(No Model.)

F. A. HUMPHREY.

COMBINED PANEL GAGE, MEASURING ROD, AND TRAMMEL.

No. 348,674. Patented Sept. 7, 1886.

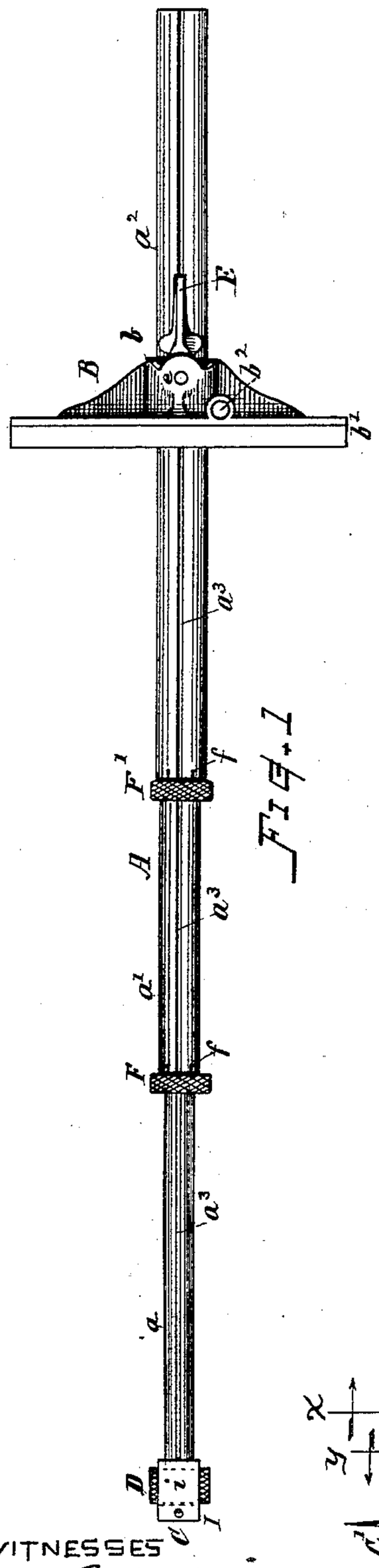

FIG. 1.

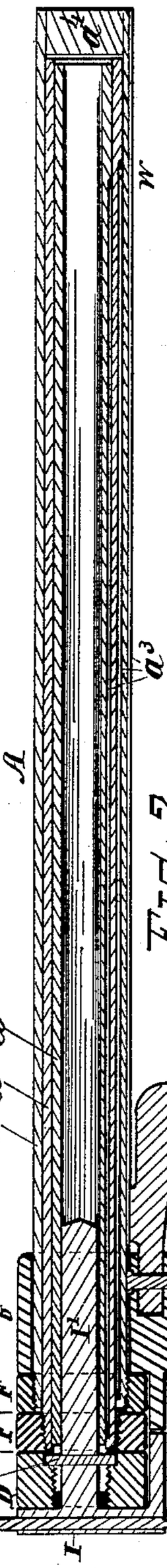

FIG. 2.

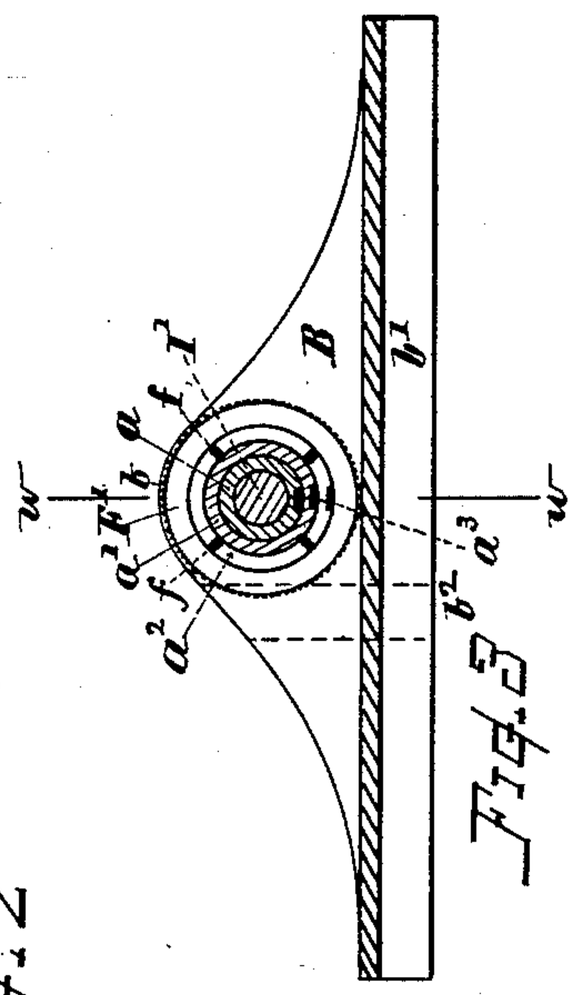

FIG. 3.

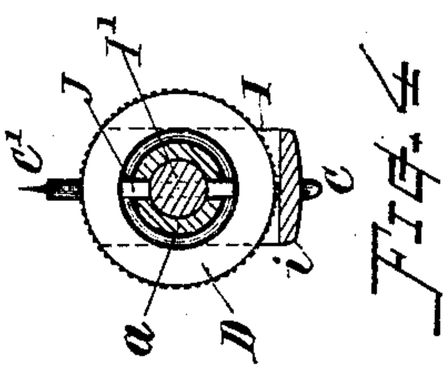

FIG. 4.

WITNESSES

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COMBINED PANEL-GAGE, MEASURING-ROD, AND TRAMMEL.

SPECIFICATION forming part of Letters Patent No. 348,674, dated September 7, 1886.

Application filed April 29, 1886. Serial No. 200,532. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. HUMPHREY, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Combined Panel-Gage, Measuring-Rod, and Trammel, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide a convenient, practical, and serviceable panel-gage having an extensible tubular bar formed of telescoping sections and means for retaining said sections at positions of adjustment; also, to provide a micrometer-adjusting device for the marking tooth or point, as hereinafter explained; also, to provide a tool or convertible gage which can be used as a measuring-rod, when desired, also as a trammel for laying out circles, and one which can be manufactured with facility and economy. These objects I attain by a gage tool or instrument constructed as shown in the drawings and explained in the following description, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a bottom view, on reduced scale, of my improved panel-gage partially extended. Fig. 2 is a vertical longitudinal section at center line, *w w*, Fig. 3. Fig. 3 is a transverse section at the position of line *x x*, looking toward the adjustable head-block; and Fig. 4 is a transverse section at line *y y*, looking toward the tooth-supporting end of the instrument.

In referring to parts, A denotes the bars; B, the sliding head or guard-block; C, the marking-tooth, and D the micrometer-adjusting nut.

The bar A consists of a series of tubes or tubular sections, $a\ a'\ a^2$, of such relative diameters that one section telescopes within another and is therein supported with a smooth sliding fit. Each section may be ten or twelve inches (more or less) in length, and the rear end of the outer tube may be stopped with a plug or disk, a^4, to prevent the entrance of dirt. The front ends of the overlying tubes $a\ a'$ are longitudinally slitted for a short distance, as at *f*, and are externally screw-threaded, either straight or slightly tapering, to receive the internally tapered and threaded rings or pinch-nuts F F', which serve to compress the slitted ends of the outer tubes or sections about the exterior surfaces of the inner ones for retaining the sections at positions of longitudinal adjustment. The exterior surface of the pinch-nuts is preferably milled, checked, or corrugated to prevent the nut slipping in the fingers when clamping the parts.

The tubular sections are severally provided with a longitudinal groove, a^3, and are confined against rotating with relation to each other by means of a lug or projection on the outer section fitting into the groove of the inner section, and sliding therein as the parts are extended; or the lug may be formed by bending down or setting in a portion of the metal of the tube at its front end. The groove a^3 of the inner tube may be stopped or not formed completely to the rear end of the section, as at *w*, Fig. 2, so that the lug, when it reaches the limit of the groove, will act as a guard to prevent the sections from separating or withdrawing one from another when extending the bar to its full capacity.

The tubular sections may, if desired, be fitted together with bearing-rings or short bearing-surfaces at or near their ends only, in lieu of the entire inclosed length of the tubes being utilized for bearing-surface, one upon the other, as herein shown.

The head B is formed with a hub, *b*, fitted to slide on the larger section of the bar, and having laterally-extended wings and a transverse guard-lip, *b'*, as indicated. A clamping-lever, E, is provided for retaining said head at position of adjustment, which lever may be arranged to operate substantially as described in my specification for marking-gages heretofore filed. (See Serial No. 199,275.)

A hole, b^2, is formed through the head to receive and support a pencil, for purposes hereinafter explained.

The horizontal portion of the guard is preferably attached forward of the hub, so that it will extend beneath the pinch-nuts when the gage is closed together, as in Fig. 2.

The head B is prevented from rotation on the bar A by a pin or lug, which may be the pivot-pin of the cramping-lever, the end whereof runs in the groove a^3 of the outer section, on which the head is mounted.

The marking-tooth C is supported in an adjustable carrier, I, which in the present instance is provided with a lip, *i*, in line with

the horizontal part of the guard on the head. (See Fig. 2.) Said marking-tooth carrier is furnished with a spindle or shank, I′, that extends into the inner section or tube, *a*, of the bar A, and serves to support and guide the carrier, which is arranged to have a limited movement under control of the nut D, which nut is fitted with a screw-thread to the end of the tube *a*, and is confined to the carrier I by a pin or lugs, J, fixed in the spindle I′, and projecting outward through longitudinal slots formed in the end of the tube and engaging with the rear end of the nut D or a groove formed therein, so that when the nut is turned the action of the screw-thread running it on or off from the end of the tube *a* will effect a slight longitudinal movement of the carrier I and marking-tooth, C, in relation to the bar A and head B, for the purposes of micro-adjustment. The top end of the tooth *c* is extended above the head of the carrier and pointed at *c′*, (or, if preferred, a separate tooth or point may be employed at that position,) so that by inverting the instrument and using the said point for a center, and with a pencil inserted through the hole b^2 in the head the instrument can be used as a trammel for laying out circles and curved arcs upon the work. Again, in the use of the instrument the bar can be conveniently used as a measuring-rod for taking the dimension of spaces, as a doorway or interior of a box or other similar purposes. This is effected by loosening the nuts F F′ then extending the bar A until the ends reach the sides of the space and then clamping the parts by screwing on the nuts F F′, after which the instrument can be removed and the measurement transferred as desired.

The head B can be slipped off from the bar when it is used for measuring, if desired.

The operation of using the instrument for the purpose of a gage will be sufficiently understood by any person conversant with marking-gages, so that a detailed description thereof herein will be unnecessary. The head B is adjusted, as required, and the bar A is extended for all such distances as are not within the scope of the main section.

The advantages of my improvements are that an economical, convenient, and efficient instrument is provided, one in every way desirable and better adapted to meet the requirements of the workman, and to facilitate the accurate and practical laying-off of work of various kinds.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. A panel-gage having a bar which is composed of a series of metal tubes adapted for telescoping one within another, and provided with means for retaining them severally at positions of longitudinal adjustment, and means for preventing rotation of said tubes one within another, combined with an adjustable guard or head block and a marking-tooth, substantially as and for the purpose set forth.

2. A panel-gage having a telescoping sectional bar, an adjustable guard or head, and a marking-tooth supported in a micro-adjustable carrier, substantially as hereinbefore set forth.

3. The combination of the telescoping tubular sections screw-threaded and slitted at their ends, the internally-tapered thumb-nuts fitted to said screw-threaded ends, and the head or guard block B, adjustably mounted on the outer one of said sections, means for retaining said head at positions thereon, and a marking-tooth supported by the inner one of said sections, substantially as and for the purposes set forth.

4. The combination, substantially as described, of the extensible bar composed of telescoping sections, the clamping-nuts F F′ on the overlying ends of said sections, the marking-tooth carrier I, adjustably connected to the end of said bar, the marking-tooth fitted in said carrier, the carrier adjusting-nut D, confining said carrier and screw-threaded to the bar, the adjustable-head having the guard-lip *b*, mounted on the outer section of said bar, and the lever E, pivoted on said head and adapted for cramping against the bar, for the purposes set forth.

5. A panel-gage having a bar composed of telescoping sections provided with clamping devices F F′ at the ends thereof and carrying a point, C′, in combination with an adjustable guard-head having a hole, B^2, formed therethrough, adapted for supporting a pencil, substantially as and for the purpose set forth.

6. The combination of the tubular bar having a slotted screw-threaded end, the guard-head adjustable on said bar, and means, substantially as described, for securing the parts at positions of adjustment, the marking-tooth, and a marking-tooth carrier having a spindle or shank extended within said bar, and the rotatable nut fitting onto the screw-threaded end of the bar and confined to said carrier for effecting longitudinal adjustment thereof in relation to said bar, substantially as set forth.

7. In a gage having an extensible bar and an adjustable head, the marking-tooth C, and the marking-tooth carrier I, having the lip *i* and shank I′, the rotatable nut D, combined with the threaded and slotted end of said bar, substantially as and for the purpose set forth.

8. The bar A, formed of a series of telescoping sections, provided with clamping-nuts F F′, combined with an adjustable end piece, I, carrying a marking-tooth, and having a shank, I′, telescoping with the end of said bar, and a rotatable nut for effecting micro-adjustment thereof longitudinally in relation to said bar, and a removable head or guard, as set forth.

Witnest my hand this 24th day of April, A. D. 1886.

FRANK A. HUMPHREY.

Witnesses:

CHAS. H. BURLEIGH,

S. R. BARTON.