(No Model.) 2 Sheets—Sheet 1.

C. D. MENEELY.

ROLLER BEARING.

No. 462,719. Patented Nov. 10, 1891.

Fig. 1.

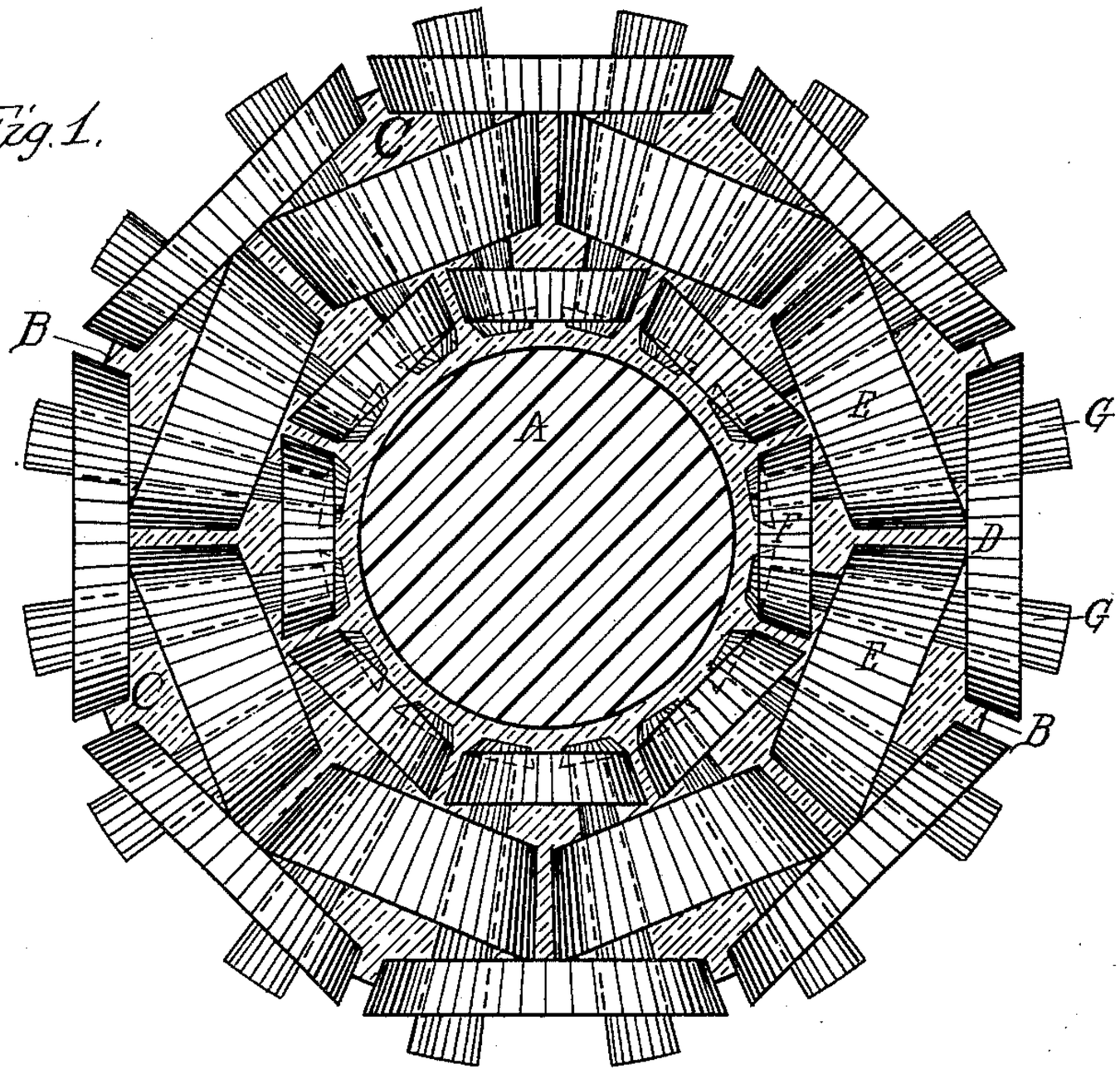


Fig. 2.

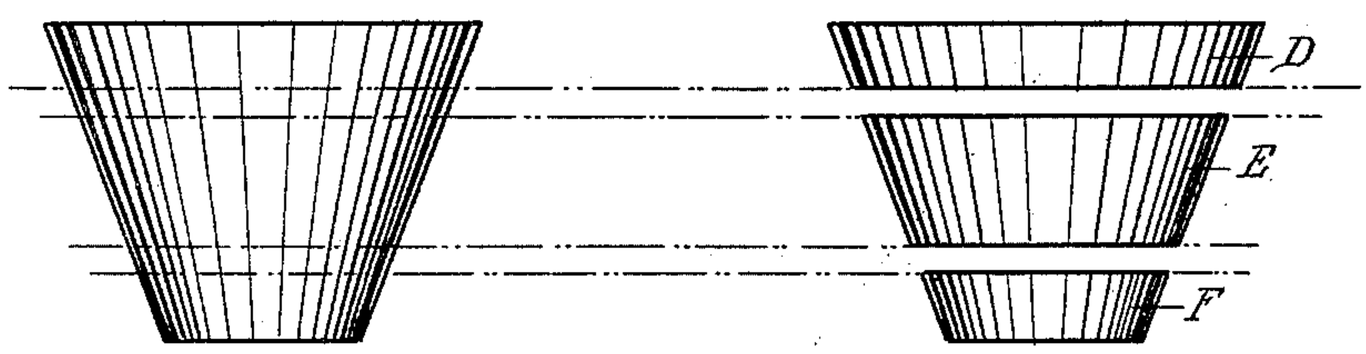
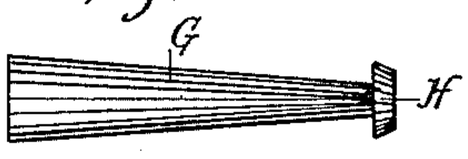


Fig. 3.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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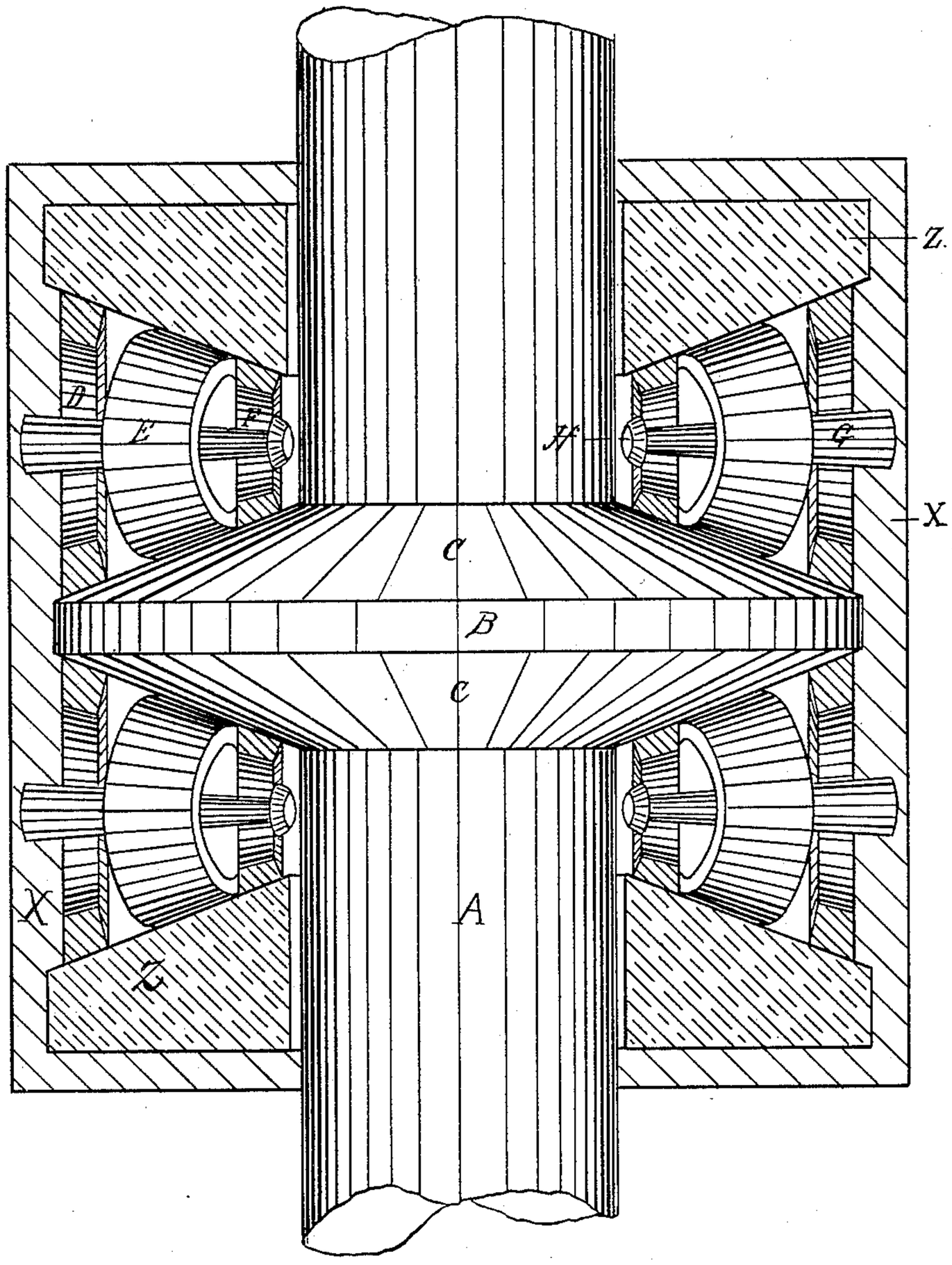
Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES D. MENEELY, OF ALBANY, NEW YORK.

ROLLER-BEARING.

SPECIFICATION forming part of Letters Patent No. 462,719, dated November 10, 1891.

Application filed March 17, 1891. Serial No. 385,333. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. MENEELY, of the city and county of Albany, State of New York, have invented new and useful Improvements in Roller-Bearings, of which the following is a specification.

My invention relates to improvements in roller-bearings, and has for its objects to provide a roller thrust and step bearing which shall be light and reduce the friction to a minimum. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a cross-section through the shaft, showing a plan of the roller-bearing in contact with a collar keyed to the shaft. Fig. 2 is a pair of truncated cones, showing the manner of determining the size of the rollers. Fig. 3 is a pin or spindle; and Fig. 4 shows the shaft and beveled collar and a section through the bearing-box, showing the rollers in contact with said collar.

Similar letters refer to similar parts throughout the several views.

To the shaft A the collar B is secured or formed upon as part of the shaft. Said collar B is provided with two lateral beveled surfaces C, extending from the shaft outwardly and approaching each other, as shown in Fig. 4.

The bearing-box X is provided at each lateral end with a beveled disk Z, corresponding in pitch to the beveled surface C of the collar, but flaring outwardly from the shaft in an opposite direction to that of the beveled surface of the collar adjacent thereto, as shown in Fig. 4.

Between the beveled disk Z of the bearing-box and the beveled surface C of the collar and in contact with each I place a number of conically-shaped tubular rollers arranged to take up the speed of the various portions of the beveled surface C of the collar B.

The beveled disk Z may be a part separate from the bearing-box, if desired, but must be stationary and form a bearing-surface for the rollers. I construct these rollers by dividing a tubular roller in the shape of a truncated cone, having its pitch conforming to that of the surface C of the collar B and the disk Z, transversely into three parts, forming three conically-shaped rollers D, E, and F, (see Fig. 2,) each of said rollers being shorter than the distance from the outer edge of the collar to the shaft. I arrange these rollers in the following manner: The largest rollers D are placed between the surface C of the collar and the stationary beveled disk Z near the outer edge of the collar. The smaller rollers E are placed between the beveled surface C and the beveled disk Z, nearer the shaft than the rollers D and overlapping or breaking the joints between the rollers D, and the rollers F are placed still nearer the shaft between the beveled surface C and the beveled disk Z and overlapping or breaking joints between the rollers E, as shown in Fig. 1. I place through the rollers spindles or pins G in such a manner that each spindle shall pass through one of the largest rollers D and through the overlapping roller next adjacent to it of the series E, and from thence through the roller F, next adjacent to and overlapping said roller E. As thus arranged a roller of the series D has two spindles passing through it, each one of which passes through separate but adjacent rollers of the series E and through the same roller of the series F. At the end of each spindle is formed a cap or head H, which is in contact with the surface of the roller F nearest the shaft and which is for the purpose of keeping the spindles in place. As thus arranged the spindles alternately interlock or interweave the conical-shaped tubular rollers around the collar and between the collar and the stationary beveled disk. They also by this arrangement prevent the rollers from being forced outwardly and away from the shaft. With the rollers thus constructed, formed in the shape of truncated cones and arranged between and in contact with the beveled surfaces of the collar and the bearing-disk, said rollers being alternately interwoven by means of the spindles or pins to encircle the shaft, when the beveled collar turns each of the rollers in contact therewith revolves, as do also the spindles, which serve to keep the rollers in position and in alignment, and the friction generated is reduced to a minimum. The tendency of the thrust of the shaft and collar is to force everything between the beveled surface of the collar and the stationary beveled disk outwardly away from the shaft. This result

is prevented by the construction and position of my rollers and the arrangement of the spindles, and very little, if any, friction is generated because of the constant movement of the roller and spindles and a total absence of sliding contact.

It is understood that I place my roller-bearing on each side of the collar C in contact with each of the beveled surfaces and with each of the beveled disks of the bearing-box.

My invention is particularly well adapted for use in connection with the crank or propelling shaft of a steamship. The horizontal thrust of the shaft to which the propelling-screw of a ship is attached is enormous, and the friction generated at the bearings is so great as to necessitate a continuous stream of water or oil being applied thereto, and a great deal of power is lost in consequence. By means of my roller-bearing the friction would be reduced to a minimum. Water or oil would not be necessary, except in limited quantities, if at all, and the power necessary to operate the shaft would be greatly reduced.

It is apparent that my invention may be used as a step-bearing with the same advantage which I claim for it as a thrust-bearing, and I therefore do not limit myself in any way to the application on my invention for thrust-bearing.

I do not limit myself to the number of series of rollers, for although I have shown but three—D, E, and F—the number may be increased, provided they are arranged to break joints or lap past each other at their ends and arranged with rods or spindles, substantially as described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a roller-bearing, the combination of a series of conically-shaped tubular rollers, a beveled collar secured to the shaft, and a stationary beveled bearing-disk, said rollers placed between the beveled surfaces of said collar and said disk, each of said rollers being shorter than the distance from the outer edge of the collar to the shaft, with rods passing through said rollers alternately, substantially as described, and for the purpose set forth.

2. In a roller-bearing, the combination of a series of conically-shaped tubular rollers placed between and in contact with a beveled collar secured to the shaft and a stationary beveled bearing-disk, each of said rollers being shorter than the distance from the shaft to the outer edge of said collar, said rollers arranged to break joints or lap past each other at their inner ends, with rods arranged to pass through said rollers and alternately interlock or interweave said rollers around the shaft and between the collar and the bearing-box, substantially as described, and for the purpose set forth.

CHARLES D. MENEELY.

Witnesses:
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ALFRED A. GUTHRIE.