

C. SINTZ.
REVERSIBLE PROPELLER WHEEL.
APPLICATION FILED NOV. 26, 1907.

907,298.

Patented Dec. 22, 1908.

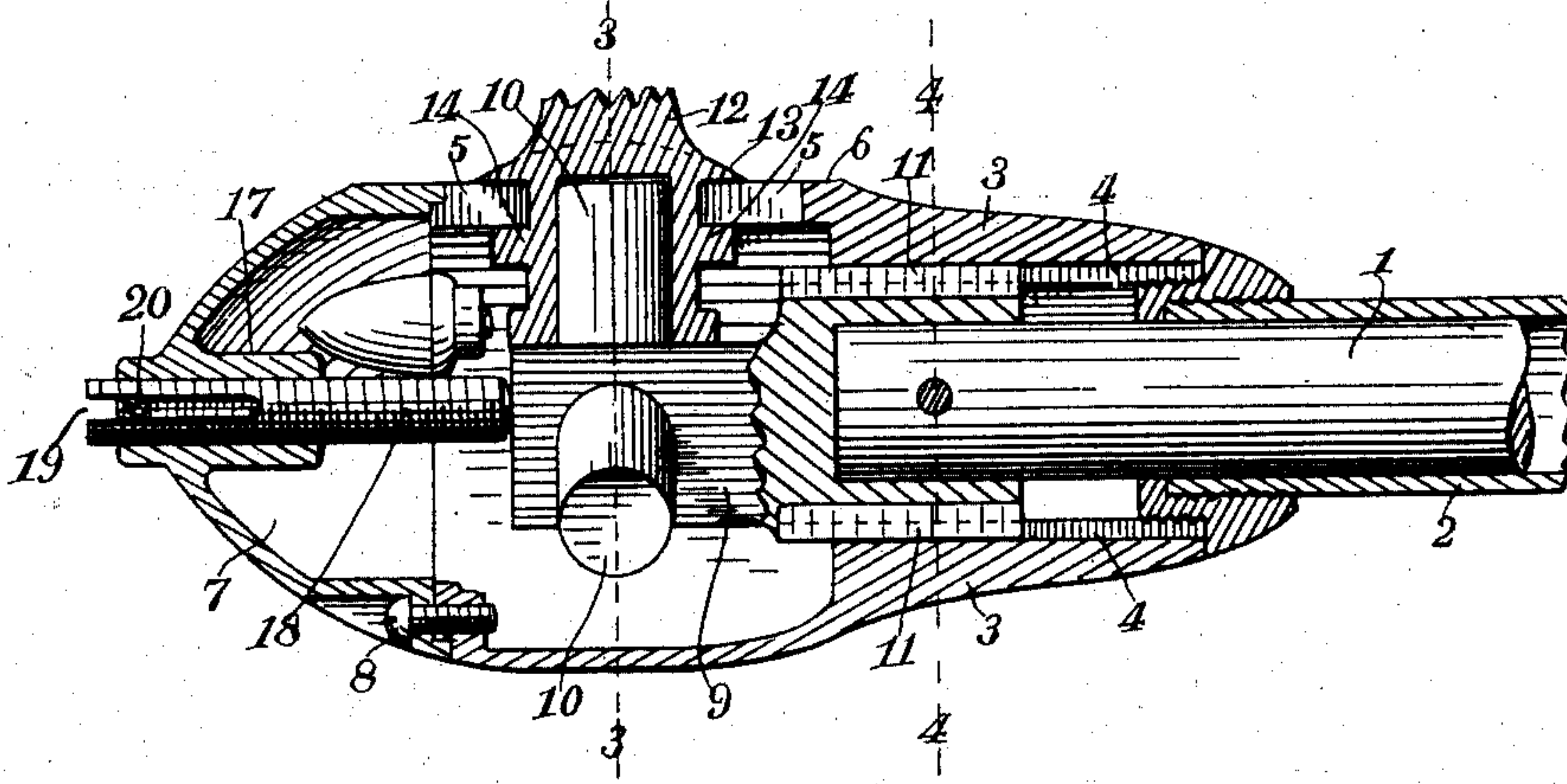


Fig. 1.

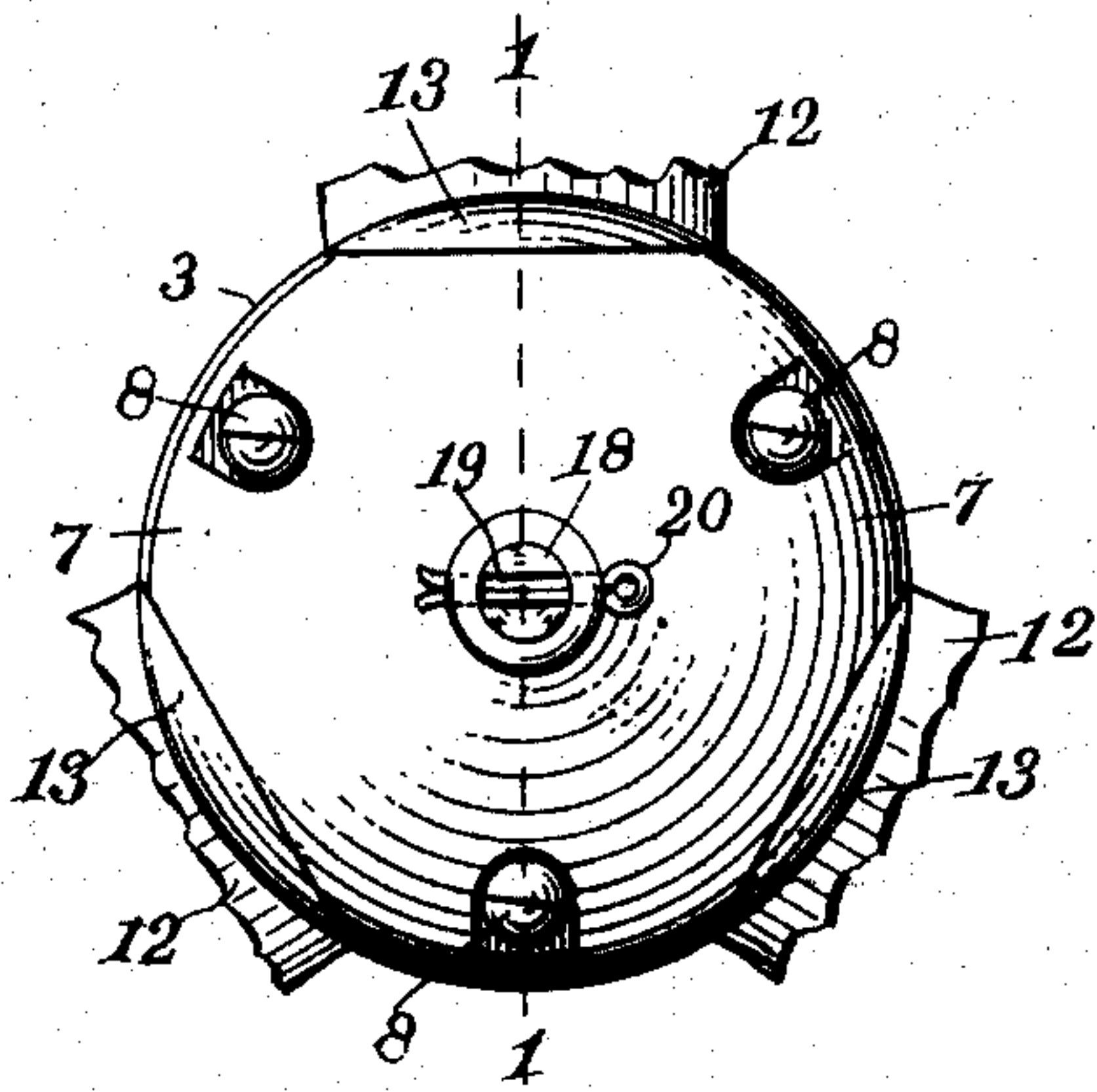


Fig. 2.

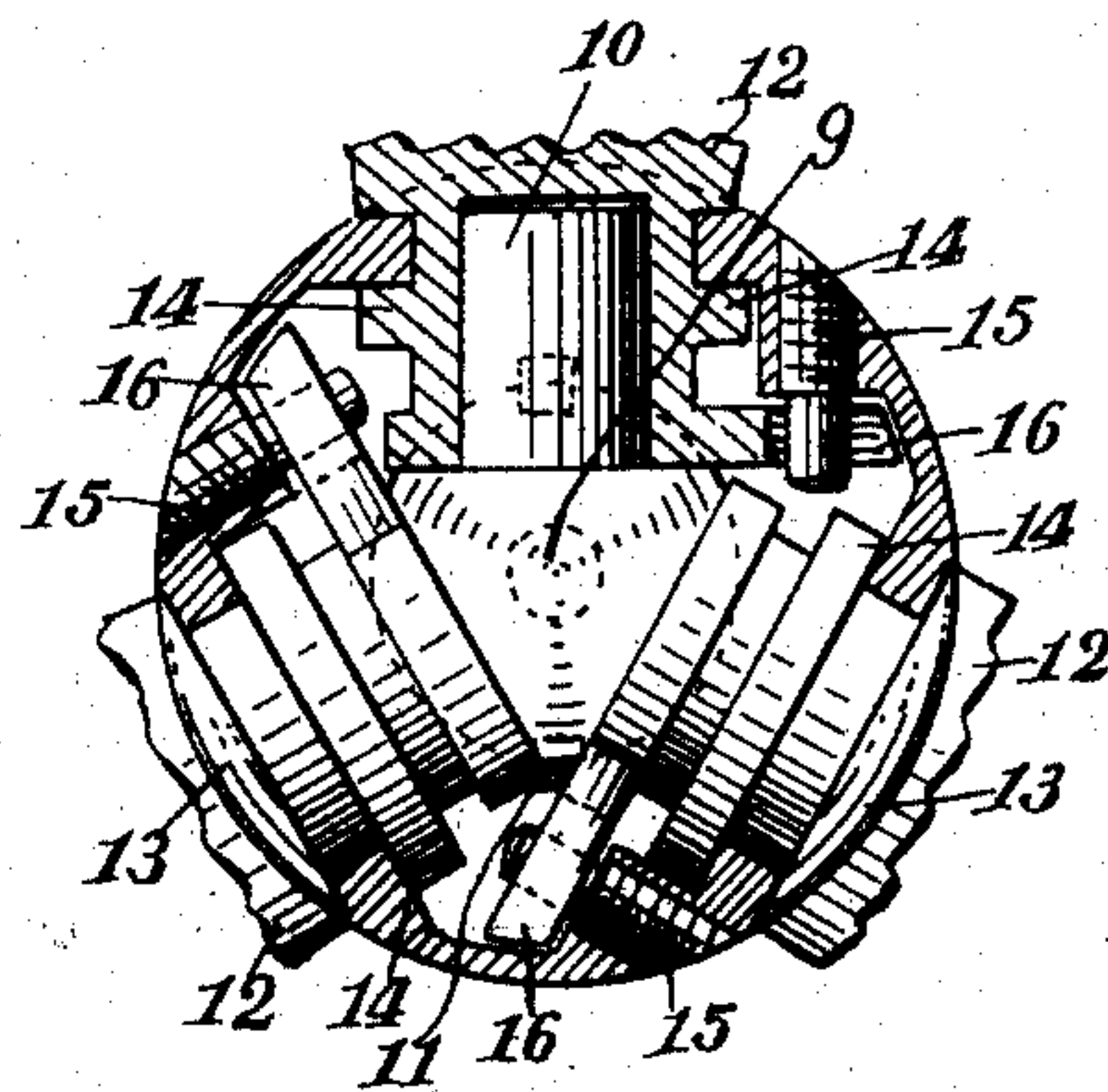


Fig. 3.

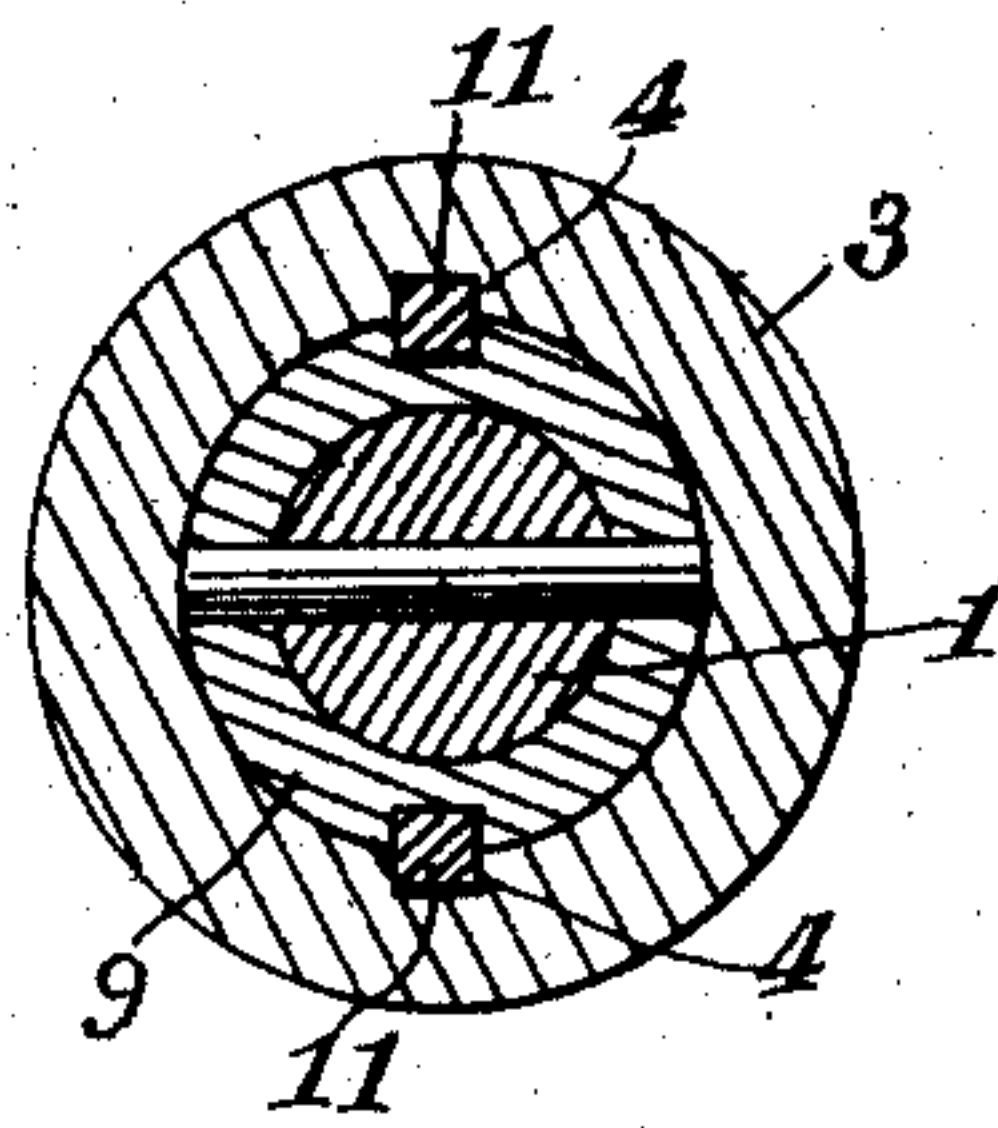


Fig. 4.

Witnesses
Georgiana Chace
Palmer Jones.

Inventor
Claude Sintz
By Luther V. Moulton
Attorney

UNITED STATES PATENT OFFICE.

CLAUDE SINTZ, OF GRAND RAPIDS, MICHIGAN.

REVERSIBLE PROPELLER-WHEEL.

No. 907,298.

Specification of Letters Patent.

Patented Dec. 22, 1908.

Application filed November 26, 1907. Serial No. 403,946.

To all whom it may concern:

Be it known that I, CLAUDE SINTZ, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Reversible Propeller-Wheels; 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.

My invention relates to improvements in reversible propeller wheels, and more particularly to the class shown in my Patent No. 878,095, issued February 4, 1908, on reversible propeller.

The object of my present invention is to provide a reversible propeller wheel with means for accurately determining the adjustment of the blades, and to accurately modify or vary the "pitch" of the same at pleasure, and it consists essentially of an adjustable stop to limit the movement of the blade adjusting means, whereby the adjustment of the blade thereby is limited and varied at pleasure, as will more fully appear by reference to the accompanying drawings, in which:

Figure 1. is a longitudinal section of a device embodying my invention, taken on the line 1—1 of Fig. 2.; Fig. 2. a rear elevation of the same; Fig. 3. a transverse section on the line 3—3 of Fig. 1.; and Fig. 4. the same on the line 4—4 of Fig. 1.

Like numbers refer to like parts in all of the figures.

1 represents a driving shaft; 2 a sleeve slidable on the shaft 1 and adjusted in any usual way, (not shown); 3 a shell attached to the sleeve and adjustable therewith; 4 keyways or grooves in the interior of the forward part of the shell slidably engaged by splines or keys 11 projecting radially from the head 9 fixed on the end of the shaft 1. The shell is thus made adjustable longitudinally of the shaft and positively driven thereby. In the shell are elongated openings 5 in which the blades 12 are inserted, being both rotative and slidable therein. These openings are surrounded by flat surfaces 6, in planes parallel with the axis and slidably engaged by flanges 13 at the base of the blades. Said openings 5 and the rear end of the shell are all open rearward when the conical cap 7 is removed and are closed by a

said cap, which is secured by screws 8 to the rear end of the shell.

9 is a head rigidly attached to the rear end of the shaft 1 and provided with radially projecting studs 10 each inserted in an opening in the axis of the shank of the respective blade 12. These blades are each held in place on the stud by a flange 14, which slidably engages an inner surface of the shell parallel with the surface 6 on the exterior of the same.

In the shell are also inserted pins 15 each of which engages the slotted outer end of an arm 16 on the respective inner end of the shank of the blade, to turn and adjust the blade on the stud 10 as the shell is moved longitudinally of its axis by means of the sleeve 2.

So far the device is the same as shown in the application above referred to.

My invention consists of the following, to-wit: 18 is a screw arranged in line with the axis of the shaft and extending through a screw threaded and forwardly projecting boss 17 in the apex of the cap. When the shell is moved forward to adjust the blades, this screw will engage the rear end of the head and thus accurately limit the forward movement of the shell, and the consequent pitch adjustment of the blades. To adjust and hold the screw it is provided with a longitudinal slot in its outer end, and a cotter pin is inserted transversely through the same and through the rear part of the boss 17. By removing the cotter pin, the screw may be turned and adjusted and the pin then replaced to securely hold the screw from turning.

Obviously the device to limit the movement of the blade adjusting member may be variously modified without departing from my invention.

What I claim is:

1. In a propeller wheel, the combination of a head adapted to be attached to a shaft, blades mounted on the head and rotative on radial axes, a shell inclosing the head and longitudinally adjustable, means for connecting the shell and the blades to adjust the latter about their axes, a boss on the interior of the rear end of the shell, a screw in the boss and engaging the head, and means for adjusting and holding the screw.

2. In a propeller wheel, a head adapted to be fixed on a shaft, blades mounted on the

head and rotative on radial axes, a shell longitudinally adjustable and connected to the blades to adjust the same, a screw having a slotted outer end engaging the head at its
5 inner end, a boss on the interior of the rear of the shell to receive the screw and a cotter pin extending through the boss and screw.

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

CLAUDE SINTZ.

Witnesses:

PALMER A. JONES,
LUTHER V. MOULTON.