(No Model.)

C. M. MUMFORD.

EXTENSIBLE MEASURING STICK.

No. 401,292. Patented Apr. 9, 1889.

Fig. 1.

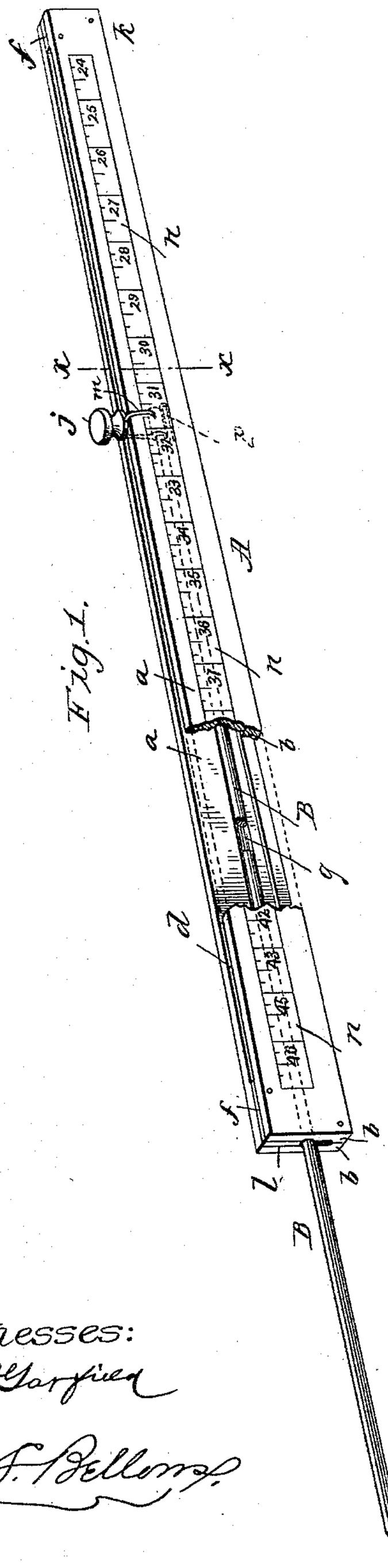

Fig. 2.

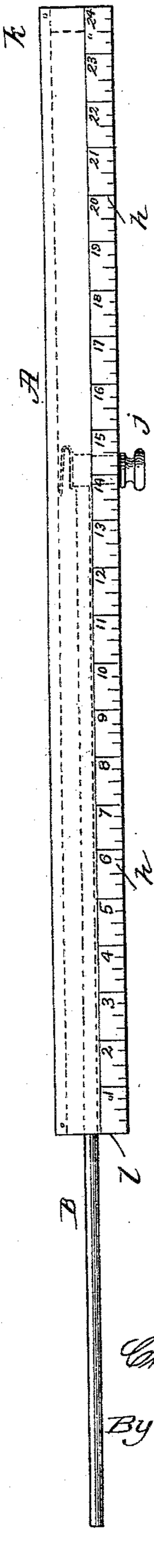

Fig. 3.

Fig. 4.

Witnesses:

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EXTENSIBLE MEASURING-STICK.

SPECIFICATION forming part of Letters Patent No. 401,292, dated April 9, 1889.

Application filed January 26, 1889. Serial No. 297,672. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. MUMFORD, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Extensible Measuring-Sticks, of which the following is a specification.

This invention relates to an extensible measuring-stick, the purpose of which, when in use, being to most accurately determine with a single implement having rigid parts the distance between various points, as in measuring the distance between window and door casings. Under the invention the distance measured by the extensible stick is registered on an index formed on the stick proper. The invention consists in the formation and combination of parts for operation, all substantially as will hereinafter more fully appear, and be set forth in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the measuring-stick with parts broken away for clearer illustration, with the extension-bar thereof projected by its end beyond the end of the measuring-stick and with the side of the measuring-stick proper foremost exposing the scale on which the extended length of the measuring-stick is to be indicated. Fig. 2 is a side view of the measuring-stick with the parts thereof in about the dispositions as in said preceding figure, but with the same turned over to present its opposite side foremost. Fig. 3 is a cross-section on an enlarged scale of the measuring-stick, taken on the line *x x*, Fig. 1; and Fig. 4 is a sectional elevation, in detail, of the particular parts shown at right angles thereto in said Fig. 3.

The measuring-stick proper, A, as shown, is composed of two side strips, *a a*, at the lower meeting faces, provided with flat-faced ribs *b b*, whereby said strips are separated from each other, leaving a deep channel, *d*, with parallel side walls and closed bottom. The ends of the channel are closed by blocks *f f* fitted therein, and longitudinal grooves *g g* are formed in the opposing side walls of said channel, which grooves extend from end to end of the stick A through the blocks.

B represents a longitudinal extension-bar fitted to slide in said grooves, and it is provided at or near one end with an extension-neck, *i*, projecting through the channel to the edge of the stick, where it is provided with a fixed head, *j*, whereby the rod may be, by thumb and finger, conveniently slid longitudinally. When the neck *i* is moved to an abutment against the block at the rear end, *k*, of the stick A, the forward end of the extension-bar B carrying such neck lies flush with the front end, *l*, of the said stick. The said stick A is to be provided with a scale, *h*, covering its length, indicating divisions and subdivisions thereof. The said head *j* is provided with an index pointer or finger, *m*, formed to lie over and upon and slide, when the bar B is moved, along the side of the stick A, preferably on the side opposite to that on which said scale *h* for the length of said stick is formed. A scale, *n*, is formed on said opposite side of the stick, the length of which is equal to the length of the slide of the bar B, and said scale has its rear end placed at the point occupied by the end of the index-pointer when the bar is slid back to its rearmost extent.

As the extension-bar B is slid forward, the pointer moves forward on its scale from its rear end as far as the forward end of the bar is projected beyond the forward end of the stick proper, A. It is preferred to place a mark or number on the end of the scale *n*, corresponding to the highest number of the scale *h*, which is on the opposite side to indicate the length of the stick A—as, for instance, the stick being twenty-four inches long, and so indicated at the end of its scale, 24 is placed at the rear end of the scale *n*, the said scale-numbers then progressing upwardly therefrom.

As there is a limiting abutment by the block *f* at the rear end of the stick, and also at the forward end, so that the extension-bar may not be slid so far forward as not to be afforded bearing for its support in longitudinal alignment by its rear end portion on the forward end portion of the stick A, of course the extension-bar B cannot have a distance of slide

as long as the length of the stick A, and in practice while the measuring-stick proper may be, say, twenty-four inches the distance of extension of the rod B is about two inches less, making the capacity of the measuring-stick about forty-six inches.

A friction-spring, *p*, is secured on the extension-bar to move therewith and bear upon the bottom of the channel *d*, whereby the position of the said bar will only be changed when positively moved, and thus, and especially if the implement is held vertically in measuring when the extension-bar is adjusted, no care need be exercised to maintain such adjustment until the indicating-scale has been inspected.

What I claim as my invention is—

1. A measuring-stick proper having on one side thereof a scale to indicate the length and subdivisions of the length thereof, and having therein a longitudinal channel, *d*, provided with the grooves *g g* in the opposing walls thereof, and the end abutments, *f f*, combined with an extension-bar movable in said grooves *g g*, provided with the neck *i*, projecting through said channel *d*, and having a head, *j*, substantially as and for the purpose described.

2. A measuring-stick proper having on one side thereof a scale to indicate the length and subdivisions of the length thereof, and having therein a longitudinal channel, *d*, provided with the grooves *g g* in the opposing walls thereof, and the end abutments, *f f*, combined with an extension-bar movable in said grooves *g g*, provided with the neck *i*, projecting through said channel *d*, and having a head, *j*, and a pointer, *m*, adapted to measure with a scale, *n*, which is also made on said measuring-stick, substantially as and for the purpose described.

3. A measuring-stick proper composed of a pair of side strips, *a a*, each provided at one edge with a rib, *b*, said strips being secured together and forming the channel *d*, and the blocks *f f* between the ends of said side strips, and the grooves *g g*, formed in the inner end walls of said strips, combined with the extension-bar B, movable in said grooves *g*, provided with the neck *i* and head *j*, and a friction-spring secured on said extension-bar, movable therewith and bearing by its free end upon the bottom of said channel, substantially as and for the purpose described.

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