

J. A. HAFNER.
Mill-Spindles.

No. 146,063.

Patented Dec. 30, 1873.

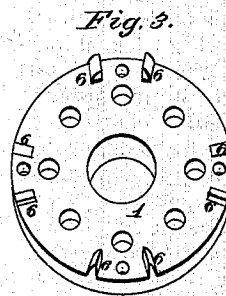
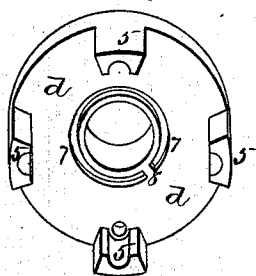
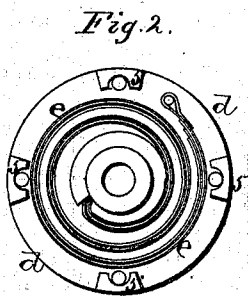
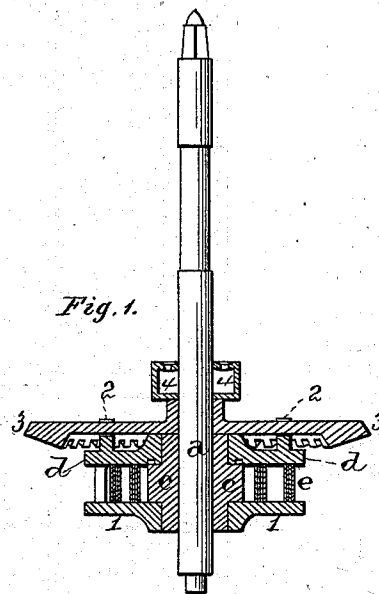
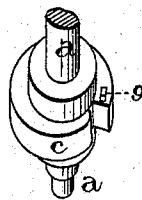


Fig. 4.



WITNESSES.

Henry N. Miller
J. A. Lehmann

By

INVENTOR

Jno. A. Hafner
per
Alexander Mason

Attorneys.

UNITED STATES PATENT OFFICE

JOHN A. HAFNER, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MILL-SPINDLES.

Specification forming part of Letters Patent No. **146,063**, dated December 30, 1873; application filed August 27, 1873.

To all whom it may concern:

Be it known that I, JOHN A. HAFNER, of the city of Pittsburg, in the county of Allegheny and in the State of Pennsylvania, have invented certain new and useful Improvements in Equalizer for Mill-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 relates to an improvement in mill-spindles; and it consists in the arrangement and combination of parts, which will be more fully described hereafter.

Figure 1 is a vertical section of my invention. Fig. 2 is a plan view of the upper plate and spring. Fig. 3 is a perspective of the lower plate. Fig. 4 is a detail view.

a represents a mill-spindle, having keyed to its lower end a center hub, *c*, to which the inner end of the spring *e* is fastened. This spring is made of any suitable number of steel plates, and connects the casing with the shaft. The casing consists of two circular plates, the upper one, *d*, of which has two or more projections or other devices, 2, formed upon its top, for engaging with the arms or spokes of the wheel 3, so as to cause them to revolve together. On its under side there are formed a number of projections, 5, the lower ends of which are held in position by the small flanges 6, formed upon the top of the lower plate 1, and around the opening through which the spindle passes there is formed a

recess, 7, in which is the stop 8. Upon the top of the center hub is formed a small lug, 9, which fits in this recess or groove 7, and serves to revolve the casing with the spindle as long as the spindle is moving forward; but should it turn backward, the casing will not revolve with it until the stud has moved the whole length of the groove and strikes the opposite side of the stop 8. Around the top of the wheel is placed an oil-chamber, 4, for lubricating the various parts. The spring may be used above or below the pinion, as may be desired. The pinion is loose on the shaft or spindle, and, being connected to the casing on two sides, it drives the casing so evenly and regularly that all side pressure or wear, either upon the spindle or pinion, is prevented.

Having thus described my invention, I claim—

1. The combination of the hub *c*, having the lug 9 and plate *d*, provided with the grooves, as specified, for causing the casing to revolve with the pinion, substantially as set forth.

2. The grooved plate *d*, having the projections 5, in combination with the plate 1, spring *e*, hub *c*, and spindle *a*, substantially as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of August, 1873.

JNO. A. HAFNER.

Witnesses:

ROBT. J. GRIER,
C. O'DONNELL.