

No. 610,652.

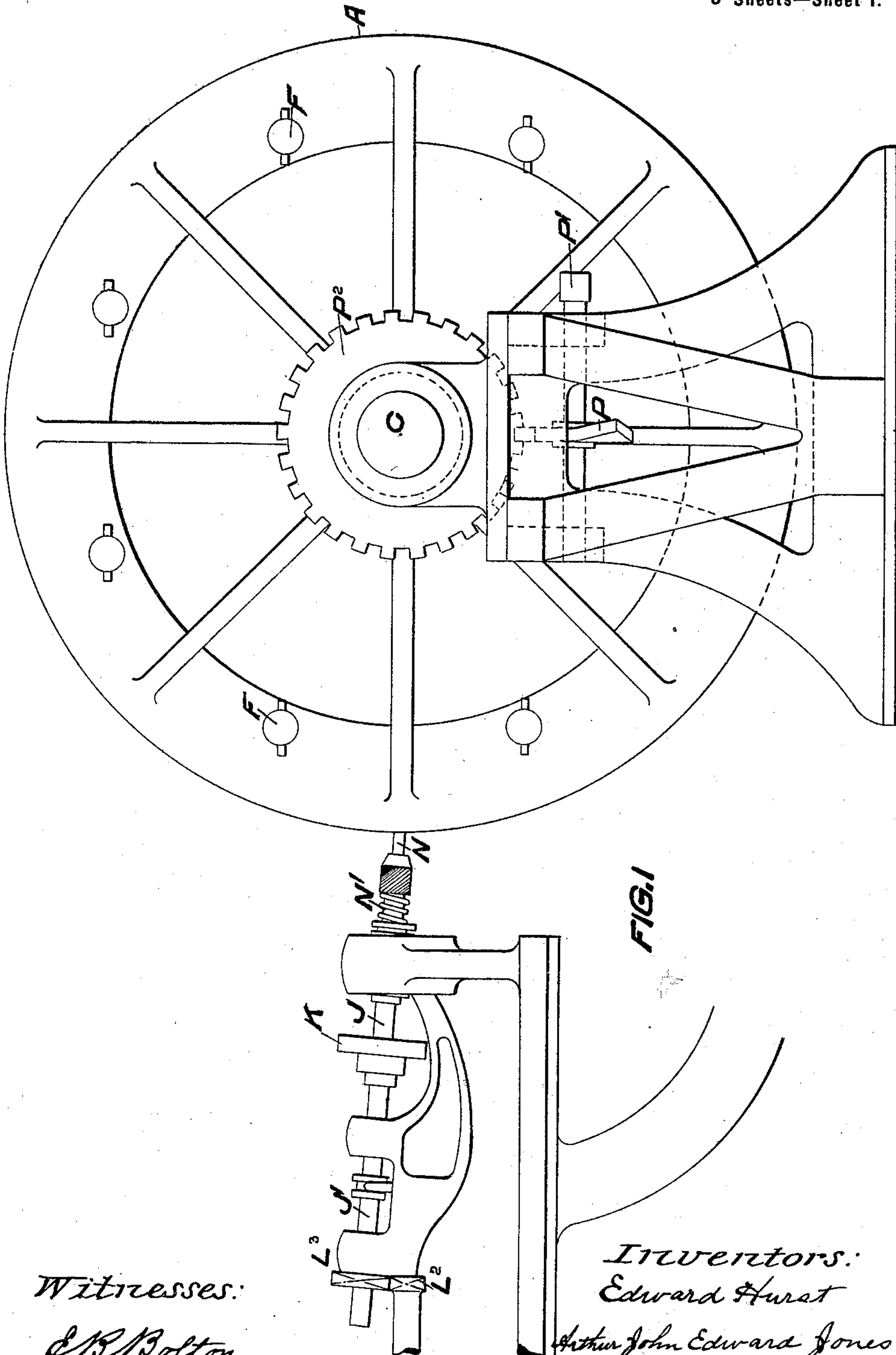
Patented Sept. 13, 1898.

E. HURST & A. J. E. JONES.  
MACHINE FOR ASSEMBLING CYCLE OR SIMILAR WHEELS.

(Application filed Mar. 29, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

C. R. Bolton

Old Union

Inventors:

Edward Hurst

Arthur John Edward Jones

By

Richard A. R.

their Attorneys

**No. 610,652.**

**Patented Sept. 13, 1898.**

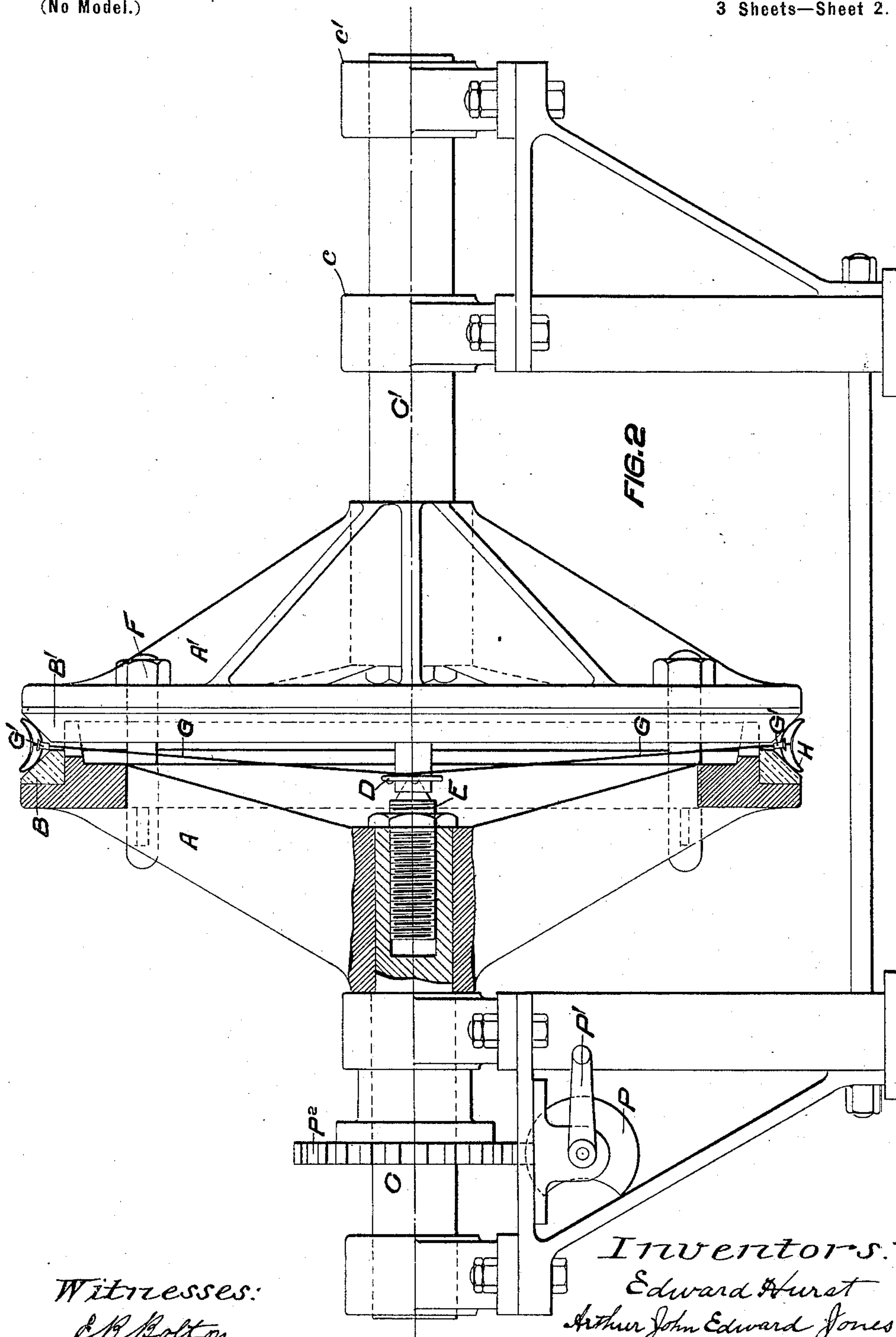
**E. HURST & A. J. E. JONES.**

**MACHINE FOR ASSEMBLING CYCLE OR SIMILAR WHEELS.**

(Application filed Mar. 29, 1898.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses:

C. R. Bolton

Oldman

*Inventors.*

Edward Hurst

Arthur John Edward Jones

By

Remond

*their Attorneys.*

No. 610,652.

Patented Sept. 13, 1898.

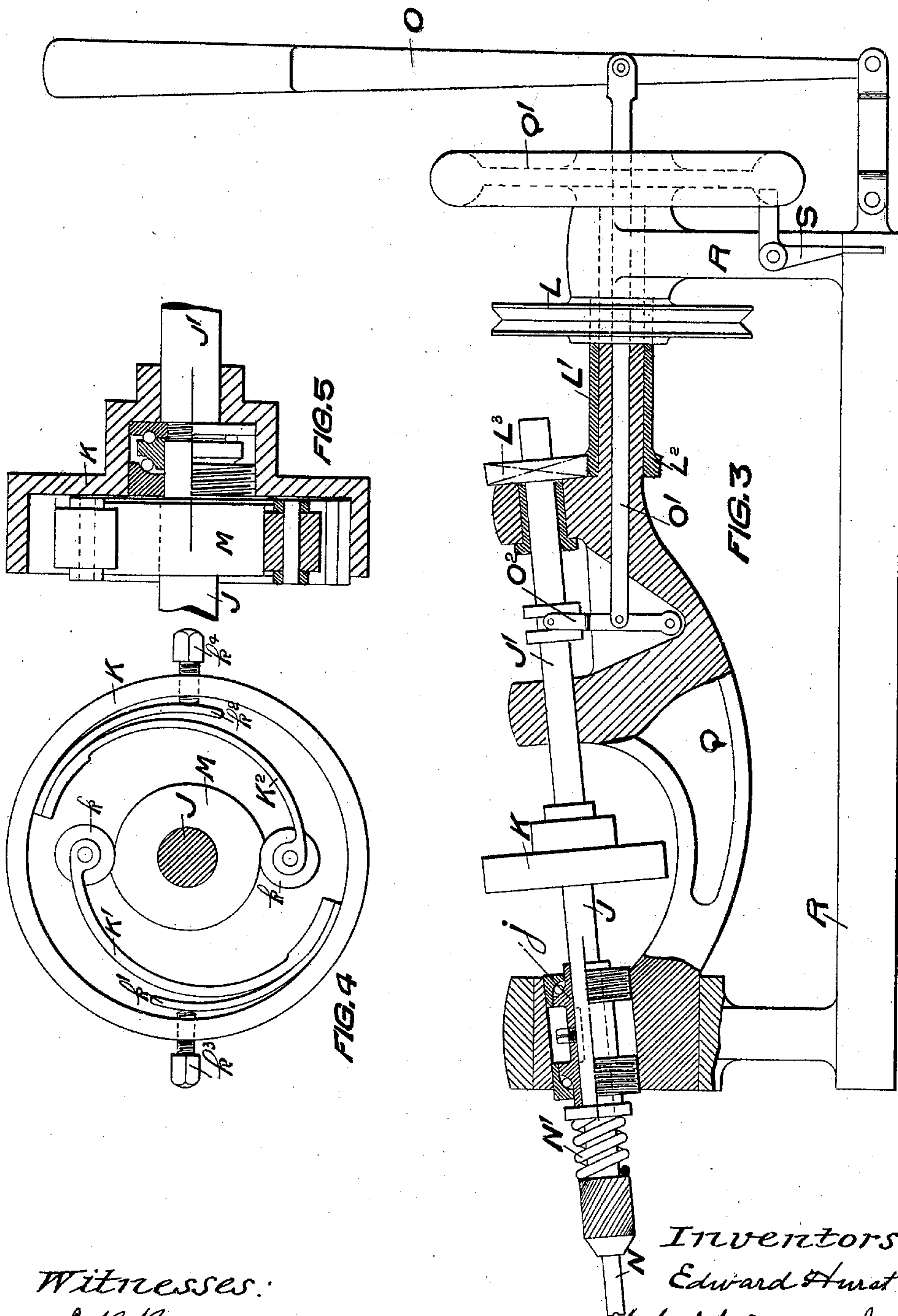
E. HURST & A. J. E. JONES.

MACHINE FOR ASSEMBLING CYCLE OR SIMILAR WHEELS.

(Application filed Mar. 29, 1898.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses:

E. R. Bolton

Oldman

Inventors:

Edward Hurst

Arthur John Edward Jones

By

Reinhardt

their Attorneys.



# UNITED STATES PATENT OFFICE.

EDWARD HURST AND ARTHUR JOHN EDWARD JONES, OF BIRMINGHAM,  
ENGLAND.

## MACHINE FOR ASSEMBLING CYCLE OR SIMILAR WHEELS.

SPECIFICATION forming part of Letters Patent No. 610,652, dated September 13, 1898.

Application filed March 29, 1898. Serial No. 675,627. (No model.)

*To all whom it may concern:*

Be it known that we, EDWARD HURST and ARTHUR JOHN EDWARD JONES, subjects of the Queen of Great Britain and Ireland, and residents of rear 31 Buck street, in the city of Birmingham, England, have invented certain new and useful Improvements in Cycle and Like Wheel Building Machines, (for which we have filed an application for patent in Great Britain, No. 20,148, bearing date September 2, 1897,) of which the following is a specification.

This invention consists of improvements in cycle and like wheel building machines, our object being to produce a simple and convenient machine whereby the rim and hub shall be securely held in their true relative positions while the spokes are expeditiously fixed by the machine with a uniformity of tension.

In the three accompanying sheets of explanatory drawings to be hereinafter referred to, Figure 1 is a front elevation, and Fig. 2 an end elevation, (with parts in section,) representing our improved wheel-building machine. Fig. 3 is a sectional elevation, to a larger scale, of the spoke-fixing spindle and its connections; while Fig. 4 is an end elevation, and Fig. 5 a sectional side elevation, to a still larger scale, showing the spring clutch connections between the forward and rear parts of the spindle.

The same reference-letters in the different views indicate the same parts.

We arrange the wheel-holder or wheel-retaining part of our machine at right angles to the spoke-fixing spindle and its connections. The wheel-retaining part consists of a pair of clamping disks or rings, as A A', each having a central boss connected by arms with the peripheries, such peripheries being arranged to receive jaw-pieces, as B B', suitable for the reception between them of the rim of the wheel to be built up. The rings A A' are mounted upon separate trunnions C C' and have sufficient space between their adjacent ends to admit the hub D of the wheel to be built up. At the extremities of each trunnion we fit a screwed or adjustable center piece, as E, which is shaped to fit within the ball-races of the wheel-hub. The ring A'

and its gudgeon C' can be caused to slide endwise in the supporting-bearings c c'; but the two rings A and A' are connected together at their peripheries after the wheel has been placed in position by dowel-bolts F or by other convenient and ordinary fastenings. When thus connected together, the rings have the appearance of a hollow wheel or pulley with the cycle or like wheel between them, the outer or rim ends of the spokes, as G, being in position, but not fixed to their wheel-rim H.

The spoke-fixing spindle, which is mounted upon suitable bearings at right angles with the trunnions supporting the wheel, is in two parts J and J', arranged in line with each other and connected by a spring-clutch K, consisting of a drum mounted upon the rear part or end J' of the spindle, such part being continuously driven during the working of the machine by a power-transmitting belt working over the pulley L and connected by spring-arms K' K<sup>2</sup> with a cam-like disk M, secured to the front part or end J of the spindle. The forward extremity of such part of the spindle is fitted with a turn-screw or other suitable tool or appliance, as N, for engaging the ordinary screw-sockets G', by which the outer ends of the spokes are secured to their wheel-rim. The complete spindle is moved in a longitudinal direction by means of a hand-lever O, pivoted upon the bed or framing of the machine and connected with the spindle by the rod O' and lever O<sup>2</sup>. The tightening-tool N is kept in engagement with the spoke-sockets, as G', by the spring N'; but at the conclusion of the tightening operation the tool is withdrawn against the action of the spring N' by the withdrawal of the spindle on the movement of the hand-lever O. The ball-bearing sleeve j for the front part J of the spindle rotates with the spindle, but the latter slides independently on the operation of the lever O.

The cycle-wheel mounted within the clamping disks or rings A A' is intermittently rotated upon the trunnions to bring each spoke end in its turn in line with the tightening-spindle by the action of the helical cam-disk P (which is rotated by the lever P') on the gapped wheel P<sup>2</sup>, secured to the trunnion C.



On the engagement of the turn-screw or like tool N with screw-socket G' the latter is rotated by the spindle until its resistance due to the tightening of the spoke exceeds the resistance of the clutch spring-arms K' K<sup>2</sup>, hereinbefore described. The fore part J of the spindle is thus brought to rest, and the operator by means of the lever O withdraws the complete spindle, and with it the tool N. The wheel is then rotated until the next socket is brought into line with the turn-screw, and the tightening operation is then repeated. The spring-arms K' K<sup>2</sup> are each fitted with a roller k at the free end, while by the additional springs k' k<sup>2</sup> at the back of the arms K' K<sup>2</sup> and the screws k<sup>3</sup> k<sup>4</sup> the resistance of the said arms K' K<sup>2</sup> can be adjusted.

The complete spindle formed by the parts J J' is carried in a framing Q, which is itself supported in bearings on the standard R. The hand-wheel Q' is keyed on the outer extremity of the framing Q. The driving-pulley L is secured to a sleeve L', which has a bevel-pinion or toothed wheel L<sup>2</sup> formed at its opposite end for engagement with the wheel L<sup>3</sup>, secured with the end J' of the spindle. By a rotating movement of the hand-wheel Q' the framing Q, secured with it, is also rotated, and thus the inclination of the spindle carried by the framing can be readily adjusted to suit the inclination of the wheel-spokes G. The spokes are inclined alternately in opposite directions, and the spindle is intended to be held in two angular positions to suit the inclination of the spokes. The framing is retained in any desired position by the engagement of the lever-stop S with notches in the hand-wheel Q'.

By the use of our machine we are enabled to readily and expeditiously secure the spokes with a uniform and known tension and to fix the hub and the wheel in their true relative positions.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In cycle and like wheel building machines, the combination with a spoke-tightening-tool-operating spindle formed by the two parts J J' connected by a spring-clutch, of the withdrawing-lever O, rod O', and lever

O<sup>2</sup>, and of the spring N' acting upon the tool, substantially as described.

2. The combination with the two-part spoke-tightening-tool-operating spindle of a cycle and like wheel building machine, of a connecting-clutch comprising a drum secured upon the inner end of one spindle part and a cam-like disk secured upon the adjacent end of the other part, the drum and disk being connected by spring-arms K' K<sup>2</sup>, having the rollers k k, substantially as described.

3. The combination with the spring-arms K' K<sup>2</sup> of the connecting-clutch of a two-part spoke-tightening-tool-operating spindle, of the adjustable springs k' k<sup>2</sup>, substantially as described.

4. The combination with the spoke-tightening-tool-operating spindle of a cycle and like wheel building machine, of a supporting-framing Q rotatable within the bearings of a standard R, said spindle being arranged at an angle to the frame whereby upon rotating the frame the spindle's angular position will be changed to conform to that of the spoke, substantially as described.

5. The combination with the rotatable supporting-frame Q carrying the spoke-tightening-tool-operating spindle, of the sleeve L' having the driving-pulley L at one end and the wheel L<sup>2</sup> at the opposite end, the said wheel L<sup>2</sup> gearing with the wheel L<sup>3</sup> secured to the spindle, the said frame Q being adjustable to different angular positions to suit the different angular positions of the spokes, substantially as described.

6. The combination with the rotatable supporting-frame Q carrying the spoke-tightening-tool-operating spindle, of the hand-wheel Q' secured to the frame Q, and the stop S, the said frame Q being adjustable to different angular positions to suit the different angular positions of the spokes, substantially as described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

EDWARD HURST.

ARTHUR JOHN EDWARD JONES.

Witnesses:

EDWARD MARKS,  
HERBERT BOWKETT.