

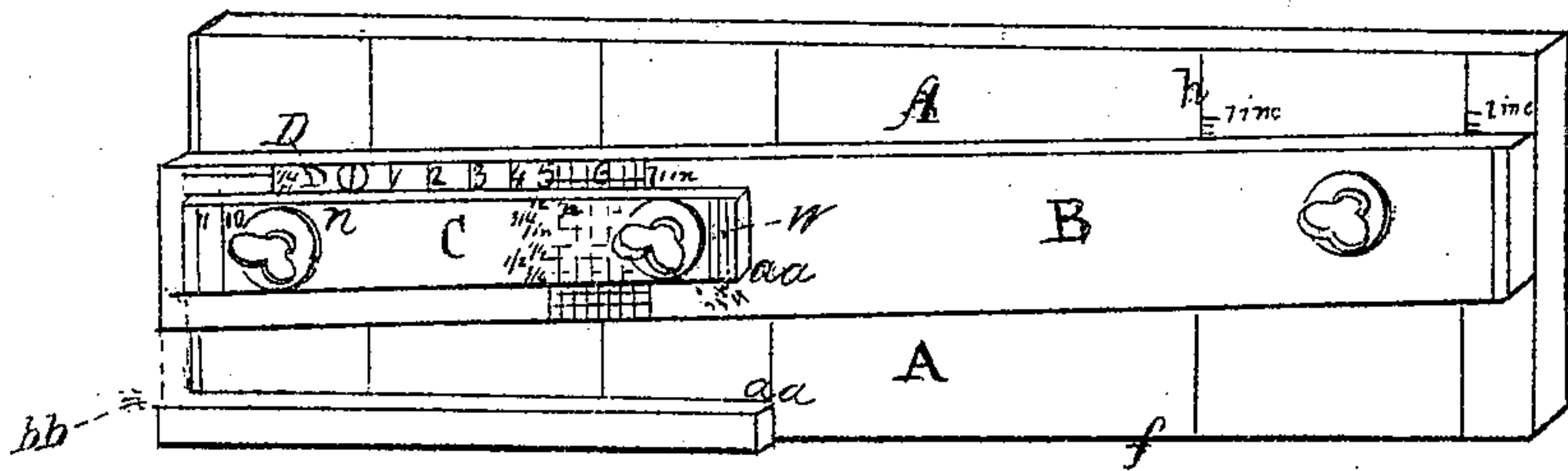
J. Birkett,

2 Sheets, Sheet 1

Gage.

No. 92,148.

Patented July 6, 1869.



Witnesses
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United States Patent Office.

JOSEPH BIRKETT, OF TAZEWELL COUNTY, ILLINOIS.

Letters Patent No. 92,148, dated July 6, 1869.

IMPROVEMENT IN AXLE-GAUGES.

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

Be it known that I, JOSEPH BIRKETT, of the county of Tazewell, and State of Illinois, have invented a new and improved Axle-Gauge, for setting thimble-skeins on iron or wooden axles, and for other purposes, which I verily believe has not been before known or used prior to the invention thereof by me; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation thereof, reference being had to the accompanying drawings, for ning part of this specification, similar letters indicating corresponding parts, in which—

Figure 1 is a perspective view.

Figure 2, the complete instrument, on a larger scale.

Figures 3 and 4, the movable and adjustable gauges B C, attached to the back piece A.

A represents a board, about thirty six inches in length, and about one foot wide, having parallel sides, and a line or mark, *e e*, running longitudinally, parallel with the side *f f*.

Another line, *g*, across it, about five inches from the left end of the board, represents the face of the spoke of a wheel.

The space between this line *g* and the line marked *h*, represents one-half of the height of the front wheel of a vehicle which it may be desirous to gauge.

The space between the line *g* and the line *i*, represents one-half the height of the hind wheel.

B is a strip of wood, or other substance, with parallel sides, about thirty-six inches long, and five inches wide, and about one-fourth of an inch in thickness, which is pivoted permanently to the board A, by means of a screw or bolt, D, placed about five inches from the left end of the same.

At the remoter end of the latter board B, is a slot, *k*, through which a thumb-screw (with washer) passes into the back board A, for the purpose of retaining the board B, when swung to the required rule-mark or gauge.

A perpendicular scale of inches and fractions of an inch is drawn at the upper left angle of the latter. Another scale, of inches and fractions of an inch, is drawn on the upper edge of the same piece, commencing at the pivot D, and extending to seven inches, with a second scale, *m*, of fractions of an inch, vertically across the same, commencing on the upper edge.

C is another parallelogram, of wood, or other convenient material, fourteen inches in length, and three inches in width, movable over and upon the piece B, by means of slots, and adjustable by convenient thumb-screws, when at the required mark.

A transverse line, *p*, crosses the latter piece C, which line marks the shoulder of the box or skein.

The lines *q q q* mark the length of various-sized skeins from their shoulders to the end of the skein.

To use this instrument, first measure the "dish," or obliquity of the spokes with the hub. For example, assume that the dish of the hind wheel is three-fourths of an inch. Then move the piece B up to the three-fourths-inch mark on the rule *t*, on the back piece. Then tighten the thumb-screw *j*. Next, note

the distance between the face of the spoke to the shoulder of the "box." Assume it to be six inches. Then, move the piece C until the line *p* coincides with the sixth inch of the rule *m*, which commences at the pivot D, on the line representing the face of the spoke. Thus far, we have found the angle which the axis of the box of the wheel, represented by the upper edge of the piece B, forms with a horizontal line running through the whole length of the axle-tree, represented by the line *e e*.

Next, to find the required taper for the bottom of the axle-tree, or, more correctly speaking, the angle which the bottom or under surface of the axle-tree, between the point and the shoulder, will form with the general horizontal line of the axle-tree, we proceed as follows:

Measure the diameter of the skein or box, at the shoulder or back end. Assume, for instance, that it is three inches in diameter. Then take half of three inches, which is one and one-half inch, and move the piece C until its edge, at the line *p*, comes one and one-half inch from the edge of the piece B, (at the rule or scale *m*.) Then, measure the size of the skein at the point. Say it is two inches in diameter. Then take one-half of this diameter, which is one inch. If the skein is eleven inches in length, move the piece C so that the upper edge, at the left end, where it is marked eleven inches, *q*, comes even with the one-inch mark on the rule, marked *z*, of piece B. Then tighten the screw. Then find the length of shoulder of the skein. Say it is four and one-half inches. Upon this, measure the distance from the lower edge of scale, or at the point indicating the length of the shoulder of the skein, down to the lower edge of piece A. Next, measure the distance between the line indicating the point of the skein, on the rule *q q q*, at the lower edge of piece C, and the lower edge of piece A, marked *b b*, *b b*. Then, the difference between these two distances, *b b*, *b b* and *a a*, *a a*, indicates the height of the point, on the end of the timber or axle-tree, at which to commence the taper, running to the back end of the shoulder of the skein.

This gauge is infallible for all purposes of this kind, and I claim that a wheel, in order to run with the least amount of friction, and, at the same time, to properly carry the load, must be set on the axle in such a way that the spokes, between the hub and the ground, are always perpendicular.

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

An instrument for finding the proper angles for setting thimble-skeins, iron or wooden axles, and consisting of three movable gauges, A B C, with scales or inches marked thereon, adjusted one upon the other by means of slots and thumb-screws, or their equivalents, as and for the purposes described.

JOSEPH BIRKETT.

Witnesses:

WM. BRYAN,
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