

(No Model.)

R. A. SIMPSON.  
AXLE GAGE.

No. 550,061.

Patented Nov. 19, 1895.

Fig. 1.

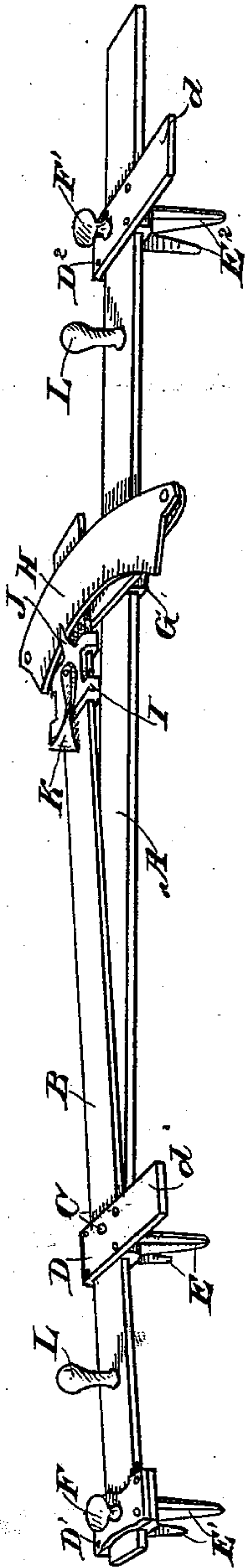


Fig. 2.

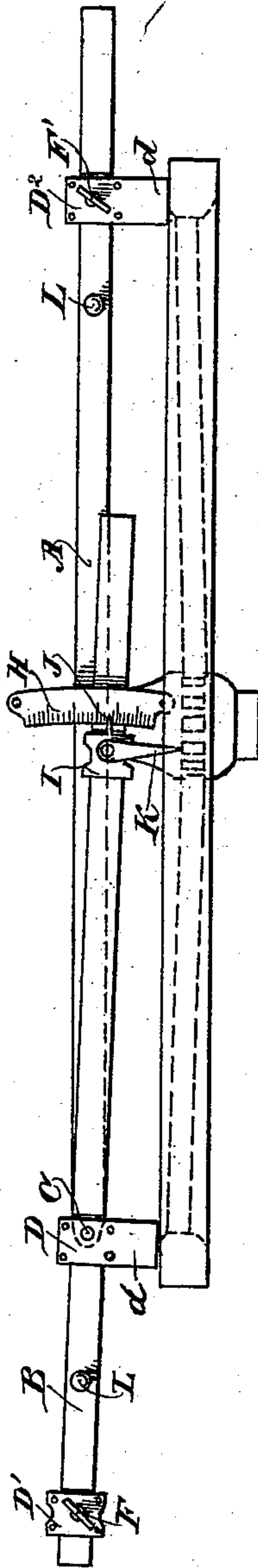
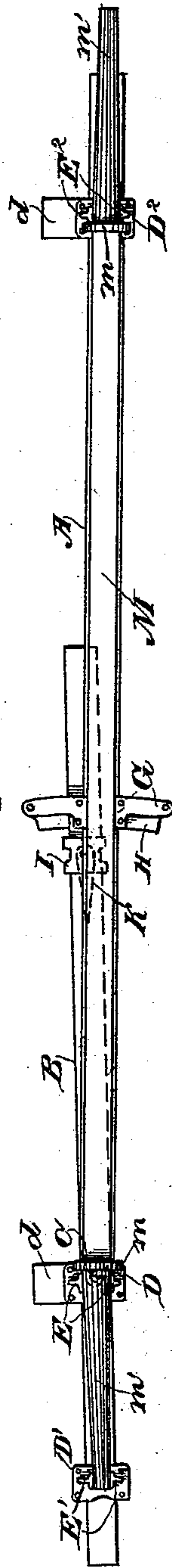


Fig. 3.



Witnesses,  
J. H. Starnes  
J. F. Oscheck

Inventor  
Rufus A. Simpson  
By Devey & Co. atty



# UNITED STATES PATENT OFFICE.

RUFUS ANDREW SIMPSON, OF FERNDALE, CALIFORNIA.

## AXLE-GAGE.

SPECIFICATION forming part of Letters Patent No. 550,061, dated November 19, 1895.

Application filed August 11, 1894. Serial No. 520,055. (No model.)

*To all whom it may concern:*

Be it known that I, RUFUS ANDREW SIMPSON, a citizen of the United States, residing at Ferndale, Humboldt county, State of California, have invented an Improvement in Axle-Gages; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in that class of devices known as "axle-gages."

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a view of the gage. Fig. 2 shows its application to ascertain the dish of a wheel. Fig. 3 shows it applied to the axle.

The object of my invention is to provide a gage for accurately measuring the "dish," as it is called, of a wagon-wheel, and for use in indicating the set for the axle thereof to correspond with any given dish of the wheel.

My present invention is an improvement upon a device for which Letters Patent, No. 309,984, were issued to me December 30, 1884.

In my present invention I employ two iron or steel bars A and B, formed, preferably, of flat plates wide enough to be rigid when locked together in the direction of their greatest width. These plates are flexible to a certain extent in the direction of their least thickness, to allow them to conform to the curvatures or changes of direction of the axle and allow the forked legs or arms E E' E<sup>2</sup> to all arrive at a bearing upon the axle, which might not be possible if the bars were altogether rigid. These bars are pivoted together by a pivot-pin, as shown at C, so that the bar A has one end pivoted to the bar B at a point intermediate between the ends of the latter. Across this pivot-pin C is fixed a plate D, which extends transversely across the upper side of the plate B. Upon the opposite side are the forked legs or arms E, which diverge from a point near the plate outwardly and are of sufficient length so that they will clasp the opposite sides of any axle from three-fourths of an inch in diameter to three inches without any change or adjustment, the axle always coming to a bearing exactly central between these diverging arms whenever the gage is applied to it. Upon the free end of the bar B is

a sliding clamp D', having diverging arms E' projecting from it similar to the arms E and for the same purpose. This clamp D' is slidable upon the bar B and is locked at any desired point by a set-screw F. Upon the opposite end of the arm A is a similar sliding clamp D<sup>2</sup>, having diverging arms E<sup>2</sup>, corresponding in shape with the arms E and E' previously described. The sliding clamp D<sup>2</sup> is locked at the desired point by a set-screw F'.

The arms D and D<sup>2</sup> are extended at one side beyond the respective edges of the plates A and B, as shown at d, and when the apparatus is applied to the wheel to ascertain its set or dish these ends rest against the sides of the felloes or wheel-rim.

Upon the bar A, between the plates D and D<sup>2</sup>, is a sliding clamp G, having fixed upon the side corresponding with the plates D D<sup>2</sup> a transverse gage H, having lines of subdivision marked upon one edge, as shown.

The end of the bar B which is adjacent to the gage H extends beneath it and is movable transversely beneath the gage within a suitable loop or yoke, which allows it to turn from one side to the other, moving about the pivot-pin C, which connects it with the bar A. Upon this end of the bar B is a sliding clasp I, having a small indicating-pointer J in the center, which is adapted to move over the curved transverse gage H. To the clasp I is pivoted an arm or pointer K, turnable about its pivot-pin and having its free end thickened or cam-shaped, (see Fig. 1,) so that when the pointer is turned into the position shown in Fig. 3 this thickened end will engage the plate B and serve as a lock for retaining the loop I in position, as hereinafter described.

When the dish of the wheel is to be ascertained, the gage is set upon the wheel so that the extension d of the arm D rests upon the rim of the wheel at one side and the corresponding extension of the arm D<sup>2</sup> rests upon the rim upon the opposite side. The clasp I is moved to a point opposite the center of the wheel at one side of the hub, and the pointer K is turned so as to rest upon the spoke which is central between the two opposite sides of the wheel. This pointer K is of such length that when the two bars A and B lie upon each other in a straight line so as to exactly coincide the pointer will project to the same dis-



tance that the arms  $d$  project beyond the edges of the bars A and B. By reason of the dish of the wheel the arm B must be turned about its pivot-pin and moved over the transverse scale H until the point of K touches the central spoke and thus indicates, by means of the pointer J upon the scale H, the amount of dish of the wheel and also the amount of set which is to be given to the axle. The distance from the pivot-pin C to the pointer J represents the length of the spoke of the wheel. When the dish of the wheel has thus been ascertained by the scale H and noted, the pointer K is turned about its pivot until it presses upon the side of the bar B, and this acts as a lock to retain the sliding loop I in place while the operation of setting the axle is proceeding.

By means of two handles L, which are fixed to project from the bars A and B, the apparatus is easily handled and the hands of the operator are protected from the heat which will be transmitted to the gage from the hot axle. They also serve to press the forked arms E down firmly against the axle, so as to accurately center the axle between them.

The apparatus is now used upon the axle M, after the latter has been bent to about the desired set, by placing the forked arms E upon each side of the axle near the shoulder  $m$ . The arms  $E^2$  are caused to clasp the axle near the opposite shoulder, and the arms  $E'$  are fitted to clasp the spindle  $m'$ , upon which the wheel turns and which is set or bent out of line with the main portion of the axle. The axle having been heated and bent the gage is applied as above described, and the pointer J must indicate upon the transverse scale H the same position that it showed when the dish of the wheel was obtained. When this is effected the axle will be properly set for the particular dish of the wheel which is to run upon it.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an axle gage, the bars A and B pivoted together and movable with relation to each other about their pivot pin, an arm D fixed transversely adjacent to the pivotal point and extending beyond one edge of the bars, a second arm  $D^2$  with a sliding clasp and set screw by which it is adjustable longitudinally upon one of the bars having a corresponding projection beyond the edge of its bar, a clasp slidable longitudinally upon the bar B having an arm K pivoted to it adapted to project beyond the side of the bar, and corresponding in length with the projections  $d$ , said arm having its free end thickened or cam shaped to lock the clasp in position, a pointer J projecting centrally from the clasp along the bar B, the diverging or forked arms E,  $E'$

and  $E^2$ , and a transverse scale movable upon the bar A over which the pointer J moves and upon which it indicates the amount of dish of the wheel, or set and gather of axle.

2. In an axle gage, the bars A and B pivoted together having plates D and  $D^2$  extending transversely across them with ends projecting beyond the edges of the plates and adapted to rest upon the opposite rims of the wheel, a loop or clasp slidable upon the bar B, and a transverse scale correspondingly movable upon the bar A, and an arm pivoted to the sliding clasp of the bar B having a thickened or cam-shaped outer end, and turnable so as to project beyond the edges of the bars, corresponding with the projections of the arms D and  $D^2$  whereby said central arm may be made to form contact with a spoke when the arms D and  $D^2$  rest upon the rim of the wheel, the diverging or forked arms E,  $E'$  and  $E^2$  and an indicating pointer upon the clasp which carries the central arm whereby the amount of dish of the wheel is indicated upon the transverse scale of which the pointer is movable and the set of the axle ascertained.

3. In an axle gage, the bars A and B pivoted together having the transverse plates D and  $D^2$  projecting beyond one side of the arms A and B and an intermediate adjustable yoke or clasp carrying a corresponding arm which is adapted to form contact with a spoke central between the two exterior arms when the latter abut against the side of the wheel felly, a transverse gage upon which the amount of dish of the wheel is indicated when these arms are in contact with the felly and spoke, the movable arm being adapted to swing inwardly upon the bar and having its outer or free end thickened or cam-shaped to lock the sliding loop in place after the dish of the wheel has been ascertained.

4. In an axle gage, the bars A and B pivoted together having fixed and adjustable plates D and  $D^2$  extending transversely across them and projecting beyond the edges of the pivoted plates, and adapted to rest upon the wheel rim at opposite sides, an adjustable plate intermediate between the plates D and  $D^2$ , having an arm adapted to rest upon a central spoke when the others rest upon the rim, to give the dish of the wheel a transverse gage and pointer forks which indicate the dish, arms having forks which diverge outwardly from the centers of the sides of the bars A and B adapted to clasp the axle and retain it in the central line of the bars while the gage is inspected to ascertain the set of the axle.

In witness whereof I have hereunto set my hand.

RUFUS ANDREW SIMPSON.

Witnesses:

I. M. RING,  
H. F. ROSS.