

F. H. PERRY.

Improvement in Spindle Bearings, &c., for Spinning Machines.

No. 125,687.

Patented April 16, 1872.

Fig. 1.

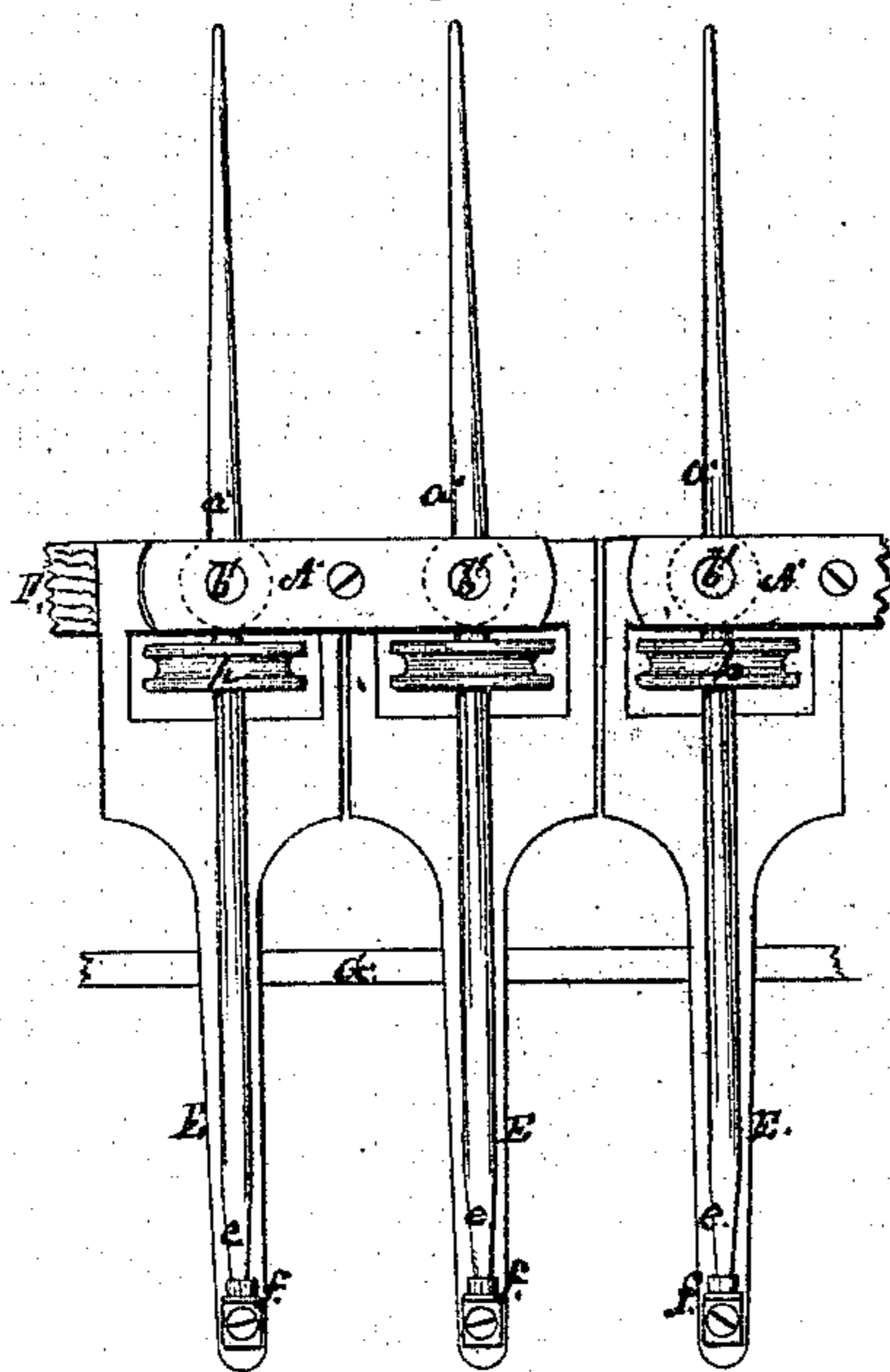
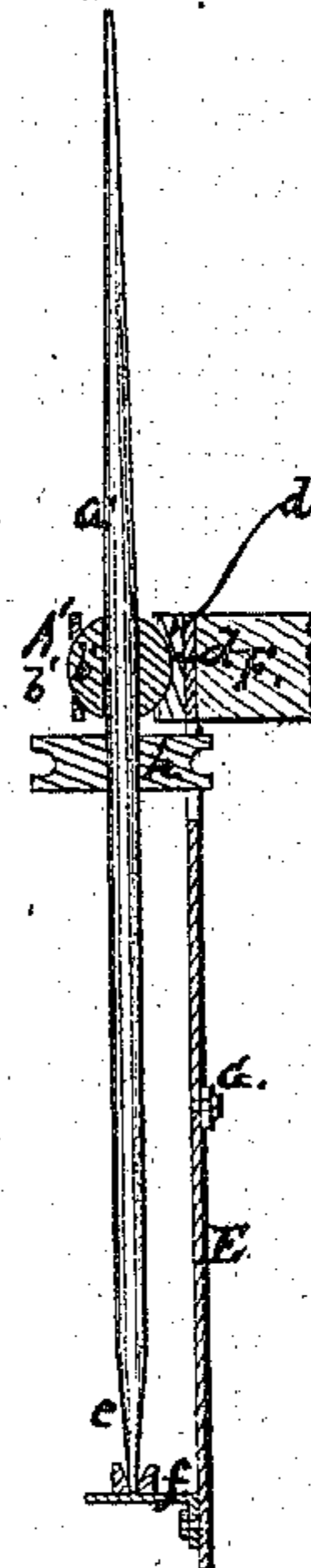


Fig. 2.



Witnesses.

A. Poole

G. B. Woodruff

Inventor.

Francis H. Perry

UNITED STATES PATENT OFFICE.

FRANCIS H. PERRY, OF NIAGARA FALLS, NEW YORK.

IMPROVEMENT IN SPINDLE-BEARINGS, &c., FOR SPINNING-MACHINES.

Specification forming part of Letters Patent No. 125,687, dated April 16, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, FRANCIS H. PERRY, of Niagara Falls, in the county of Niagara and State of New York, have invented a certain new and useful Improvement in Spinning and Twisting Machines which consist of an oscillating or a vibratory spindle-holder; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 represents a series of spindles as they are arranged on the carriage of a jack, mule, or self-operator, showing a front view of the steps and the spring cap-plate for holding the spindle-bearings. Fig. 2 shows a sectional end view of the same.

The object of my invention is to obtain a much higher rate of speed of the spindles than has heretofore been obtained for spinning and twisting yarns; and also to insure the certainty of the whole series of spindles—more or less in number—employed on a machine to run uniformly at the same speed, thus making a very superior article of yarns, and a much larger quantity in a given time.

It is customary to construct mules, jacks, and self-operators to carry a large number of spindles in a row, and any settling either of the frame or building, or a slight bend of the spindle, will throw the spindles out of line with the bearings and cause them to bind, and therefore run with irregular speed and produce yarn irregular in twist. To obviate these difficulties, the spindle has heretofore been provided with a spherical bearing-box, said box being seated in a recess of corresponding shape in the rail, and held in place by a rigid cap screwed down over it.

My improvement consists, first, in an elastic or spring cap to hold the spherical bearing-box in its seat with a yielding pressure; and second, in an independent oscillating spring-support for the bottom of the spindle combined with a spherical journal-box or bearing for the middle portion of the spindle to run in, so as to admit a vibratory motion of the spindle at the bottom, without in the least cramping it in its bearing.

That others may fully understand my invention, I will particularly describe it.

a' a' a' a' are a portion of a set of spindles of

a mule, jack, or self-operator. The spindles *a' a'* pass through spherical journal-boxes *b' b'* and their lower ends rest in stationary cup-steps. The spherical journal-boxes *b'* are seated in recesses *d* made in the front edge of the rails *F* at the required distances apart, and are held in place by spring-caps *A'*, with an elastic or yielding pressure sufficient to retain them in place, and enable the spindle to run steadily, but not so firmly that the box cannot yield slightly to the vibrations of the spindle when slightly out of balance or running a little untrue from any cause. This slight elasticity or yielding of the cap *A'* is found to be necessary to enable the spindle to be run at high speed with regularity and thereby produce yarn with equal and uniform twist throughout. When the spindles are to be run at a very high speed, as is advantageous in twisting, it is necessary to provide means for a more rapid automatic adjustment of the axis of rotation than the spring-cap alone is capable of, and I, therefore, mount the steps *f f* for the lower ends *e e* of the spindles *d' a'* at the ends of the elastic or spring plates *E E*, whereby the lower step of each spindle is enabled to adjust itself into the axis of rotation of the spool or bobbin at the top of the spindle. This axis of rotation will always tend to the center of gravity of the spool and spindle, but, owing to inequality of winding and other causes, the center of gravity will not always be at the axis of the spindle; and it is therefore, impossible to run the spindle at a speed of several thousand turns per minute without the flexibility of the bearings which will permit the constant automatic adjustment of the axis above described. The spring-plates *E* are attached to the rail *F* at the top and to a light intermediate bracing or connecting-rail, *G*, which may be made adjustable up or down, so as to allow more or less freedom of vibration at the lower ends of the spindles, as may be required.

By the above-described means spindles may be arranged to an indefinite number in one frame, and they may be employed either in twisting a single strand or in doubling and twisting several strands; and they may be run at a speed hitherto unattainable without producing any jar or vibratory motion of the other portions of the machine or the building in which it is placed for operation.

The spherical bearings, being made or cast

of anti-friction metal, are very cheap and durable, and, when they become worn, are easily replaced without taking out the spindles, or disturbing any other portion of the machinery.

It is well known to all manufacturers of textile fabrics that there is a difficulty existing, to a greater or less degree, in obtaining a uniform twist of the yarns. For this reason such goods are not as perfect as they would be otherwise.

Having described my invention, what I claim as new is—

1. In combination with the spindle *a'*, the spherical journal-box *b'*, its seat *d*, and the

elastic spring-cap *A'*, as set forth and for the purpose described.

2. The oscillating spindle step-holder *E*, in combination with the spindle *a'* and the spherical journal-box *b'*, as set forth.

3. The combination of the spindle *a'*, spherical journal-box *b'*, spring-cap *A'*, and oscillating spindle-step holder, substantially as and for the purpose specified.

FRANCIS H. PERRY.

Witnesses:

J. B. WOODRUFF,
EDM. F. BROWN.