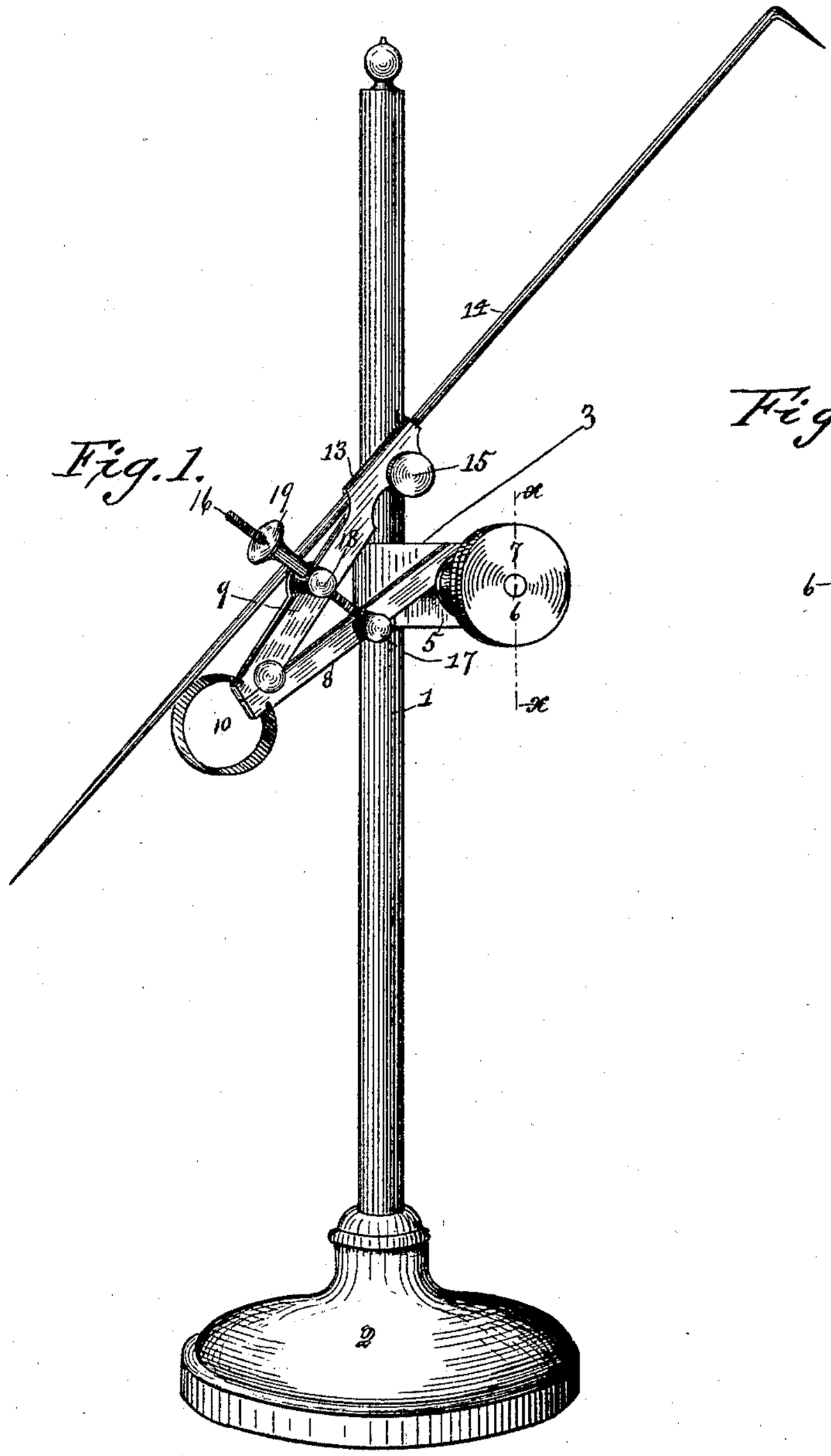
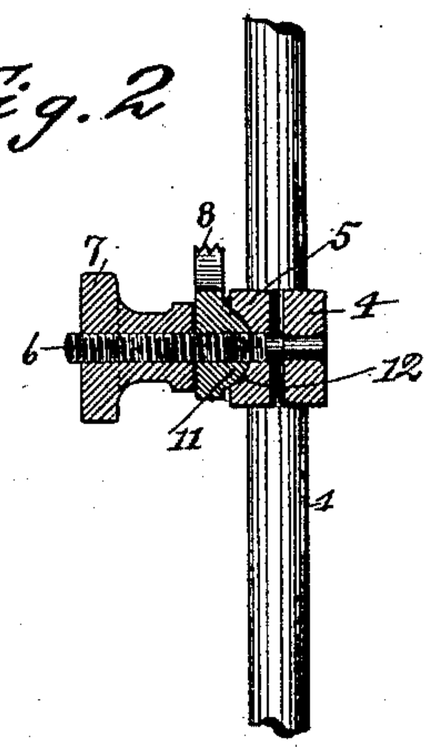


Fig. 2.



Witnesses.
Wm. F. Blodgett,
L. E. Sturm.

Inventor.
Emory Upton,
By his Attorneys.
Williamson & Blodgett.

UNITED STATES PATENT OFFICE.

EMORY UPTON, OF BATTLE CREEK, MICHIGAN.

SURFACE-GAGE.

SPECIFICATION forming part of Letters Patent No. 441,812, dated December 2, 1890.

Application filed April 15, 1890. Serial No. 347,957. (No model.)

To all whom it may concern:

Be it known that I, EMORY UPTON, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Surface-Gages; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to surface-gages for machinists' use; and the object thereof is to provide such a device with means by which the needle, index, or measuring-point can be moved and accurately set for the measurement of surfaces, and also with means for effecting a fine adjustment of the needle when required. With this end in view I provide an upright standard with the usual base, and on this standard place a split clamping-band. From one side of the split clamp projects a screw which passes through a perforation in the other side or jaw thereof. A circular countersink or groove is formed in the outer side of the perforated jaw of the clamp for a purpose hereinafter mentioned. The needle or measuring-point is carried in a split clamp formed on the end of one arm of a device resembling in appearance a pair of spring-calipers, and is capable of longitudinal adjustment therein, the split clamp being equipped with the usual thumb-screw for forcing the parts thereof together to grasp the needle. The lower arm of this device is provided with a convex or rounded projection which accurately fits the seat or countersink in the split clamp mounted on the standard. A screw of the usual kind projects from a stud on the lower arm of the caliper-like device, passes through a rocking bearing in the upper arm thereof, and above said bearing is equipped with a thumb-screw, by means of which the upper arm can be adjusted to set the needle to the finer adjustment desired. In virtue of the rounded projection on the lower arm of the calipers the device can be swung in a vertical arc and then properly clamped in place to secure the needle in the position desired. This projection and seat are also important as a means for keeping the parts in their proper relation to each other and for taking strain off from the screw-bolt passing therethrough, so that should the bolt-hole become enlarged no "lost motion" or slipping of the parts out of position can take place, and the arm will always be capable of movement in the true arc of a circle. By the means described every necessary adjustment can be given the needle, and when adjusted it can be securely clamped in position.

In the accompanying drawings, in which like numerals are placed on like parts throughout the several figures, Figure 1 is a perspective view of my invention, and Fig. 2 is a section on the line $x\,x$ of Fig. 1.

1 is a vertical standard mounted on the usual base 2.

3 is a split-clamp band having a circular portion fitting around the standard and provided with two arms or jaws 4 and 5.

6 is a screw projecting from jaw 4 and passing through a perforation in jaw 5, and 7 is a thumb-nut mounted on the screw and serving the purposes hereinafter described.

8 is the lower arm and 9 the upper arm of a caliper-like device, and 10 is a bow-spring connected to the rear ends of said arms. Arm 8 is provided with a rounded convex projection 11, which fits in a concave seat 12, formed in arm or jaw 5.

13 is a spring or split clamp formed in the end of arm 9 for the reception of the needle or index 14, and 15 is a set-screw for clamping the parts of the split clamp together, and thereby rigidly securing the needle in position.

16 is a screw held at its lower end in a lug 17, projecting laterally from arm 8.

18 is a rocking bearing on arm 9, through which the screw passes, and 19 is a thumb-nut for moving arm 9 toward arm 8 to effect the fine adjustment of the needle.

The operation of the device is manifest from the description set forth, but will be briefly recapitulated as follows: When it is desired to set the needle at a given height above the base, thumb-nut 7 is turned backward to withdraw the pressure from the clamping-jaws 4 and 5, and the split clamp is moved either upward or downward on the standard 1 to the desired position. The caliper-like device is

then turned to bring the needle to the desired position, the projection 11 rocking in the seat 12. Thumb-nut 7 is now turned upon screw 6 and firmly secures the split clamp to the standard and the caliper-like device to the split clamp. Should a still finer adjustment of the needle be desired, this can be effected by means of the screw 16 and thumb-nut 19.

While the spring-calipers are preferred as a means for effecting the finer adjustment of the needle, yet it is distinctly to be understood that any other suitable form of device capable of effecting this result can be adopted as a mechanical substitute, provided it is equipped with a rounded projection fitting the seat in the clamping-band. It is obvious that the rounded projection could be formed on the clamping-band and the seat in the needle-carrier, or, in other words, that a reverse arrangement to that described and shown could be employed without departing from my invention.

Without limiting myself to the exact details of construction shown and described, what I claim, and desire to secure by Letters Patent, is—

1. A surface-gage consisting of a base, a vertical standard rising therefrom, a clamping-band adjustable in said standard, provided with two arms or jaws, a screw projecting from one jaw through a perforation in the other, a circular concave seat surrounding said perforation, a caliper-like device provided with a projection fitting said seat, a needle carried by said device, and a screw for clamping the parts together and to the standard, substantially as and for the purpose specified.

2. In a surface-gage, the combination, with a standard, of a band adjustable thereon, a pair of hinged calipers adjustable on said band, and a needle carried in one arm of the calipers, substantially as and for the purpose specified.

3. In a surface-gage, the combination, with a standard, of a pair of spring-calipers, one arm of which carries the needle, while the other is fitted to the standard to be adjustable in a vertical arc thereon, substantially as and for the purpose specified.

4. A surface-gage comprising the following elements in combination, viz: a base, a standard, a clamp adjustable on the standard and provided with a seat, a pair of spring-calipers, one arm of which carries a projection fitting said seat, a clamp in which the needle can be adjusted and secured on the other arm of the calipers, and a screw and thumb-nut for effecting the fine adjustment of the needle, substantially as and and for the purpose specified.

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

EMORY UPTON.

Witnesses:

ALBERT C. KINGMAN,

A. A. ELLSWORTH.