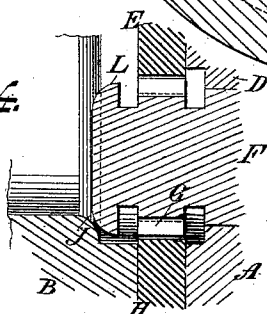
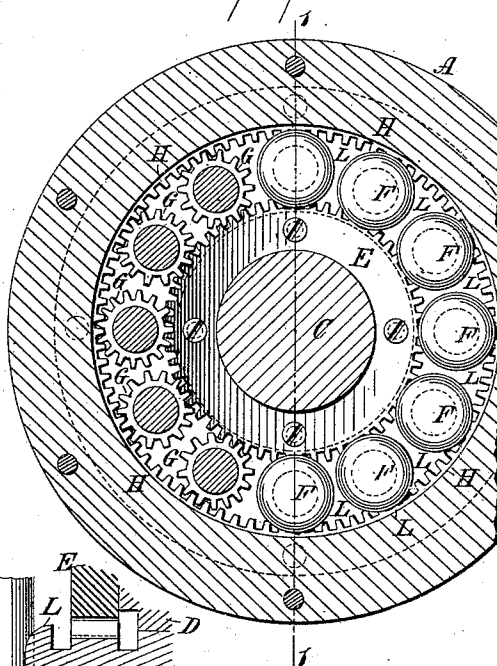
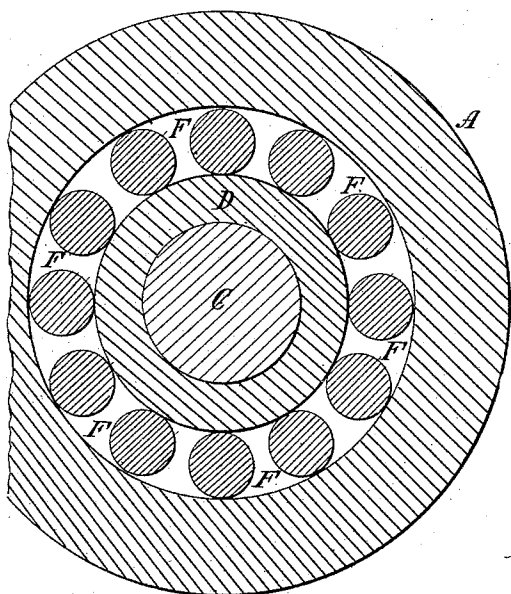
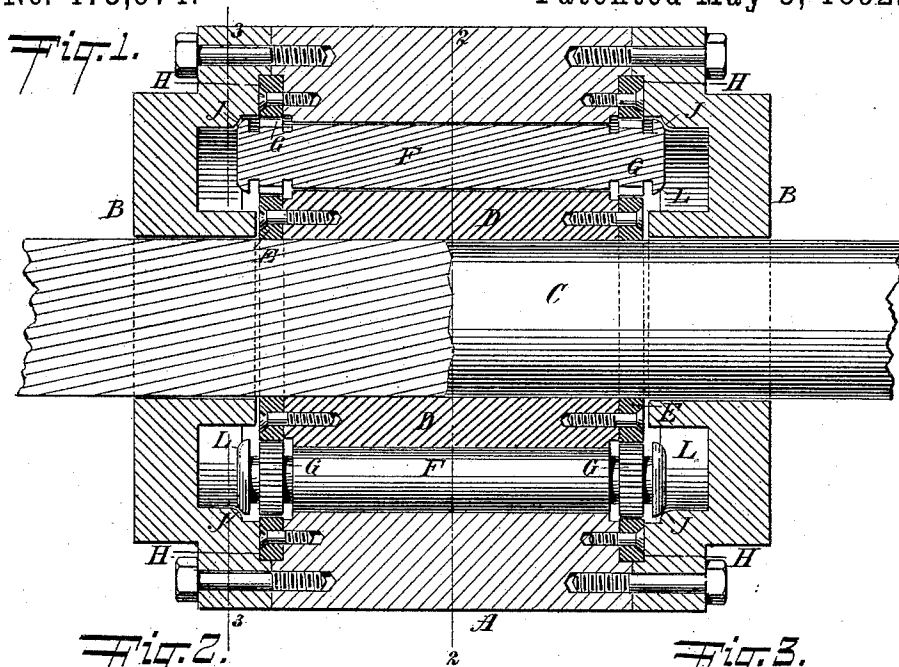


M. B. STAFFORD & R. W. MORGAN.  
ANTI-FRICTION JOURNAL BOX.

Patented May 3, 1892.



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# UNITED STATES PATENT OFFICE.

MARSHALL B. STAFFORD AND ROBERT WEBB MORGAN, OF NEW YORK, N. Y.

## ANTI-FRICTION JOURNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 473,974, dated May 3, 1892.

Application filed September 2, 1891. Serial No. 404,510. (No model.)

*To all whom it may concern:*

Be it known that we, MARSHALL B. STAFFORD and ROBERT WEBB MORGAN, citizens of the United States, and residents of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Anti - Friction Journal-Boxes, of which the following is a specification.

The invention relates to improvements in anti-friction journal-boxes; and it consists, essentially, of a shaft extending into or through the shell and provided with gear - wheels which engage a series of pinions secured upon the ends of rollers located in the line of a circle intermediate said shaft and shell, the latter also being furnished with gearing to engage said pinions and with caps having annular bearing-points for contact with reversely-curved annular bearings on the ends of said rollers.

The essential feature of novelty in the construction consists in the reversely - curved bearing-shoulders to prevent end motion in the rollers surrounding the shaft, said bearing-shoulders being in contact with each other on the pitch-line of the rollers.

The invention will be more fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section of an anti-friction journal-box constructed in accordance with the invention, said section being on the dotted line 1 1 of Fig. 3. Fig. 2 is a central vertical transverse section of same on the dotted line 2 2 of Fig. 1. Fig. 3 is a vertical transverse section of same on the dotted line 3 3 of Fig. 1; and Fig. 4 is an enlarged detached sectional view showing the relative position of the end of the rollers, with the annular bearing provided in the cap at the end of the shell.

In the drawings, A designates the shell, having at each end a cap B and receiving centrally through it the shaft or axle C. The shaft C is closely encompassed within the shell A by a sleeve D, rotating with said shaft and provided at its ends with the externally-toothed gear-wheels E E, which are secured by means of screws to and rotate with said sleeve D. The sleeve D is circular in cross-section and is concentrically arranged within

the circular walls of the shell A, and intermediate said sleeve and said walls is arranged the series of rollers F, extending parallel with and encircling the shaft C and sleeve D and being equidistant from each other, as illustrated more clearly in Fig. 2. The rollers F bear against the interior walls of the shell A and exterior surface of the sleeve D, and said rollers are provided on their ends with the pinions G, which mesh with the externally-toothed gear-wheels E E and the internally-toothed rims H, secured at opposite ends of the shell A.

The shell A is closed at its ends by means of caps B, which have proper apertures to receive the shaft C and on their inner faces are provided with the annular rounded shoulders J, which form bearings for the annular rounded shoulders L on the ends of the rollers F, as shown enlarged in Fig. 4, in which it will be observed that the curved surfaces of the shoulders J L correspond with and are opposed to each other and that the contact of said surfaces is on the pitch-line, or line of bearing between said rollers E and shell A.

In the employment of the invention, the shell A being stationary and the shaft C, with its sleeve D and gear-wheels E E, rotating, the pinions G and gearing H, coacting with the wheels E, preserve the parallelism of the rollers E with each other and with the shaft C and the proper separation of said rollers, and also prevent any slipping or rubbing motion between said rollers and the sleeve D or shell A. During the use of the invention the opposing bearing surfaces or shoulders J L prevent the lateral or end motion of the rollers E with the minimum amount of friction.

While in some instances we shall prefer to make use of the sleeve D, it is obvious that there will be other instances in which it will be convenient to discard the said sleeve, and in such event the gearing E E will be secured to or formed directly on the shaft C, and the rollers F will be brought into contact with the exterior surface of the shaft C and interior walls of the shell A. The omission of the sleeve D will result in the shell being smaller and better adapted for some pieces of machinery.

We do not limit the invention to the placing of the bearing-shoulders J on the caps B,

since if the shoulders L were located at the inner side of the pinions G said shoulders J would have to be placed on the shell proper. For some kinds of shafting, also, the shoulders J will be placed directly on the shaft instead of in the shell, and at such time the bearing-point will be on the pitch-line, or line of contact between the shaft and rollers. This latter arrangement is specially applicable where the sleeve D is omitted and the rollers F brought close against the shaft.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In an anti-friction journal-box, the shaft and the series of rollers encompassing said shaft and having the curved annular bearing-shoulders, combined with the inclosing shell having the reversely-curved annular bearing-shoulders for contact with the shoulders on the rollers, the contact-point of said shoulders being on the pitch-line of the rollers, substantially as and for the purposes set forth.

2. In an anti-friction journal-box, the shaft and the series of rollers encompassing said shaft and having the pinions and the curved annular bearing-shoulders, combined with the inclosing shell having the reversely-curved annular bearing-shoulders for contact with the shoulders on the rollers, the gearing on said shaft to engage said pinions, and the gearing on the shell also to engage said pinions, the

contact-point of said shoulders being on the pitch-line of the rollers, substantially as and for the purposes set forth.

3. In an anti-friction journal-box, the shaft, the sleeve and gearing on said shaft, and the series of rollers having the pinions and the curved annular bearing-shoulders, combined with the inclosing shell having the reversely-curved annular bearing-shoulders for contact with the shoulders on the rollers, and the gearing on the shell to engage said pinions, the contact-point of said shoulders being on the pitch-line of the rollers, substantially as shown and described.

4. In an anti-friction journal-box, the shaft and the inclosing shell, combined with the series of rollers intermediate said shaft and shell and having the curved annular bearing-shoulders, and the reversely-curved annular bearing-shoulders in contact with the first-mentioned shoulders on the pitch-line of said rollers, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 29th day of August, A. D. 1891.

MARSHALL B. STAFFORD.  
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Witnesses:

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