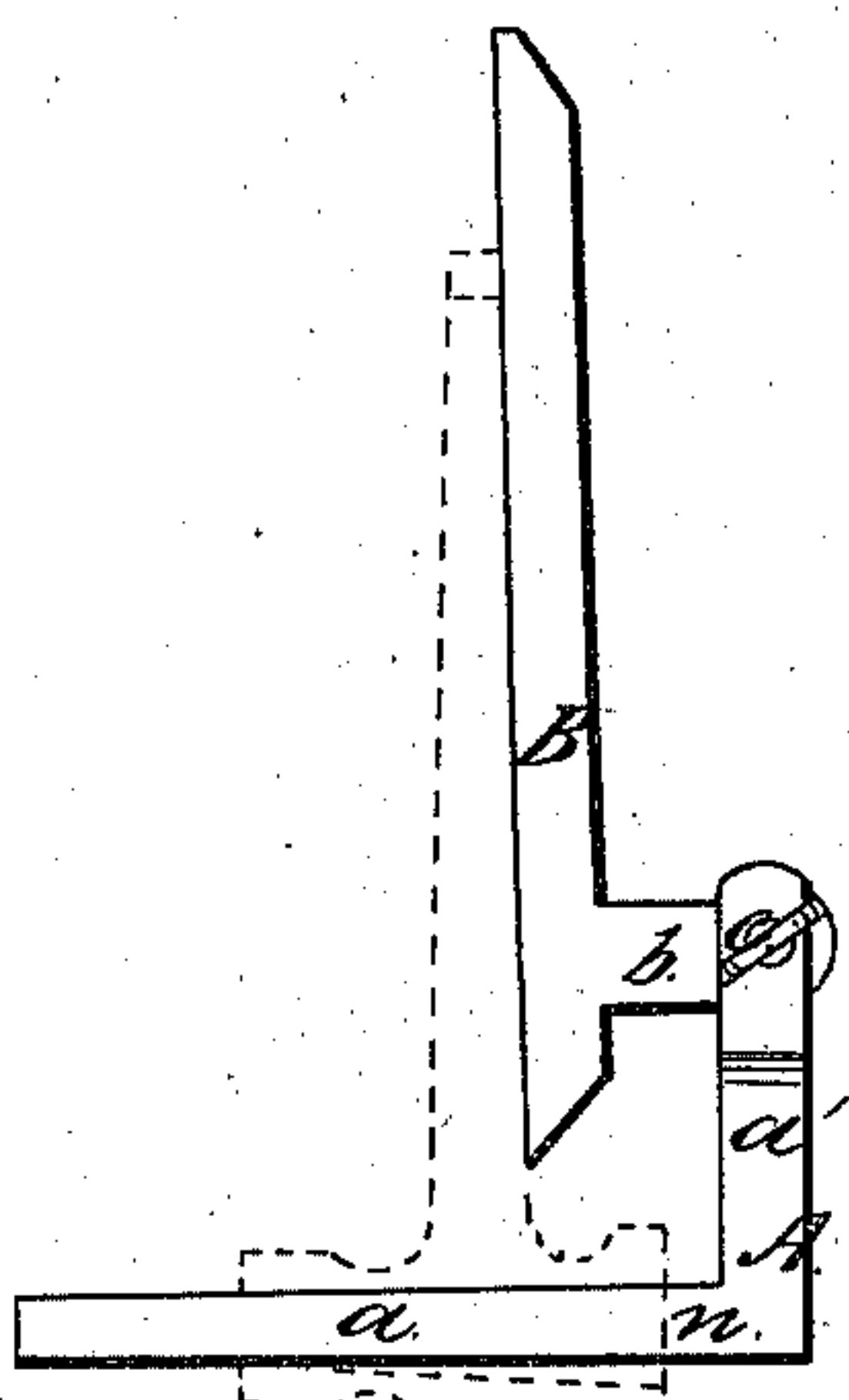


*M. Merk.*  
*Axle Gauge.*

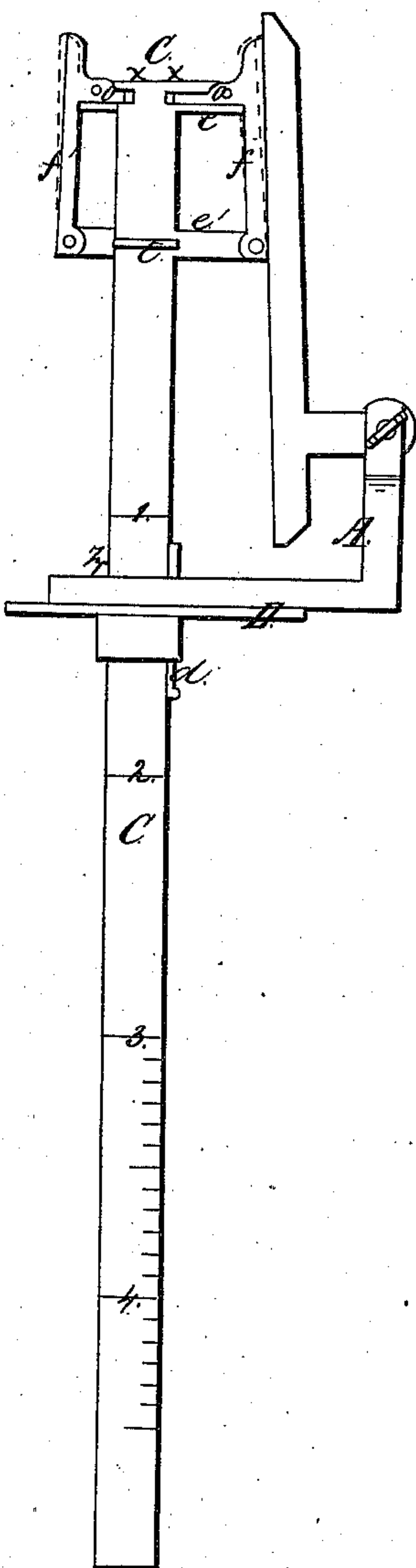
*N<sup>o</sup> 94,834.*

*Patented Sept. 14, 1869.*

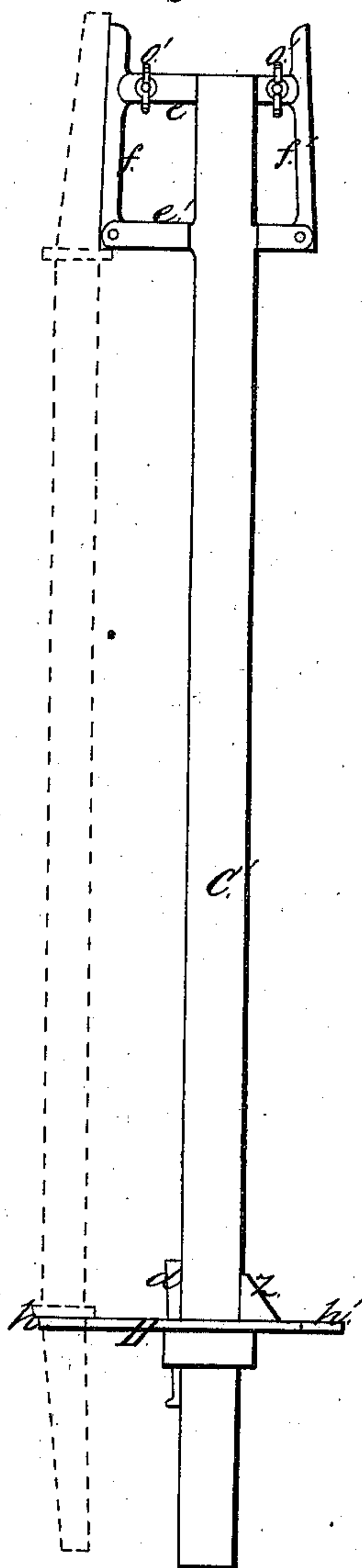
*Fig: 1.*



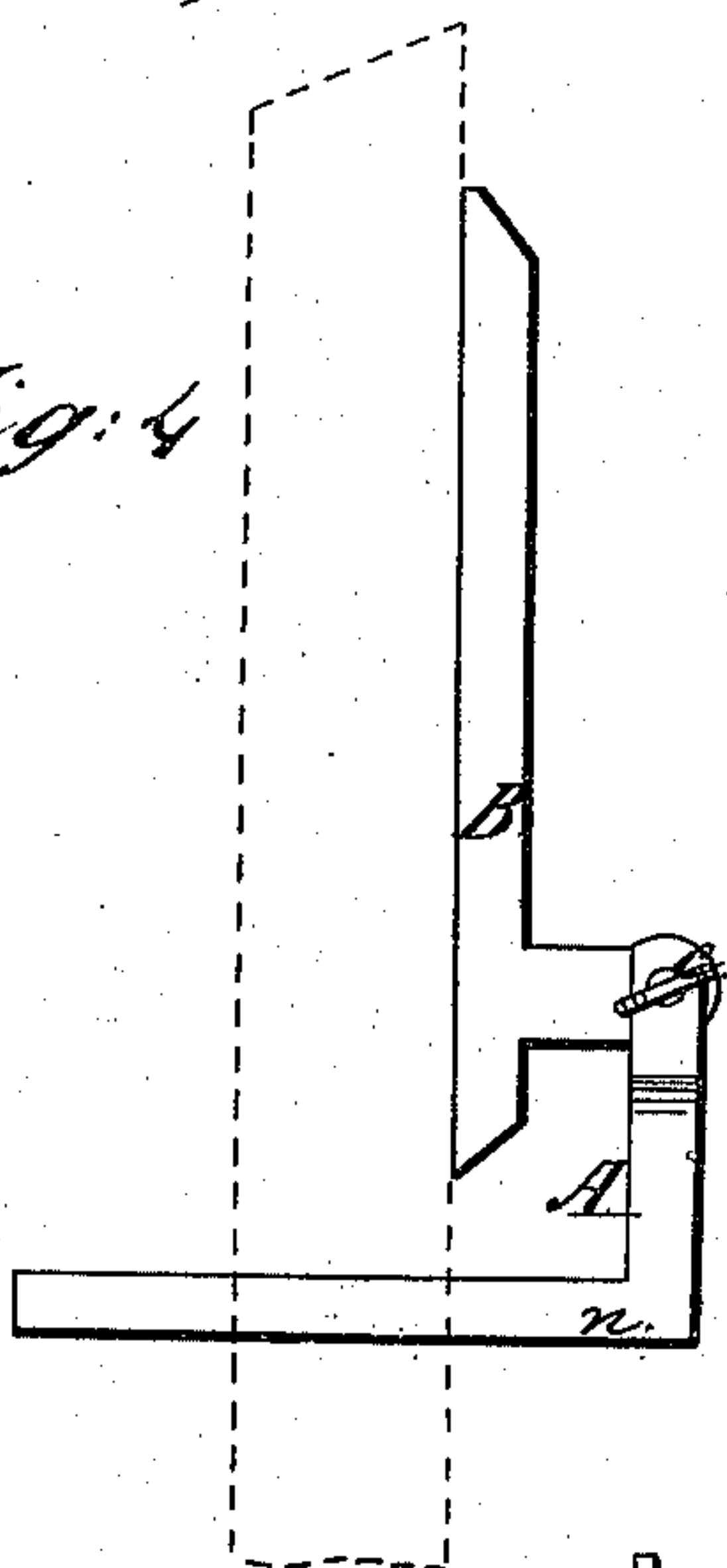
*Fig: 2.*



*Fig: 3.*



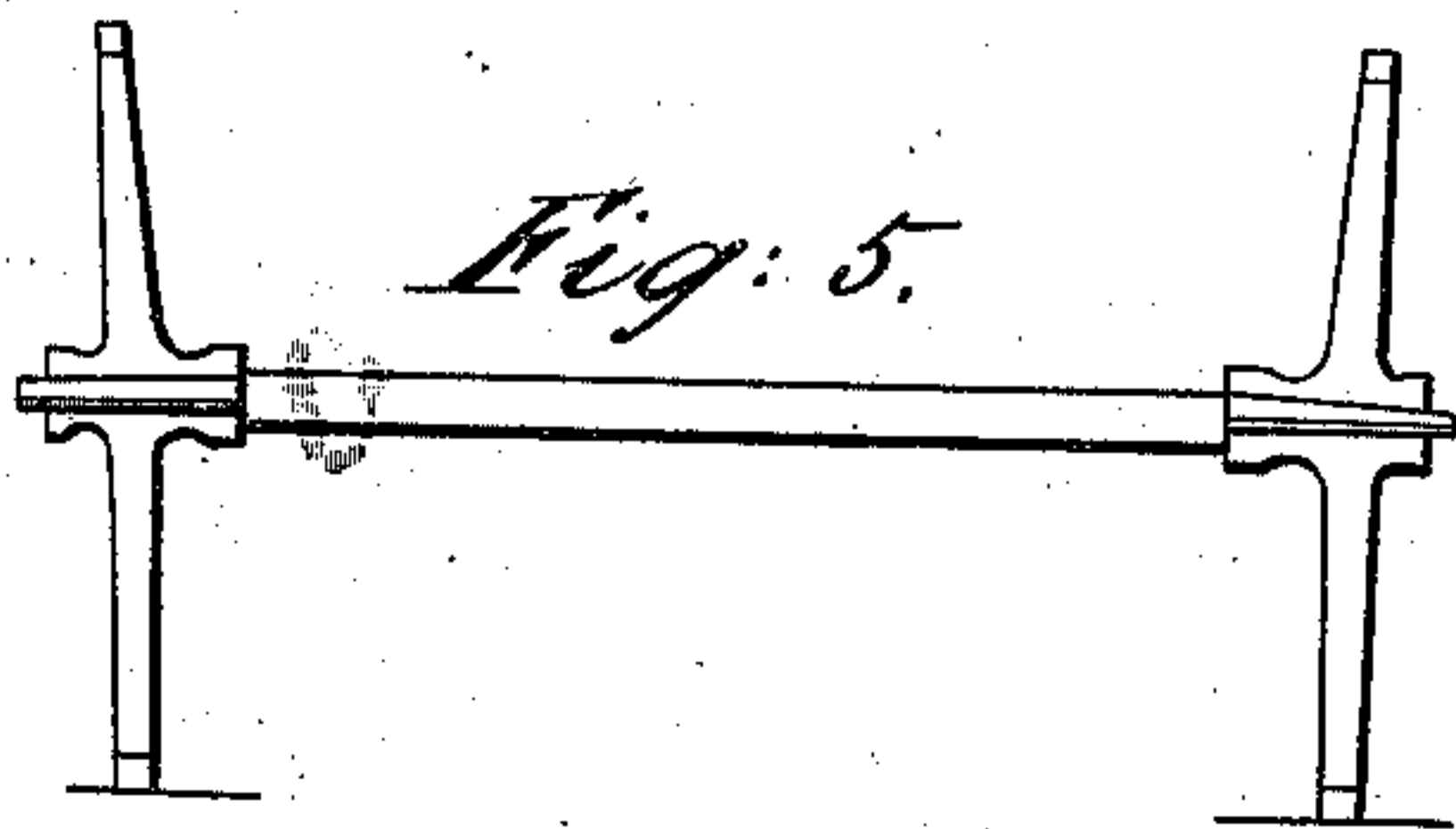
*Fig: 4.*



*Witnesses:*

*J. H. Clement*  
*Wm. Loughborough*

*Fig: 5.*



*Inventor:*

*Modest Merk.*



# United States Patent Office.

MODEST MERK, OF ROCHESTER, NEW YORK.

Letters Patent No. 94,834, dated September 14, 1869.

## IMPROVEMENT IN CARRIAGE-AXLE GAUGES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, MODEST MERK, of Rochester, in the county of Monroe, and State of New York, have invented certain new and useful Improvements in Carriage-Axle Gauges; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of the bevel-gauge A, the dotted lines showing a vertical section of a wheel.

Figure 2 is an elevation of the axle-gauge proper, showing the bevel-gauge in outline.

Figure 3 is a reverse view of the same, the axle being shown as applied to it, in dotted lines.

Figure 4 shows a straight-edge in dotted lines, laid upon the bevel-gauge, to determine the projection of the hub of the wheel.

Figure 5 is an elevation of an axle and pair of wheels.

The main object of my invention, the nature of which will be understood by reference to the drawings and specification, is to provide a simple and accurate gauge, by which the inclination of a carriage-axle bearing with the ground line can be easily found for a wheel of a certain "dish."

To enable others to make and use my invention, I will describe its construction and use.

It is well understood, that it is desirable that the inner face of the spokes, when immediately below the axle, should be perpendicular to the ground-line and the centre line of the axle, as shown by fig. 5, and it is, therefore, necessary, in welding up the axles, that the workman have a guide to determine the proper "set" of the bearing, and also to make any required number with the same inclination.

The bevel-gauge A, figs. 1, 2, and 4, is composed of the tongue *a*, having at one end the arm *a'*, projecting at right angles, or nearly so, and the blade B, made of a suitable length, and provided with a lateral spur, *b*, which is pivoted between jaws formed upon the arm *a'*, and bound by a clamping-screw, *c*.

The tongue *a* is made narrow enough to pass through the box of the wheel, and its edges are perfectly parallel.

The object of this device is to determine the angle of the inner face of the spokes, in relation to the side of the box, and is adjusted as shown in fig. 1.

Upon the axle-gauge C, figs. 2 and 3, I provide the cross-head D, held in any desired position upon the bar C' by the key *d*, and so fitted to the bar that its inner face shall be exactly at right angles to it.

At one end of the bar C', I secure the lateral arms *e* and *e'*, to the inner one *e'* of which are pivoted the adjustable templets *f* and *f'*, as shown in figs. 2 and 3.

The outer ends of these templets have projecting

lips *o o* formed upon them, resting upon the arm *e*, and bound to it by clamping-screws *o'*, fig. 3, which latter slide in slots provided in the arm *e*.

The bar C' may be laid off in feet and inches; as shown, beginning at the inner edge of the arm *e'*.

The object of this arrangement appears obvious from fig. 2.

The bevel-gauge A being applied as shown to the cross-head, the templet *f* is adjusted to correspond with the blade B, previously adjusted to the wheel.

The templet *f'* is used to gauge the "gather" or forward inclination of the axle, and is adjusted as desired, with or without the use of the bevel-gauge.

It may be desirable, in setting the templets *f f'*, to use the edges of the fixed projection *i*, fig. 2, and the spurs *z*, on the templets, as guides, which are equidistant from the working-edge of the templets, since by this plan a longer bearing is obtained for the tongue of the bevel-gauge upon the cross-head.

The lip *z* prevents the cross-head from being drawn out of truth by the key *d*.

The operation and mode of using my invention are as follows:

The bevel-gauge A is first "set," by placing the inner edge of the tongue *a* against the surface of the box, already bored and fitted to the axle-stub, and adjusting the blade B to the inclination of the inner face of the spokes, as in fig. 1. At the same time a mark, *n*, is made by suitable means upon the tongue *a*, at the inner end of the hub of the wheel.

The bevel-gauge is now transferred to the axle-gauge, fig. 2, its tongue put against the face of the cross-head, and the templet *f* accurately adjusted to the blade B, after which the cross-head is moved along the bar C', till the length of the axle between shoulders is measured between the cross-head and arm *e'*, as shown by the dotted lines in fig. 3.

This length is found by laying a straight-edge on the bevel-gauge, as shown in fig. 4, and measuring from its edge to the mark *n* above mentioned, giving the projection of the hub inside the "track" of the wheels, which distance, if doubled and subtracted from the predetermined width of "track," gives the required length.

When the axle is tried upon the gauge C, it rests upon the outer edge of the templet *f*, at the pivoted end, and in a notch, *h*, cut in the cross-head, such points being equidistant from the bar C', whereby the centre line of the axle is brought parallel with said bar.

It is obvious that the inclination of the templet *f* is that of the lower side of the axle, for we have transferred the relative inclinations of the inner face of the wheel to the lower side of the axle-box, to the templet, by means of the bevel-gauge; but since the



centre line of the axle is parallel with C', fig. 3, and the face of D at right angles to the same, therefore, when the axle conforms to the templet, the inner face of spokes will be perpendicular to the centre line of the axle, when immediately below it.

If desirable, the tongue *a* of the bevel-gauge may be graduated, beginning at the inner edge of the arm *a'*, in which case the spur *b* may be slotted for the clamping-screw *c*, whereby the gauge may be so adjusted that the edge of *a'* shall rest against the hub of the wheel, and the projection of the same determined by the graduations.

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

1. The bevel-gauge A, composed of tongue *a*, arm *a'*, and pivoted blade B, substantially as and for the purposes set forth.

2. The axle-gauge C, when used in combination with the bevel-gauge A, for the purposes set forth.

3. The fixed projection *i* on the face of the bar C', in combination with the spurs *x* on the templets, for the purpose specified.

MODEST MERK.

Witnesses:

F. H. CLEMENT,

WM. S. LOUGHBOROUGH.