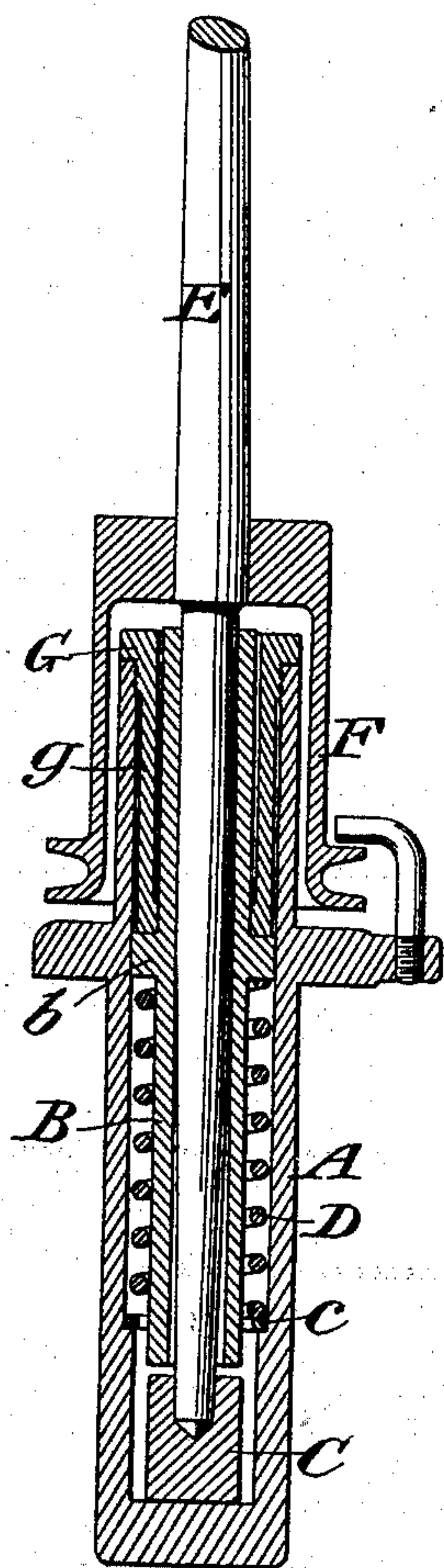


(No Model.)

E. E. BRADLEY.  
SELF BALANCING SPINDLE FOR SPINNING.

No. 504,860.

Patented Sept. 12, 1893.



Witnesses:

O. Sundgren,  
R. H. Hayward

Inventor:

Edward E. Bradley  
by attorneys  
Brown & Leonard

# UNITED STATES PATENT OFFICE.

EDWARD E. BRADLEY, OF STONINGTON, CONNECTICUT, ASSIGNOR TO JOHN E. ATWOOD AND EUGENE ATWOOD, OF SAME PLACE.

## SELF-BALANCING SPINDLE FOR SPINNING.

SPECIFICATION forming part of Letters Patent No. 504,860, dated September 12, 1893.

Application filed December 17, 1892. Serial No. 455,495. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD E. BRADLEY, of Stonington, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Self-Balancing Spindles for Spinning, of which the following is a specification.

This improvement relates to that class of self-balancing spindles for which the step and a spring-supported bolster are made in separate pieces and both arranged within an outside supporting case which serves as an oil reservoir and in which the bolster is free to oscillate. The bolster for spindles of this class is commonly provided at a distance from its upper and lower ends with a collar or flange which is supported by a spring which holds the said collar or flange against the bottom of a nut which is screwed into the supporting case, the said nut being intended to confine the oil within the reservoir of the case as well as constitute the bearing against which the bolster and its spindle can oscillate. The spindle is commonly constructed with a sleeve whirl which overhangs the bolster to bring its band groove near the center of oscillation. The outside supporting case does not, however, extend upward within the whirl nor to anywhere near the top of the bolster but its upper termination where the nut is screwed into it is entirely below the whirl and very little above the collar on the bolster and far below the oil line or level at which the oil should be kept within the bolster for the proper lubrication of the spindle, and therefore when the oil is supplied to that level it leaks through the nut which it is found in practice impossible to keep tight against the very light oils now used for lubrication.

The object of my present improvement is to prevent this leakage and thereby to effect the more perfect lubrication of that part of the spindle within the bolster and to this end my said improvement consists in the construction and combination of the parts hereinafter described and claimed.

The accompanying drawing represents a central vertical section of a bolster supporting case and bolster and their appurtenances and an elevation of the lower part of the spindle.

A is the bolster supporting case; B the bolster having an external collar or flange *b* near the middle of its length fitting easily to the interior of the bolster case; C the step fitted loosely to the bottom of the case A; D the springs supported on a ring *c* resting on a shoulder in the lower part of the case A.

E is the spindle having a sleeve whirl F which overhangs the bolster nearly to the level of the top of the collar or flange *b*.

G is the nut which closes the top of the supporting case A, and which serves to hold down the bolster upon the spring D.

The supporting case A, instead of terminating just above the collar or flange *b* of the bolster as is usual, is prolonged upward nearly to the top of the bolster so that it, as well as the bolster case, is within the sleeve of the whirl, and in order to make the nut applied at this point so far above the collar or flange *b* on the bolster, the said nut is prolonged downward within the upper part of the case in the form of a sleeve *g* which reaches down as far as is necessary to bring its lower end to the level at which the center of oscillation of the spindle and bolster is intended to be, the said center of oscillation being within the lower end of the said sleeve.

By the upward prolongation or extension *a* of the case A and the provision of the downwardly projecting sleeve on the nut G, the only point at which there could be any leakage of oil from the bolster supporting case, viz., around the nut G, is brought above the line or level to which it is necessary to keep the spindle and bolster supplied with oil and therefore leakage of oil is obviated. This is accomplished without any increase of height in the whole spindle supporting device because the upward extension of the prolongation of the supporting case A is brought within the sleeve whirl.

What I claim as my invention is—

1. The combination with a spindle and a flanged bolster and a step therefor, of a supporting case which constitutes an oil reservoir and in which said bolster and step are separately contained and which extends upward above the flange of and nearly to the top of the bolster, a nut which is screwed to



the upper end of the so extended portion of the bolster and which is provided with a downwardly projecting sleeve serving as a bearing for the upper surface of the bolster  
5 flange, and a spring within the said case for supporting the bolster against the bottom of said sleeve, substantially as herein set forth.

2. The combination with a spindle having a sleeve whirl, of a flanged bolster and a separate step for said spindle, a bolster supporting case the upper part of which is within

the sleeve of the whirl, a nut screwed to the upper end of said case, and having a sleeve projecting downward thereinto, and a spring within the bolster case for holding up the  
15 bolster with its flange against said sleeve, substantially as herein set forth.

EDWARD E. BRADLEY.

Witnesses:

JOS. F. JOSEPH,  
WM. A. GILBERT.