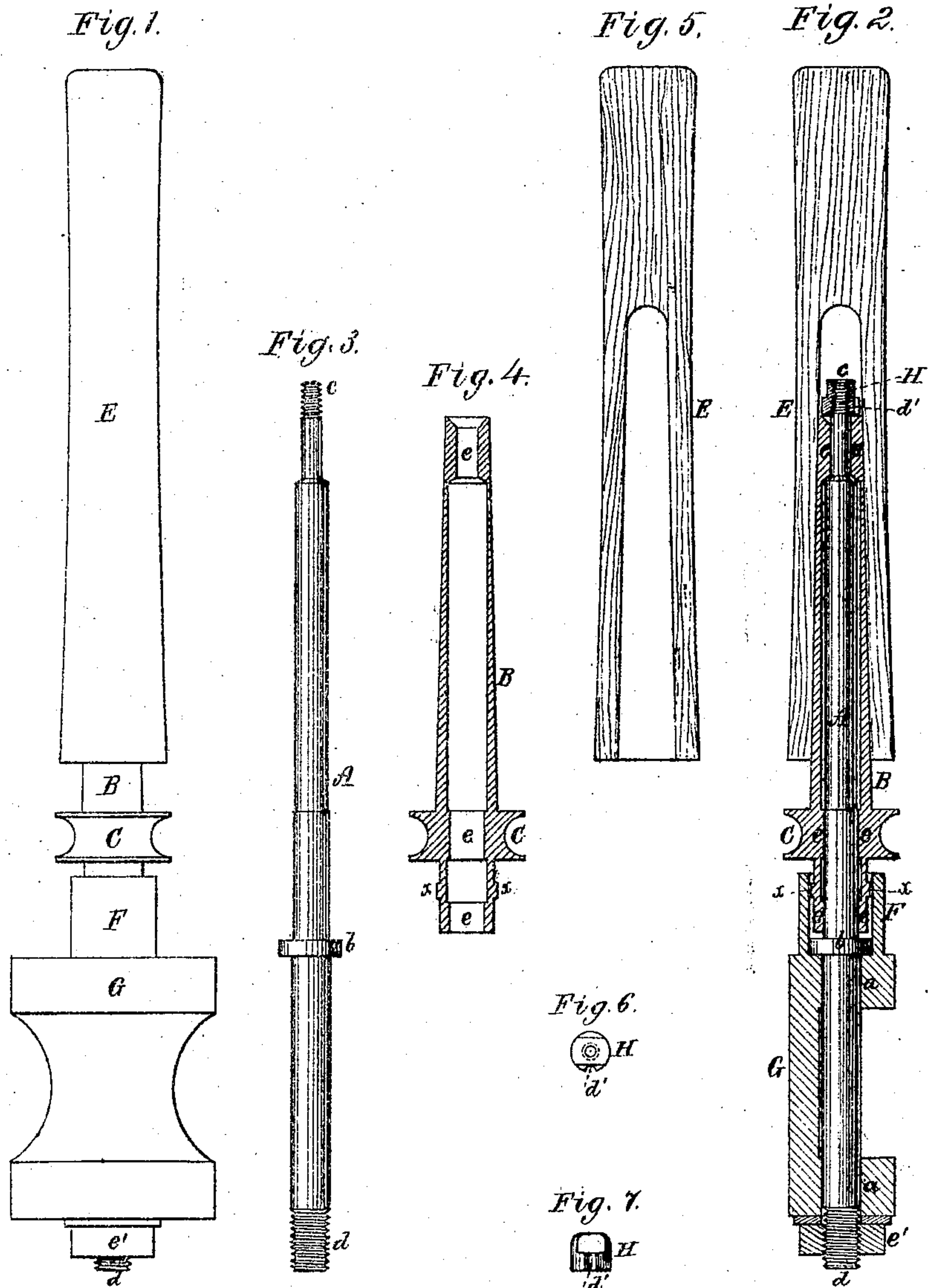


THOMAS H. GRAY.

Improvement in Spindles for Spinning Machines.

No. 124,488.

Patented March 12, 1872.



Witnesses.

S. V. Piper  
L. N. Moore

Thomas H. Gray.

by his attorney  
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# UNITED STATES PATENT OFFICE.

THOMAS H. GRAY, OF WALPOLE, MASSACHUSETTS.

## IMPROVEMENT IN SPINDLES FOR SPINNING-MACHINES.

Specification forming part of Letters Patent No. 124,488, dated March 12, 1872.

*To all persons to whom these presents may come:*

Be it known that I, THOMAS H. GRAY, of Walpole, of the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Machinery for Spinning; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a front elevation, and Fig. 2 a vertical section of my improved mechanism for spinning. Fig. 3 is an elevation of the "dead spindle." Fig. 4, a vertical section of the "live spindle." Fig. 5, a vertical section of the bobbin. Fig. 6 is a top view, and Fig. 7 a side elevation of the cap-nut of the dead spindle.

My invention has reference to a stationary dead spindle and a rotary live or tubular spindle to receive and revolve upon the dead spindle, and also to enter and support and revolve a bobbin. To these mechanical features in the abstract, or as combined otherwise than as hereinafter explained, I make no claim. My invention consists in the live and dead spindles, arranged as hereinafter described, and provided, at their upper parts, with a cylindrical journal, and bearing-screw, and nut, and shoulders; and also, as provided with a whorl, C, to the live spindle, and with the lower part of the latter extended within the oil-cup and bearing upon the dead-spindle without touching the bottom of the oil-cup, or the spindle-collar within such cup, all being as hereinafter explained, and as represented in the accompanying drawing.

In the drawing, A denotes the dead spindle, and B the live or tubular spindle, provided with a whorl, C. E is the bobbin; F, the oil-cup or reservoir; and G, the supporting-rail. The oil-cup F extends upward from the supporting-rail, in manner as shown, there being a cylindrical passage, *a*, leading from the bottom of the cup down through the rail. The dead spindle A extends through such passage *a*, and there has a diameter to correspond with that of the passage; and, besides, is provided with an encompassing shoulder or projection, *b*, to rest on the bottom of the oil-cup and aid in supporting the spindle, and in sealing or stopping such bottom so as to prevent the escape of oil therefrom. At each extremity the

spindle is provided with a male screw, as shown at *c* and *d*, the lower of such screws being to receive a nut, *e'*, which, when turned freely up against the bottom of the rail, serves, with the shoulder, to fix the spindle to such rail, and to draw the shoulder closely down upon the bottom of the oil-cup.

The live spindle extends below the whorl and into the oil-cup, but does not rest on the projection or shoulder *b*. In order to prevent the live spindle B, while in rapid revolution, from rising upward on the dead spindle, a cap-nut, H, is screwed on the upper part of the said dead spindle A, such nut having a diameter such as will enable it, with the live spindle, when on the dead spindle, to enter the bore of the bobbin, and such bobbin to bear on and be supported by the live spindle, in the manner as shown in Fig. 2. The cap-nut has an oil-passage or duct, *d'*, made in its periphery, and down across such, so as to enable oil, on being poured into such passage, to enter within the bore of the live spindle and flow upon the bearings *e* thereof. The bobbin is longer than the part of the live spindle on which such bobbin is placed, the bobbin being projected above both spindles, in manner as shown. In order to insure steadiness of motion of the live spindle on the dead spindle, I prefer to provide the live spindle with a bearing at each end of it, and one within the whorl, all as shown at *e e e*, it at other parts not being in contact with the dead spindle. Furthermore, the dead spindle A, at its head, is provided with a cylindrical journal, projecting upward from a shoulder, and the live spindle B is also furnished with a cylindrical bearing, to receive such journal; and at the foot of such bearing there is, in the live spindle, a shoulder, to rest on the shoulder aforesaid, all being as shown in Fig. 2, the object of these shoulders being to support the live spindle at its upper part on the dead spindle, so as to prevent the bottom of the live spindle from resting or being borne down on and wearing closely to or into the shoulder or collar *b*, so as not only to cause friction there, but prevent oil from passing up from the oil-cup into the bearing *e*, or down into the cup therefrom, as occasion may require.

The live spindle by being supported at top, as described, on the dead spindle, will run



steadier and with less friction than when supported at bottom. That part of the live spindle which is within the oil-reservoir is provided, near the top of the reservoir, with a small encompassing-fillet, *x*, which extends from it nearly to the next adjacent inner surface of the reservoir. The purpose of this fillet is to prevent oil from being ejected from the reservoir. The oil raised on the spindle, on meeting the fillet, will at once be thrown, by centrifugal force, from the latter against the inner surface of the reservoir, and will run down thereon. This fillet, and its arrangement in the reservoir and below its top, is a matter of much importance in the practical working of the live spindle.

In the spinning machinery as hereinbefore described, and as represented in the accom-

panying drawing, I claim as my invention as follows—viz.:

I claim, the live and dead spindles B A; constructed and applied together and to the oil-cup F, as described, and provided, at their upper ends, with the cylindrical journal and bearing, the screw and nut, and the shoulders of such journal and bearing; and also provided with the whorl C and the collar *b*, the spindle A being applied to and supported by such cup and the rail G, and the spindle B being extended below the whorl and into the oil-cup, but not so far as to touch the collar *b*, all as set forth.

THOMAS H. GRAY.

Witnesses:

R. H. EDDY,  
J. R. SNOW.