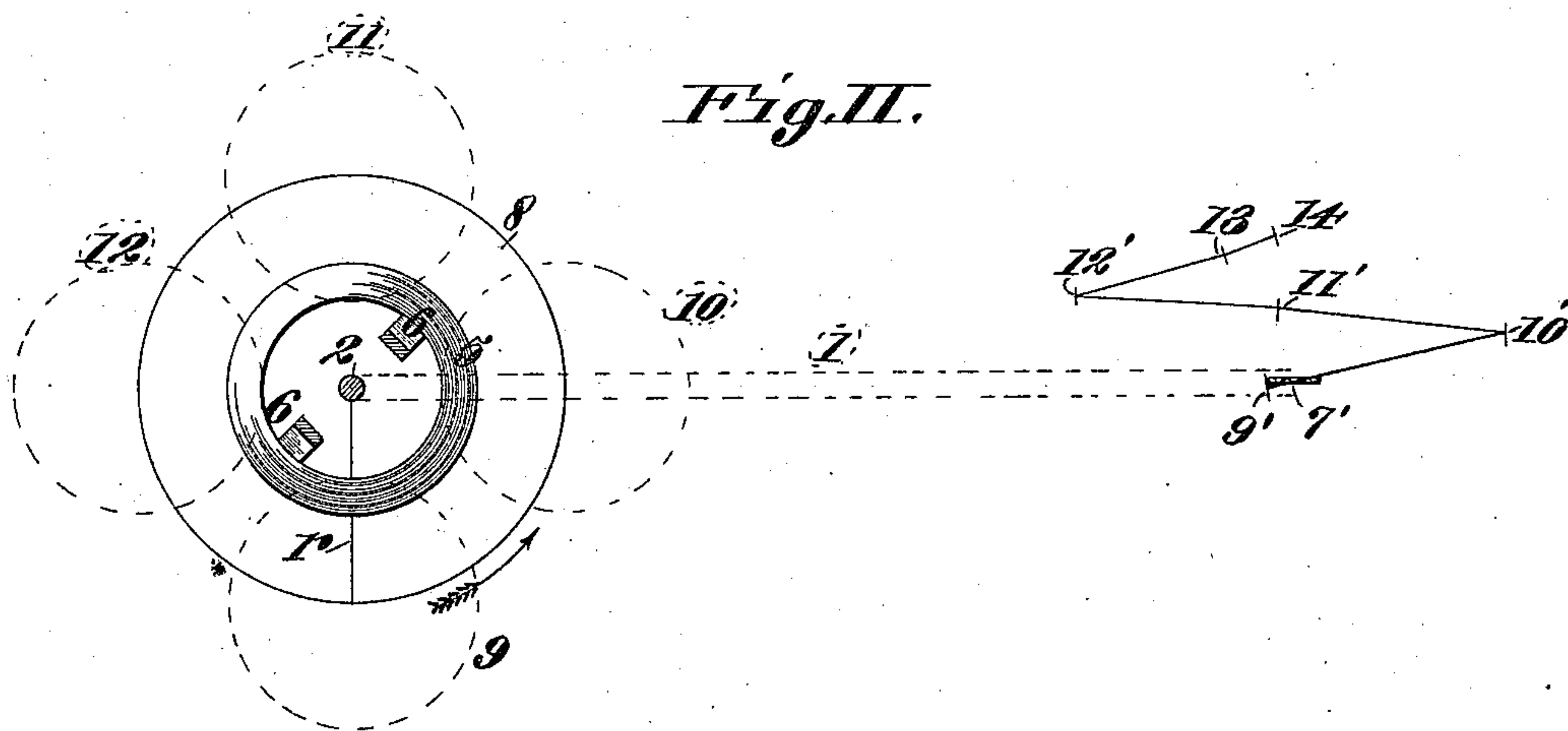
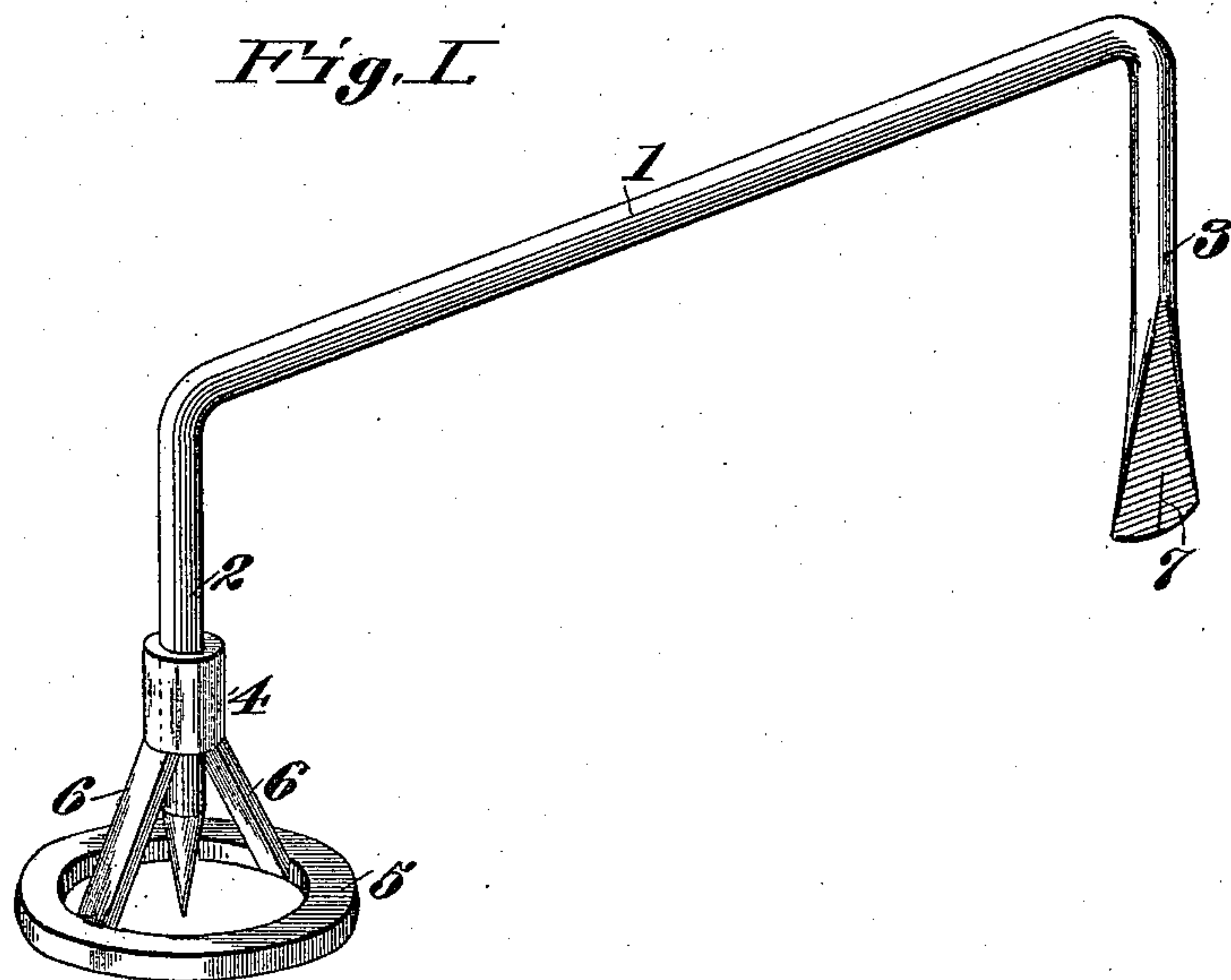


(No Model.)

B. E. CHOLLAR.
PLANIMETER.

No. 575,105.

Patented Jan. 12, 1897.



Attest;

Stanley Stoner
E. Knight

Inventor:

Byron E. Chollar.

By Wm. H. Bond atty^s

UNITED STATES PATENT OFFICE.

BYRON E. CHOLLAR, OF ST. LOUIS, MISSOURI.

PLANIMETER.

SPECIFICATION forming part of Letters Patent No. 575,105, dated January 12, 1897.

Application filed July 16, 1896. Serial No. 599,371. (No model.)

To all whom it may concern:

Be it known that I, BYRON E. CHOLLAR, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Planimeters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improvement in instruments for ascertaining the area of irregular plane surfaces. I am aware that the instrument itself is old, but my invention relates to an improved attachment therefor.

The device is shown in the drawings, in which—

Figure I illustrates a perspective view thereof. Fig. II illustrates a diagram showing the various positions of the parts during the measurement of a surface.

1 is the horizontal portion of the planimeter; 2, the perpendicular portion, terminating in a point, said point being adapted to trace the boundaries of the surface to be measured.

3 is the second perpendicular portion of the instrument, being in the same plane as the other portions and terminating in a flat knife-edge, the said edge being in the plane of the portions 1, 2, and 3.

4 is a sleeve adapted to fit over and support the upright 2.

5 is a ring attached to the sleeve 4 by means of the braces 6.

7 is a knife-edge in line with point 2 and provided with a cut at its point of contact and situated on the end of upright 3.

For the purpose of illustrating the use of my invention we will assume that the circle 8 incloses the area to be ascertained. By placing the pointed end of 2 in the center of this circle the edge 7 will fall upon the place 7', as shown in Fig. II. The point of 2 is then moved down the radius r to the circumference. The supporting-ring 5 will then be in the position shown at 9, while the center of edge 7, which has been allowed to swing freely, will be at 9'. The point 2 being traced over the circumference, as shown by the arrow, causes the ring 5 to take, consecutively, the positions shown at 10, 11, and 12.

The edge 7 being in the meantime allowed to travel freely will be in the positions 10' 11' 12'. When the point has returned to the end of the radius r , the edge 7 will be at 13. Then the point 2 is traced back up the radius r to the center, at which place it will be found that the edge 7 rests at 14. The distance from 14 to 7', the place of starting, multiplied by the distance from point 2 to the point of contact of edge 7 will give the area thereof. Formerly the bent wire 1 2 3 was all that was used. As great care and exactness are required, the necessary freedom of the loose end 7 was impaired by the handling of the device. The pointed end 2 must exactly trace the boundary of the surface, while the end 7 must be allowed to move freely. Holding the instrument in the hand prevented this. I have therefore provided the collar 4, through which the pointed end 2 plays, supported by braces from a flat ring 5. The ring 5 is large enough to expose the pointed end 2 to one's view. The collar 4 holds the instrument upright, and the braces 6 afford a convenient means for holding or moving the device. By its use accurate results may be obtained with an ease that has not before been possible.

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

1. The combination with a planimeter, of a frame adapted to seat on the surface to be traced whereby the pointed upright of the planimeter is supported in contact with the said surface; substantially as described.

2. The combination of a pointed upright, a knife-edge upright, and a connection between the two, a collar adapted to support said pointed upright, and a horizontal ring secured to said collar by means of braces, substantially as described.

3. The combination of tracing-upright 2, knife-edge upright 3, and connection 1, all made integral, with supporting-collar 4 adapted to receive said tracing-upright 2, horizontal ring 5, and braces 6, likewise made integral, substantially as described.

BYRON E. CHOLLAR.

In presence of—

E. S. KNIGHT,
STANLEY STONER.