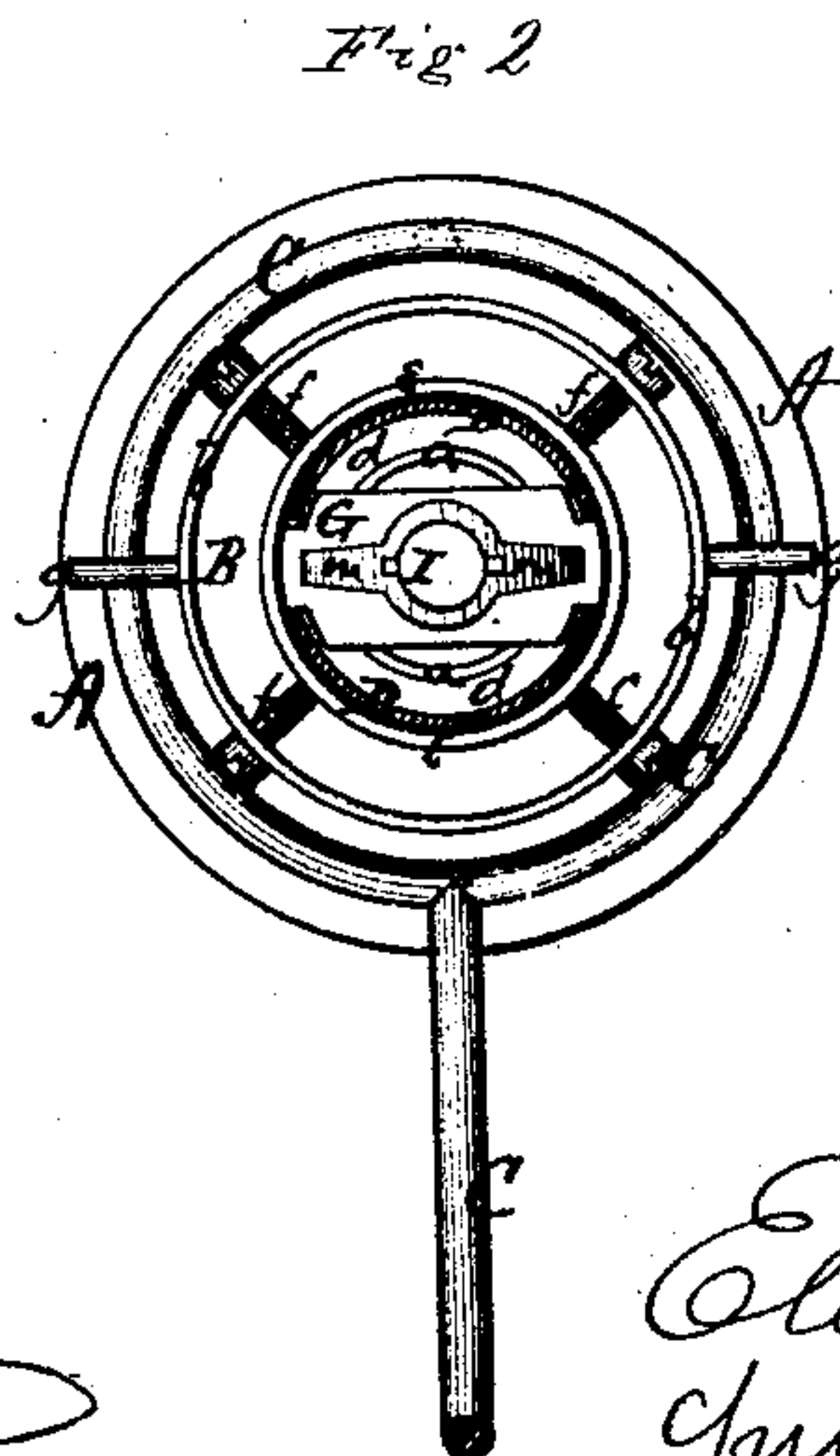
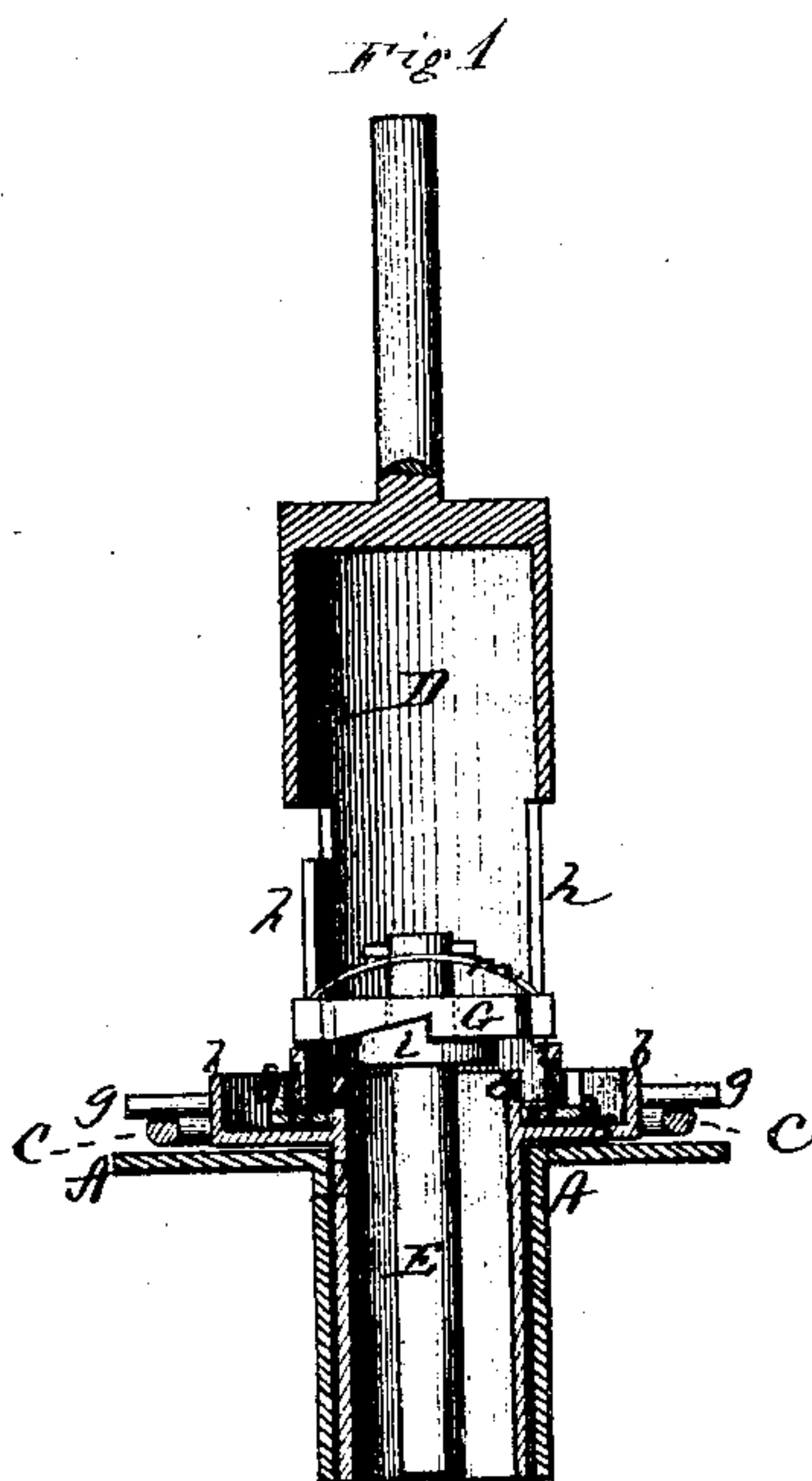


E. Dougherty,

Step Spindle.

No. 101,109.

Patented Mar. 22. 1870.



Witnesses.

Harry King
C. L. Everett

Inventor.

Eliphalet Dougherty
per *Hander Mason*
Attys

United States Patent Office.

ELIPHALET DOUGHERTY, OF NORTH LEWISBURG, OHIO, ASSIGNOR TO HIMSELF AND J. M. FLOOD, OF SAME PLACE.

Letters Patent No. 101,109, dated March 22, 1870.

IMPROVEMENT IN STEP-SPINDLES.

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, ELIPHALET DOUGHERTY, of North Lewisburg, in the county of Champaign and in the State of Ohio, have invented certain new and useful Improvements in Step-Spindles; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a step-joint with ratchet and bearing, so as to place a run of stone directly over a perpendicular shaft, in order that none of the weight of the stone spindle or driver bears on the water-wheel shaft, or so as to place one joint of heavy shafting perpendicular above another, and each separate joint bears its own weight, and by the ratchet all damage from the sudden stoppage of the driving-wheel is prevented, for the reason that the machinery is allowed to run on by its own momentum, without in the slightest injuring the machinery by the shock.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a vertical section, and

Figure 2, a horizontal section of my invention.

A represents a circular plate, with tube extending downward, and is firmly secured in the bridge-tree.

Within this tube is placed another tube and plate, B, provided with an inner rim, *a*, and an outer rim, *b*, extending above its face, forming a suitable receptacle for the lubricating substance.

Around the inner rim *a* is placed a flat ring, *d*, upon which the hollow step-spindle is to move.

At or near the outer edge on the upper side of this ring *d* is placed another steel ring, *e*, which surrounds the spindle and keeps it in place while running.

Screws *f f* pass through the outer rim *b* and bear against the ring *e*, which serves to tram the spindle to the face of the stone, or to line the shafting, if the step-spindle is used on such.

The outer rim *b* is provided with two ears or pivots, *g g*, which rest upon the lever C, so that the entire plate and tube B can be raised or lowered while the stone is grinding, or to adjust the shafting.

D is the step-spindle, which is hollow, and provided with slots *h h*, in which the driver works.

The foot of the step D is formed by shrinking a steel band around the main casting, as shown in fig. 1.

The driving-shaft E passes up through the tube B, and is near its upper end provided with the lower half *i* of a ratchet, the upper half of which is formed by the driver G, placed upon the shaft and fitting within the slots *h h* of the step D.

A spring, *m*, at the upper end of the shaft E holds the driver G close to the ratchet *i*.

It will readily be seen that when the machinery is in operation, the water-wheel may be stopped by drift-wood or from any other cause suddenly, and still the machinery is allowed to run on by its own momentum, without becoming injured from the sudden shock.

Having thus fully described my invention,

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

1. The hollow spindle-foot D, provided with a steel ring shrunk around its lower end, substantially as and for the purposes herein set forth.

2. The driver G, ratchet *i*, and spring *m*, working inside of the hollow step D, substantially as and for the purposes herein set forth.

3. The combination of the hollow step D and rings *d* and *e*, substantially as and for the purposes herein set forth.

4. The plate and tube B, provided with rims *a* and *b* and ears or pivots *g g*, all substantially as and for the purposes herein set forth.

5. The combination of the plates and tubes A B, lever C, hollow step D, rings *d e*, shaft E, driver G, ratchet *i*, and spring *m*, all constructed as described, and arranged to operate substantially in the manner and for the purposes herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 6th day of December, 1869.

ELIPHALET DOUGHERTY.

Witnesses:

H. D. GOMEY,
J. F. HUNTER.