

Patented July 10, 1900.

(Application filed Apr. 13, 1900.)

2 Sheets—Sheet 1.

[illegible]

A detailed technical drawing of a mechanical assembly, likely a part of a machine tool or a specialized transport system. The drawing shows a horizontal track or guide (1) with a series of rollers or guides (2, 2.1, 2.2, 2.3) mounted on it. A vertical component (7) is positioned on the left, with a handle (9) on top and a base (11) at the bottom. A vertical component (8) is positioned on the right, with a handle (16) on top and a base (20) at the bottom. A horizontal component (10) connects the two vertical components. A vertical component (3) is on the far left, and a horizontal component (4) is at the bottom. Other numbered parts include 1, 2, 2.1, 2.2, 2.3, 7, 8, 9, 10, 11, 14, 16, 20, 21, 22, 23, 24, and 25. The drawing is a perspective view showing the internal structure and components of the device.

Inventor
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No. 653,640.

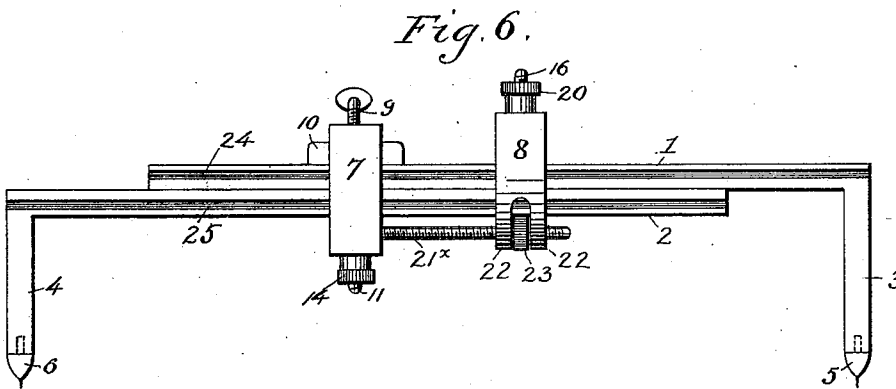
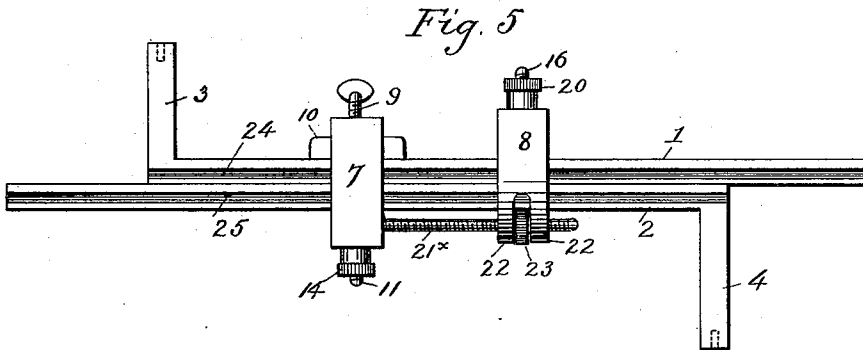
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G. H. BUTRICK.
COMBINATION MEASURING INSTRUMENT.

(Application filed Apr. 18, 1900.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE H. BUTRICK, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF
ONE-HALF TO JAMES E. CONNOR, OF SAME PLACE.

COMBINATION MEASURING INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 653,640, dated July 10, 1900.

Application filed April 13, 1900. Serial No. 12,725. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. BUTRICK, of Worcester, county of Worcester, and State of Massachusetts, have invented a new and useful Improvement in Combination Measuring Instruments, of which the following is a specification.

This invention has reference to a combination measuring and drafting instrument; and it consists of two members connected by improved means in such manner that they may be variously adjusted, reversed, and interchanged to produce different instruments for different measurements and uses.

The invention consists also in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved instrument with the parts adjusted to form gaging-calipers. Fig. 2 is a transverse section on the line *a a* of Fig. 1. Fig. 3 is a similar section on the line *b b* of Fig. 1. Fig. 4 is an elevation of the device with the parts adjusted to form a square. Fig. 5 is an elevation of the device with the parts adjusted to form a depth-gage. Fig. 6 is a similar view with the parts adjusted to form a beam-compass.

Referring to the drawings, my device comprises two bars 1 and 2, of general rectangular form in cross-section, having on their ends right-angular legs 3 and 4, each provided with removable pins 5 and 6. In their various adjustments these members are adapted to be held in operative relation face to face, with the legs extending either in the same or opposite directions, by means of two yokes 7 and 8, each having an opening through which the two bars extend and in which they fit snugly, as shown in Figs. 2 and 3. The yoke 7 has tapped through its upper end a binding-screw 9, with its end abutting against a clamping-block 10, resting, when the parts are in the position shown in Fig. 1, on the outer face of the bar 1, this arrangement affording means by which the two bars may be held together within the yoke in fixed relations. In its lower end the yoke is provided with a vertical hole, in which is seated a clamping-bolt 11, having on its end within the opening in the yoke a finger 12, which engages in a lon-

gitudinal groove 13 in the side of the bar 2. The outer exposed end of the bolt is threaded and receives a nut 14, by which it may be drawn outwardly and by the engagement of the finger in the groove clamp the bar 2 firmly to the yoke. A spring 15 encircles the bolt between the yoke and nut and prevents undue looseness of the parts when the nut is turned to release the bar. The other yoke 8 has formed in its upper end a vertical hole 16, in which is seated a clamping-bolt 17, provided on its inner end with a finger 18, engaging in a longitudinal groove 19 in the side of the upper bar 1. This bolt has a clamping-nut 20 and spring 21, similar to those described, for the purpose of clamping the upper bar firmly to the yoke.

From this description it will be seen that each of the yokes is provided with means for clamping one of the bars to it, and means are also provided for binding the two bars together in fixed relations, so that in order to adjust the bars longitudinally one with respect to the other it is but necessary to loosen the binding-screw 9, after which the yokes may be adjusted to or from each other and will carry with them the respective bars. While this manner of adjusting the parts will answer for certain kinds of measurements, a finer adjustment is demanded in other cases, and to accomplish this I connect two yokes by an adjusting mechanism consisting of a horizontally-threaded bolt 21^x, fixed to yoke 7 beneath the lower bar and extending through ears 22, depending from yoke 8, a nut 23 being applied to the bolt between the ears. By this means the yokes carrying their respective bars may be adjusted to a nicety, it being but necessary to first loosen the binding-screw 9, as before described. After the adjustment is made the screw is again tightened to hold the parts in fixed relations.

In order that the bars may be reversed side for side within the yokes, as shown in Fig. 4, or end for end, as in Fig. 5, and at the same time be subject to the action of the clamping-screws 11 and 17, I provide each bar opposite to the longitudinal grooves described with additional longitudinal grooves, a groove 24 in bar 1 and a groove 25 in bar 2, arranged directly opposite the other grooves, so that when

these bars are reversed the grooves will occupy the same position with relation to the fingers of the clamping-screws as did the other grooves.

5 In Fig. 1 the bars are adjusted with the angular legs extending in the same direction side by side to form gaging-calipers for either inside or outside measurements.

In Fig. 4 the upper bar has been reversed 10 side for side, with its leg extending in a direction opposite the leg on the other bar to form a square for squaring to shoulder.

In Fig. 5 the lower bar has been reversed end for end to form a depth-gage for measuring the depth of holes and cavities, while in 15 Fig. 6 the bars are adjusted end to end, with both legs extending in the same direction to form beam-compasses.

In the various positions the two bars are 20 adapted to be clamped, respectively, to the yokes and are at all times adjustably connected by the adjusting-bolt 21^x, so that under all conditions their longitudinal adjustments are effected by the same means and in 25 the same manner.

The sides of the bars may be provided with graduations 26 for the various measurements.

Having thus described my invention, what I claim is—

30 1. The combination with the two bars arranged face to face, of two yokes embracing the same, a device carried by each yoke and each engaging one of the bars, and means independent of said devices for binding the 35 bars together face to face in fixed relations.

2. In combination with the two bars disposed face to face, a yoke embracing said bars, a clamping device sustained by the yoke and adapted to bind the bars together in fixed

relations, a second clamping device also sus- 40 tained by the yoke and engaging one of the bars, a second yoke embracing said bars, and a clamping device sustained by this yoke and engaging the opposite bar.

3. The combination with the two bars ar- 45 ranged face to face, of two yokes embracing the same, a clamping device mounted on each yoke and adapted each to engage one of the bars, means independent of said clamping devices for binding the bars together face to 50 face in fixed relations, and an adjusting connection between the yokes.

4. In a measuring instrument the combination with the two bars each having longitudinal grooves in its opposite sides, of two 55 yokes embracing said bars, a sliding bolt mounted in one yoke and provided on its end with a finger adapted to engage in the grooves in one of the bars, and a sliding bolt mounted in the other yoke and adapted to engage 60 in the grooves in the other bar, whereby the said bars are reversible in the yokes side for side and end for end.

5. In combination with the two bars disposed face to face each provided in its sides 65 with longitudinal grooves, two yokes embracing said bars, a clamping device on one of the yokes adapted to bind the bars firmly in fixed relations, and clamping-bolts sustained 70 by the yokes and adapted each to engage in the grooves of one of the bars.

In testimony whereof I hereunto set my hand, this 4th day of April, 1900, in the presence of two attesting witnesses.

GEORGE H. BUTRICK.

Witnesses:

JOHN H. MEAGHER,
JOHN E. SULLIVAN.