(No Model.)

E. MAERTENS.

BALL BEARING FOR SPINNING AND TWISTING MACHINE SPINDLES.

No. 546,022. Patented Sept. 10, 1895.

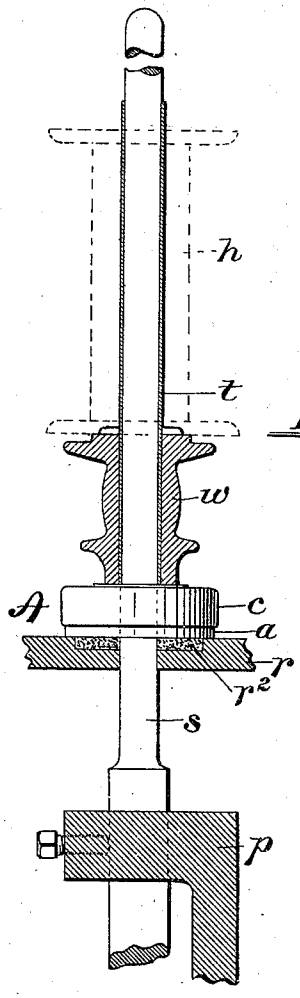

Fig. 3.

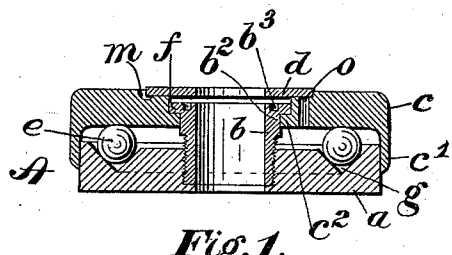

Fig. 1.

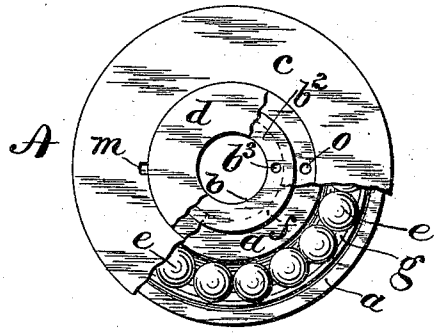

Fig. 2.

Witnesses.

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BALL-BEARING FOR SPINNING AND TWISTING MACHINE SPINDLES.

SPECIFICATION forming part of Letters Patent No. 546,022, dated September 10, 1895.

Application filed March 7, 1895. Serial No. 540,855. (No model.)

To all whom it may concern:

Be it known that I, EMILE MAERTENS, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Ball-Bearings for Spinning and Twisting Machine Spindles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention relates to improvements in "ball-bearings," so called, for spindles of spinning and twisting machines employed in the manufacture of yarn, &c.; and it consists, essentially, in the combination, with a ball-carrying base member adapted to be mounted on the usual spindle rail or plate and a stationary shouldered central sleeve or bushing arranged to receive the dead-spindle secured to said base, of a freely-rotatable cap or plate resting upon the balls, provided with an oil-duct and in engagement with the shouldered portion of said sleeve, and a central disk or washer fixed to said cap and concealing the oil-duct and bushing and capable of rotation with the cap, all as will be more fully hereinafter set forth and claimed.

I am aware that ball-bearings for the spindles of spinning and twisting machines have been used prior to my invention. Such former devices, however, were rendered more or less inefficient from the fact that they were unprovided with means for effectually excluding dust, fly, lint, or other dirt or foreign matter. Therefore the advantages normally due to bearings provided with a series of antifriction-balls were materially lessened after a comparatively short service owing to the presence therein of lint, &c., thereby requiring a correspondingly-increased amount of power for operating the spindles. I am also aware that ball-bearings for vertical spindles have been made in which a movable central sleeve or bushing is employed, through which bushing the live-spindle extends. My invention differs from such former bearings in that the dead-spindle passes loosely through the bushing, the latter being stationary and so arranged that it is out of contact with the live-spindle at all times.

The object I have in view is to practically overcome the objections or disadvantages inherent in ball-bearings of the class just referred to. By means of my improvement the bearings are prevented from clogging up with dust, lint, &c. Consequently the spindles may be freely rotated with a minimum consumption of power.

When the several parts forming my improved bearing are combined together, thus constituting an article of manufacture, the interior of the bearing—that is, the portion in which the series of small antifriction-balls are mounted—is practically dirt-tight, the balls being completely concealed, thereby excluding dust and other foreign matter.

In the accompanying sheet of drawings, Figure 1 is a transverse sectional view, enlarged, taken through the center of my improved ball-bearing. Fig. 2 is a plan view of the same, portions being broken away to show its interior; and Fig. 3 is a side elevation, in partial section, showing the bearing combined with mounted spindles and arranged substantially as in use.

A, again referring to the drawings, designates my improved ball-bearing as a whole and as arranged for the spindles of spinning and twisting machines. It consists, essentially, of a round base member a, having a V-shaped annular groove g in its upper face, in which a series of antifriction-balls e are located. A screw-threaded central sleeve or bushing b is secured to the base a and a freely-rotatable cap or disk c is supported by the balls e and is held in position by the head of the bushing b. The rotary cap-plate c is provided with a downwardly-extending peripheral rim c', the latter closely surrounding the corresponding sides of the base. The said cap is counterbored centrally to form the flange c^2 and is arranged to receive and freely revolve around the enlarged flange f and head b^2 of the bushing, as clearly shown in Fig. 1. As thus constructed, it forms a practically dirt-tight joint and serves to prevent the entrance of foreign matter. The upper end of the bushing may be provided with two holes b^3 or other equivalent means to

receive a suitable wrench, to facilitate its insertion and removal. The cap *c* has a thin metal washer or disk *d* let snugly into its upper face. Said washer is practically one with the cap and it covers an oil-duct *o*, formed in the cap. This oil-duct when uncovered affords means by which the bearing can be easily lubricated. The washer *d* may be readily detached from the cap by inserting the end of a suitable pointed tool or wire into the recess *m*.

In Fig. 3 my improved ball-bearing is shown as adapted to spindles of spinning and twisting machines—that is to say, the stationary or dead spindle *s* is adjustably mounted in a spindle-rail *p* and passes upwardly through the usual lifter plate or rail *r*. On top of the latter is located my improved ball-bearing A, said spindle also passing through it. A sleeve or live-spindle *t* is mounted to revolve around the upper portion of the stationary spindle and is arranged to carry a bobbin or spool *h*. (Shown by dotted lines.) The live-spindle has secured thereto at the bottom a belt-driven whirl *w*. The two latter revolve in unison, as common, and rest directly upon the washer portion of the cap-plate *c*, which in turn is supported by the stationary ball-carrying base *a*, the stationary bushing *b* at the same time serving to hold the revolving cap-plate in position both centrally and vertically.

From the foregoing it will be apparent that the central bushing or sleeve *b* is out of contact with the live-spindle and whirl at all times.

I prefer to interpose a lubricating disk or washer r^2 of fibrous material between the under side of the bearing A and the lifter-plate *r*, the latter being recessed for the purpose, as shown. In some cases the bearing may be secured directly to the dead-spindle *s* without the intervention of the rail or lifter plate *r*. In any event the base *a* of my improved ball-bearing is to be fixed or stationary, while at the same time the cap-plate *c* thereof is adapted to be rotated by and in unison with the live-spindle.

I claim as my invention—

1. As an improved article of manufacture, the hereinbefore described ball-bearing for spindles of cop spinning and twisting machines, the same consisting essentially of a base member, a series of anti-friction balls arranged therein, a suitable cover or cap-plate resting upon said balls and capable of being independently rotatable with respect to the base member, and a removable central bushing or sleeve arranged to be out of contact with the live spindle and fixed to said base and having its head portion arranged to maintain said cap-plate in position, and being also arranged to receive a dead-spindle.

2. In a ball-bearing of the class described, the combination with a circular base having a groove formed in its upper face and a series of anti-friction balls arranged in said groove, of the rotatable cap-plate resting upon said balls and having its outer portion extending downwardly and around the sides of the base, and a removable shouldered bushing or sleeve arranged to be out of contact with the live spindle and screwed into said base and engaging the cap-plate to hold the latter in position, substantially as set forth.

3. In a ball-bearing of the class described, the combination with the grooved base, balls mounted therein, and a central bushing or sleeve screwed into the base, of the rotatable cap-plate arranged to engage with the head of said bushing to hold the plate in position, and a removable washer or cover forming a part of said cap-plate, substantially as hereinbefore described.

4. The combination with a suitably mounted non-rotatable or dead-spindle, and a rotatable or live-spindle mounted thereon, of the ball-bearing device substantially as hereinbefore described, the same consisting of the supported base member *a*, a removable central bushing *b* out of contact with the said live spindle and fixed into the base and having said dead-spindle passing therethrough, a cover or cap-plate interengaging with the head of said bushing and supporting the live-spindle and capable of being rotated by the latter, and a series of movable anti-friction balls interposed between the base member and cap-plate, said balls supporting the latter and the load resting thereon.

5. In a spinning or twisting machine, the combination with a dead-spindle, a rotatable or live-spindle mounted thereon and a lifter-plate, of a ball-bearing device supported by the lifter-plate through which parts said dead-spindle passes, said ball-bearing having a cap-plate extending downwardly around the bearing-base and capable of being rotated by the live-spindle, a removable bushing screwed into the bearing base member, and a lubricating-disk let into the upper face of the lifter-plate and in engagement with the under side of the said bearing, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

EMILE MAERTENS.

Witnesses:
GEO. H. REMINGTON,
WILLIAM POSELLS.