

No. 685,368.

Patented Oct. 29, 1901.

W. S. AVARD.
PROPELLER RUDDER.

(Application filed Jan. 14, 1901.)

(No Model.)

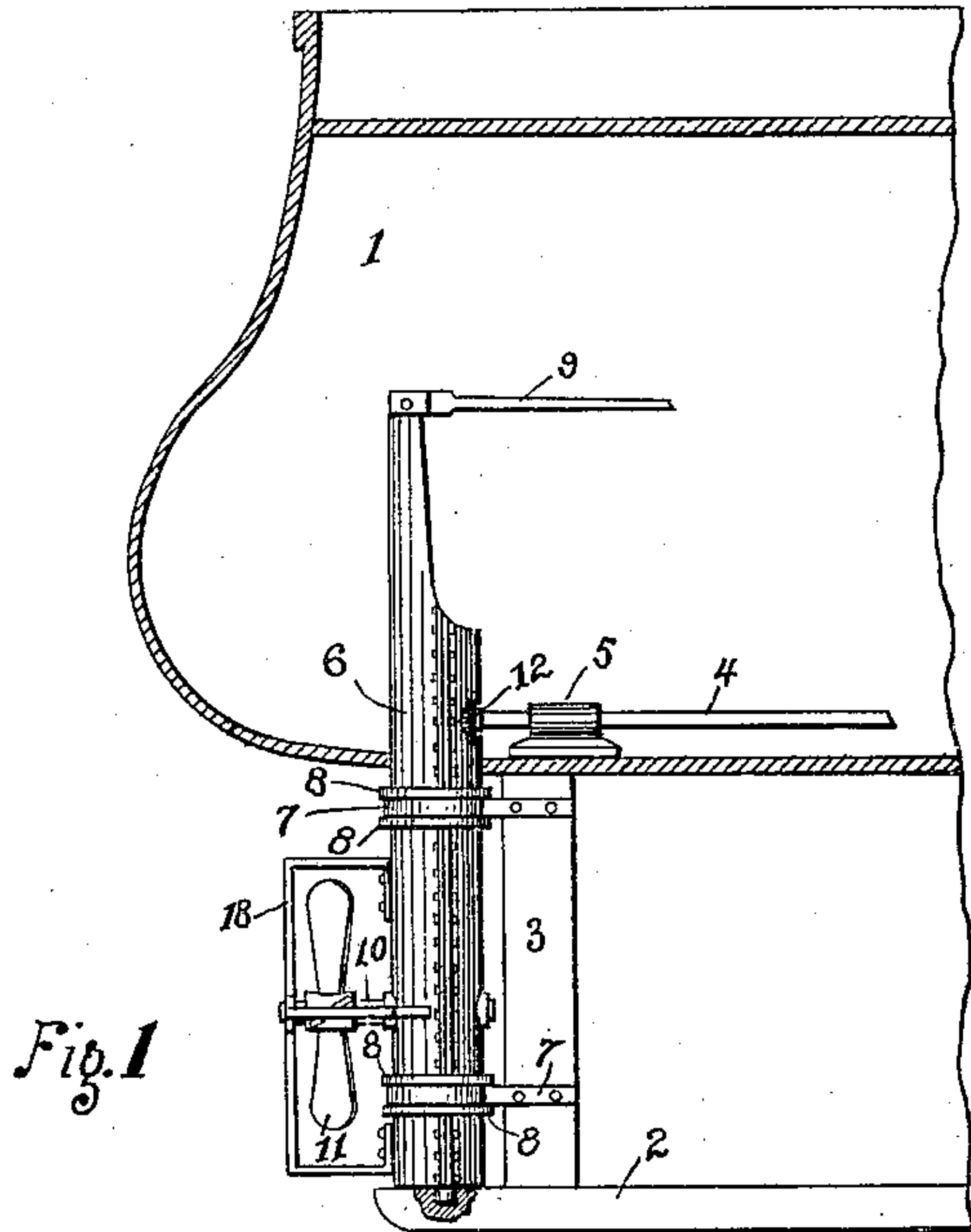


Fig. 1

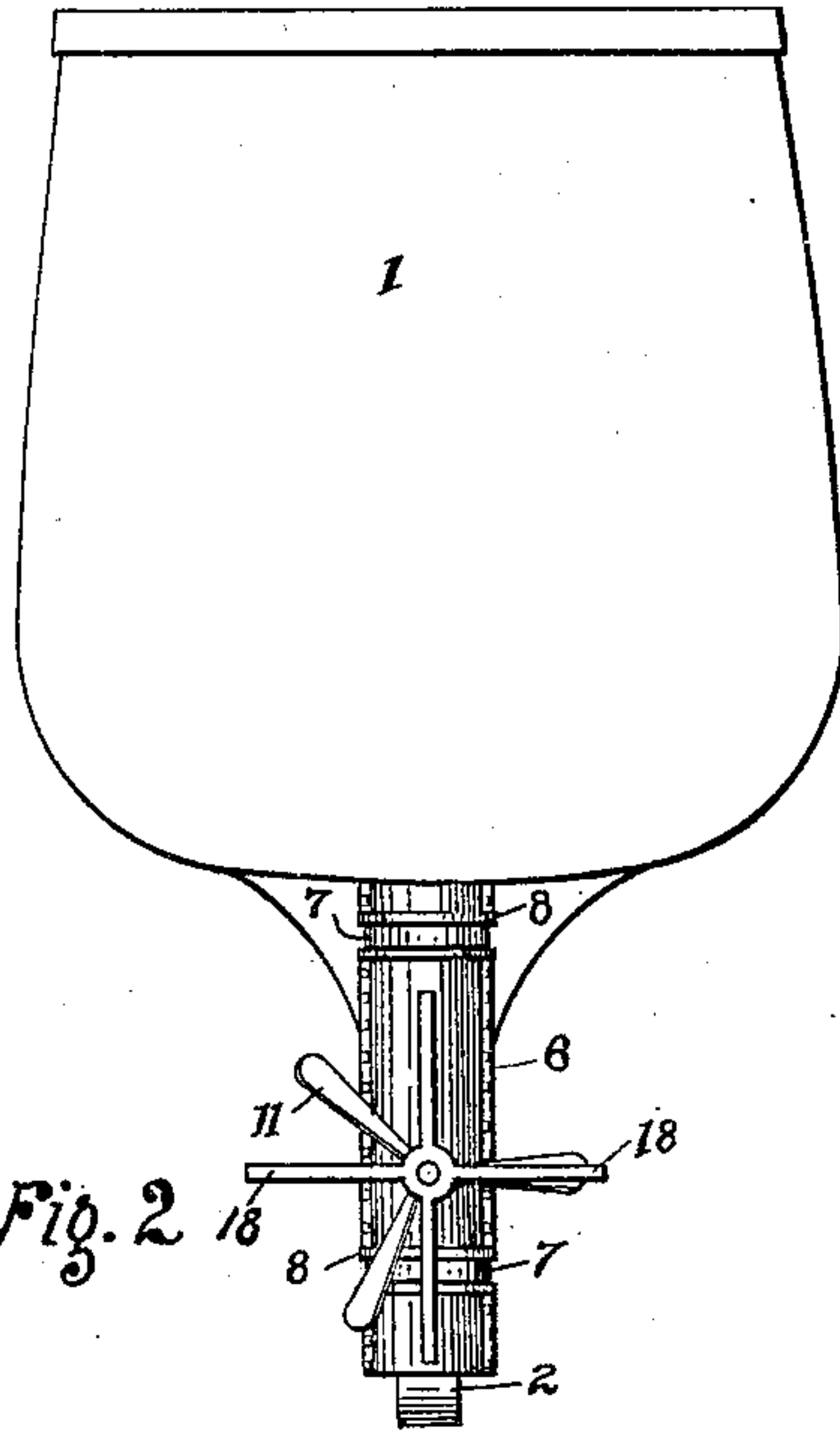


Fig. 2

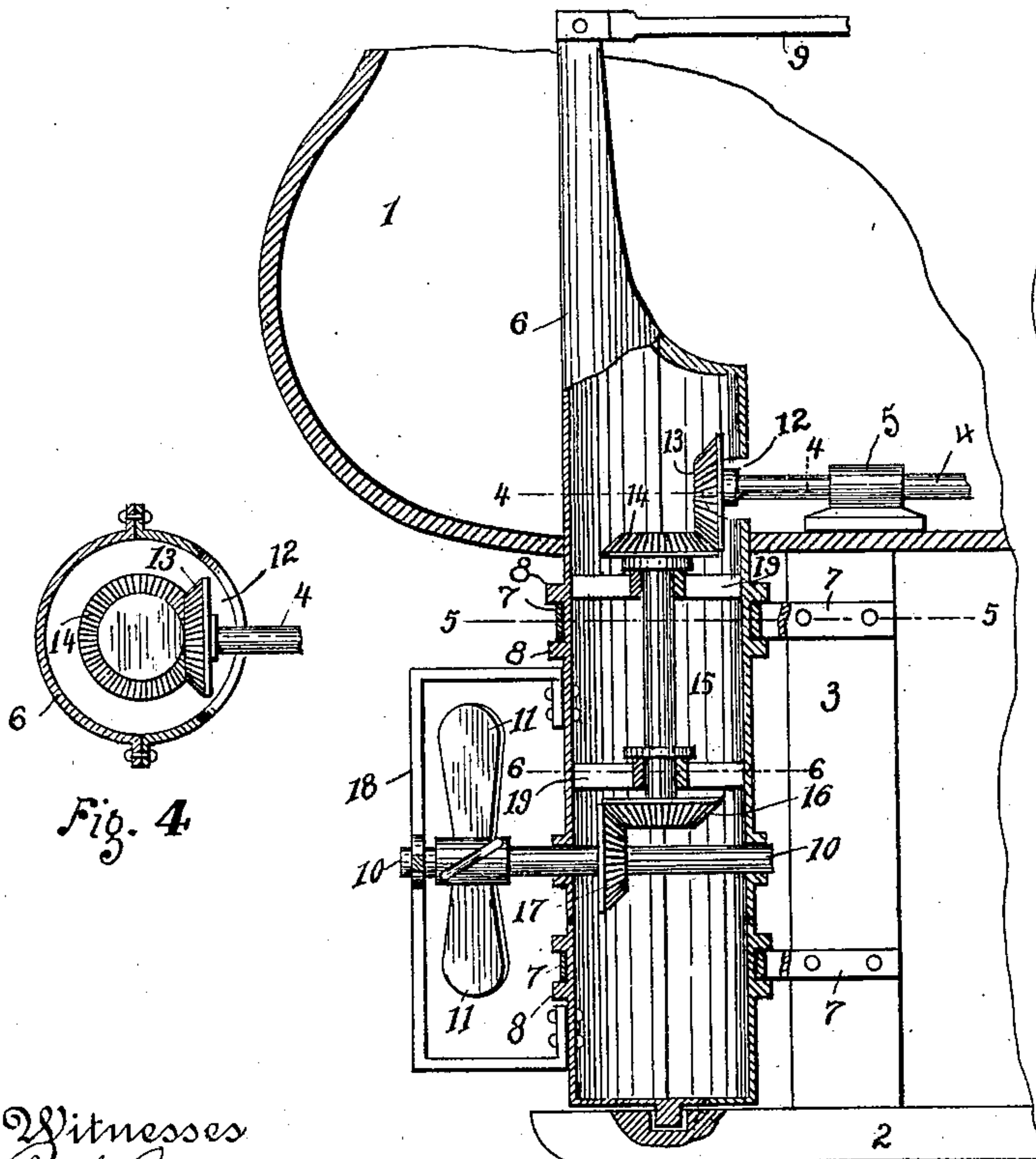


Fig. 3

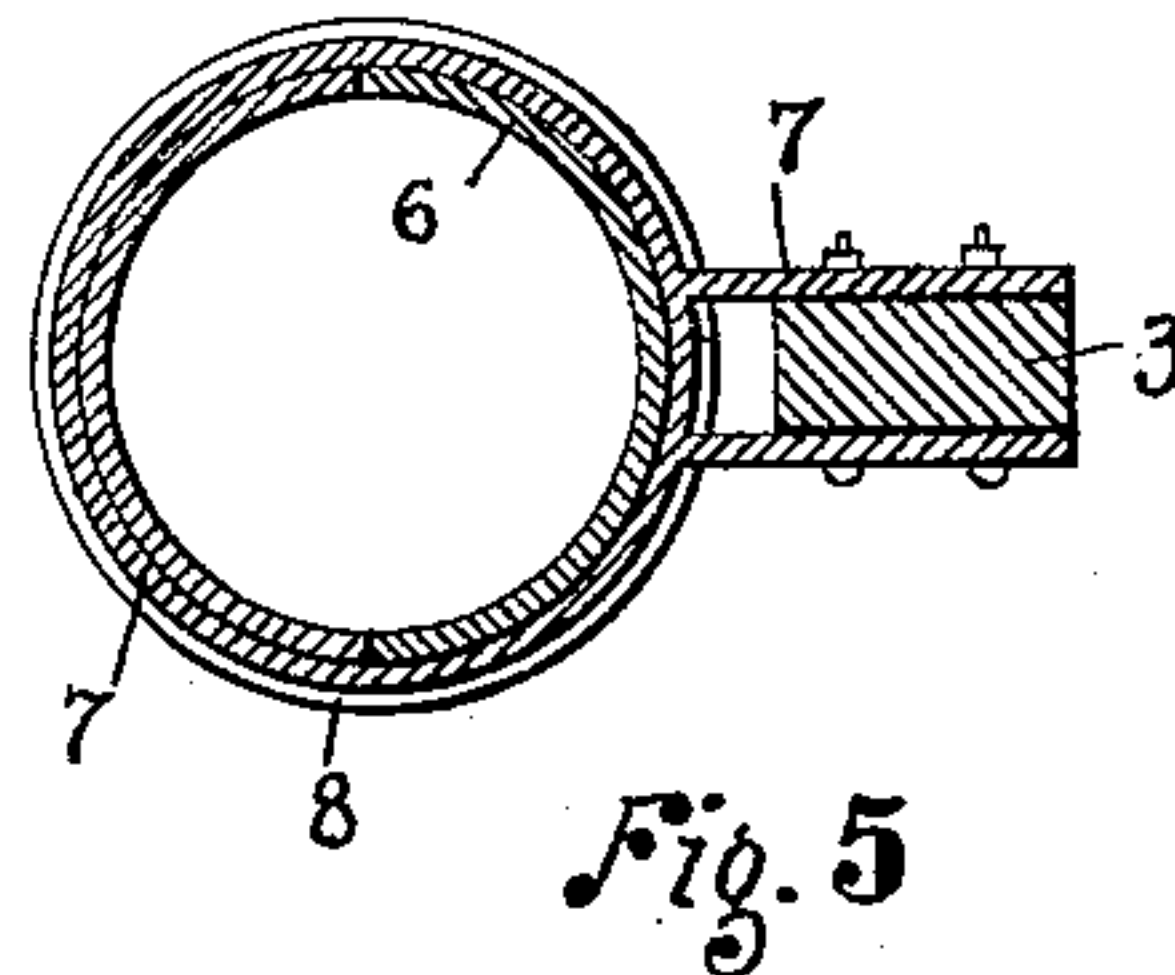


Fig. 5

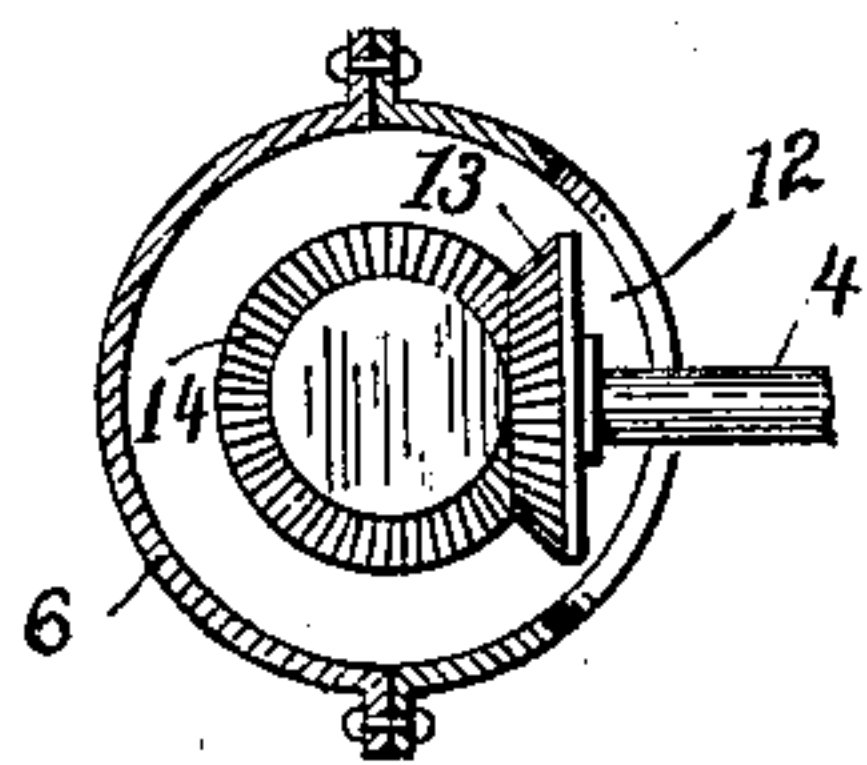


Fig. 4

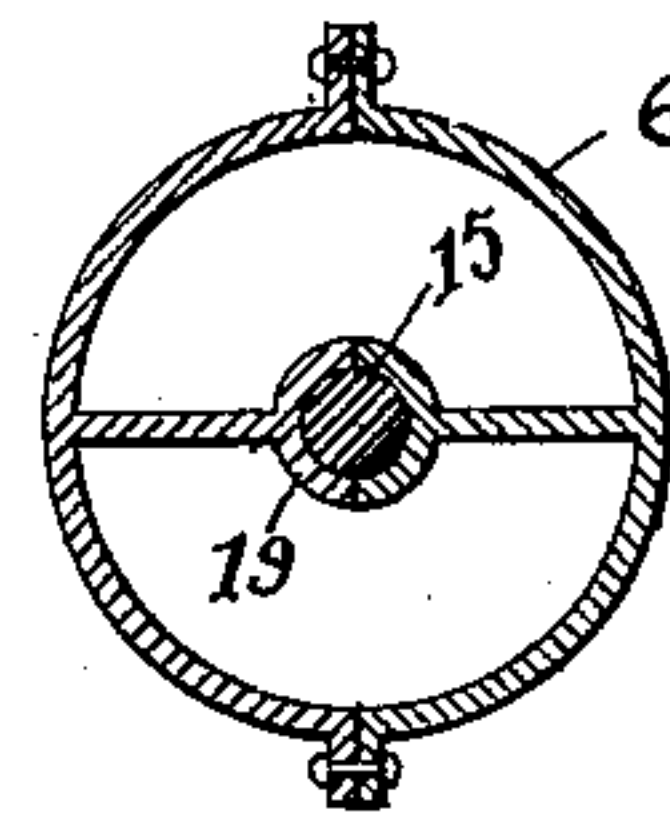


Fig. 6

Witnesses
P. J. Hawn
Jas. A. Sisco,

By his Attorney

Inventor
W. S. Avard
Emil Stank

UNITED STATES PATENT OFFICE.

WILLIAM STEBBINS AVARD, OF COFFEYVILLE, KANSAS, ASSIGNOR OF ONE-HALF TO T. GEIST AND E. M. PERLES, OF ST. LOUIS, MISSOURI.

PROPELLER-RUDDER.

SPECIFICATION forming part of Letters Patent No. 685,368, dated October 29, 1901.

Application filed January 14, 1901. Serial No. 43,242. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM STEBBINS AVARD, a citizen of the United States, residing at Coffeyville, county of Montgomery, and State of Kansas, have invented certain new and useful Improvements in Propeller-Rudders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in propeller-rudders; and it consists in the novel arrangement and combination of parts more fully set forth in the specification and pointed out in the claim.

In the drawings, Figure 1 is a side elevation of my invention, showing the stern of the ship in middle longitudinal section. Fig. 2 is an end elevation of the parts. Fig. 3 is a middle vertical section of the device on a larger scale, the ship being shown as in Fig. 1. Fig. 4 is a transverse section on line 4 4 of Fig. 3, taken through the slot of the rudder-post. Fig. 5 is a section on line 5 5 of Fig. 3, taken through one of the hinges; and Fig. 6 is a section on line 6 6 of Fig. 3, taken through one of the bearings or spiders for the upright shaft mounted in the rudder-post.

The object of my invention is to construct a propeller which while it serves the usual purpose of propelling the ship at the same time serves as a rudder, the latter being in the present instance wholly displaced by the propeller referred to.

The special advantages of my present construction are that the ship is under better control, can be steered with a minimum amount of resistance, can be quickly and advantageously handled, and possesses further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents a section of a vessel, 2 the keel thereof, and 3 the stern-post. In the present case I preferably dispose the main drive-shaft 4 parallel to the keel, the rear end of said shaft being mounted in a bearing 5, bolted to the floor above the keel. The rudder-post 6 in the present instance is preferably made hollow, (and sectional,) being supported at in-

intermediate points on hinges 7 7, bolted to the stern-post, the hinges engaging the peripheral collars 8 8, formed with the rudder-post, the latter being additionally supported at the base by the projecting end of the keel. The upper end of the rudder-post is provided with a tiller 9, as usual. The gearing by which rotation is imparted to the propeller-shaft 10 and blades 11 thereof is located within the hollow rudder-post, the connection between said gearing and shaft 10 and the drive-shaft 4 being accomplished as follows: The rear end of the shaft 4 enters or penetrates the post 6 through the peripheral transverse slot or opening 12 of said post, the shaft 4 carrying within the post a terminal bevel gear-wheel 13, which meshes with the upper terminal bevel gear-wheel 14 of the upright shaft or spindle 15, the latter being provided at its lower end with a gear-wheel 16, meshing directly with a similar gear-wheel 17, secured or keyed to the propeller-shaft 10. The shaft 10 has bearings provided for it not only in the walls of the post 6, but it is further supported at the center of a frame or brace 18, whose arms are directly secured to the post 6. The transverse slot 12, as is obvious, allows for rotation or oscillation of the post 6 about its hinges without interfering with the shaft 4, the length of said slot being sufficient to allow for the maximum oscillation to which the rudder-post may be subjected. The spindle 15 is supported on bearings or spiders 19, cast or formed with the walls of the post or in any manner obvious to the skilled mechanic. The upper extension of the rudder-post, to which the tiller is secured, need not necessarily be hollow, but may be solid; but the post proper is preferably cast in sections, as is obvious, and the walls thereof may, if desirable, be provided with hand-holes, (not shown,) through which access may be had with the interior thereof for purposes of repairing the gearing located therein. The arrangement here shown may further be altered in details which may suggest themselves to the skilled mechanic without departing from the spirit or nature of my invention.

The operation of the device is obvious from the foregoing, but may be adverted to briefly as follows: By oscillating the tiller to the

right or left the rudder-post will be accordingly oscillated and the propeller-shaft deflected to any desirable angle with the keel. This oscillation of the rudder-post does not, however, interfere with the operation of either the gearing within the post or with the rotation of the drive-shaft, the latter penetrating the walls of the post through the slot 12, as previously described. Thus the vessel is propelled and steered at the same time by means of the propeller, the latter performing the dual function of propeller and rudder.

I am aware that propellers have been mounted on rudders in ship-building, and I make no claim to this construction, as I omit the rudder altogether, leaving a clear space between the rudder-post and the propeller-blades, and thereby removing the friction produced by the rudder under the old forms of construction.

Having described my invention, what I claim is—

A combined propeller and rudder for ships comprising a drive-shaft, a hollow rudder-post hinged at points intermediate of its length, to the stern-post of the vessel, and having an additional bearing or support on the keel thereof, a transverse peripheral slot

formed in the wall of the rudder-post for the free passage of the adjacent end of the drive-shaft, a bevel gear-wheel secured to the drive-shaft within the rudder-post, an upright shaft mounted in bearings in the rudder-post, a propeller-shaft mounted in, and projecting from, the rudder-post, a bevel gear-wheel keyed to the propeller-shaft within the rudder-post, terminal bevel gear-wheels carried by the upright shaft and meshing respectively with the corresponding gear-wheels on the drive-shaft and propeller-shaft, blades carried by the propeller-shaft, and a tiller secured to the free end of the upper extension of the rudder-post a suitable distance above and beyond the drive-shaft, said upper extension housing and protecting the driving mechanism located within the lower portion of the hollow rudder-post, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM STEBBINS AVARD.

Witnesses:

CHARLES A. WELLS,
RALPH A. COVEY.