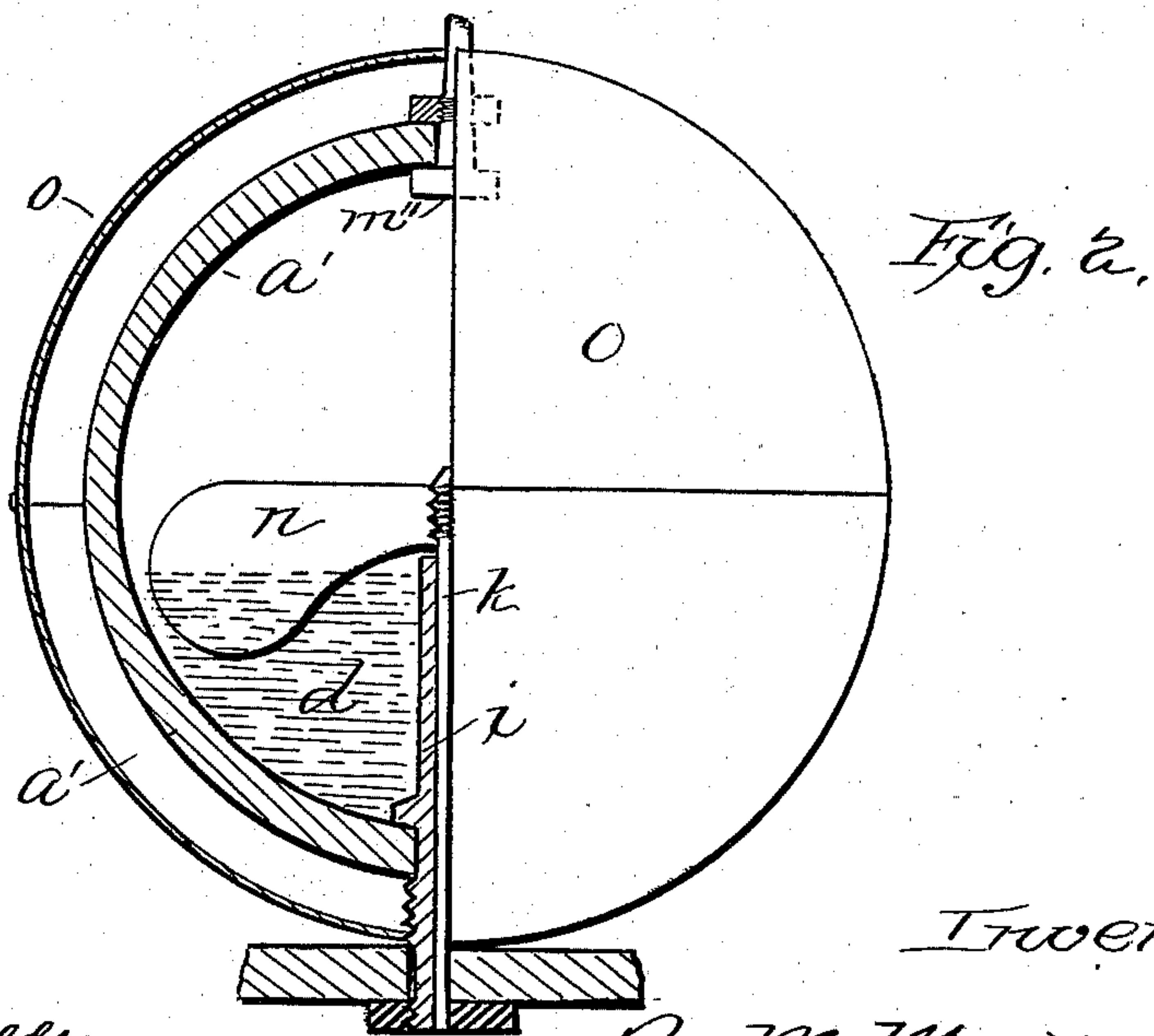
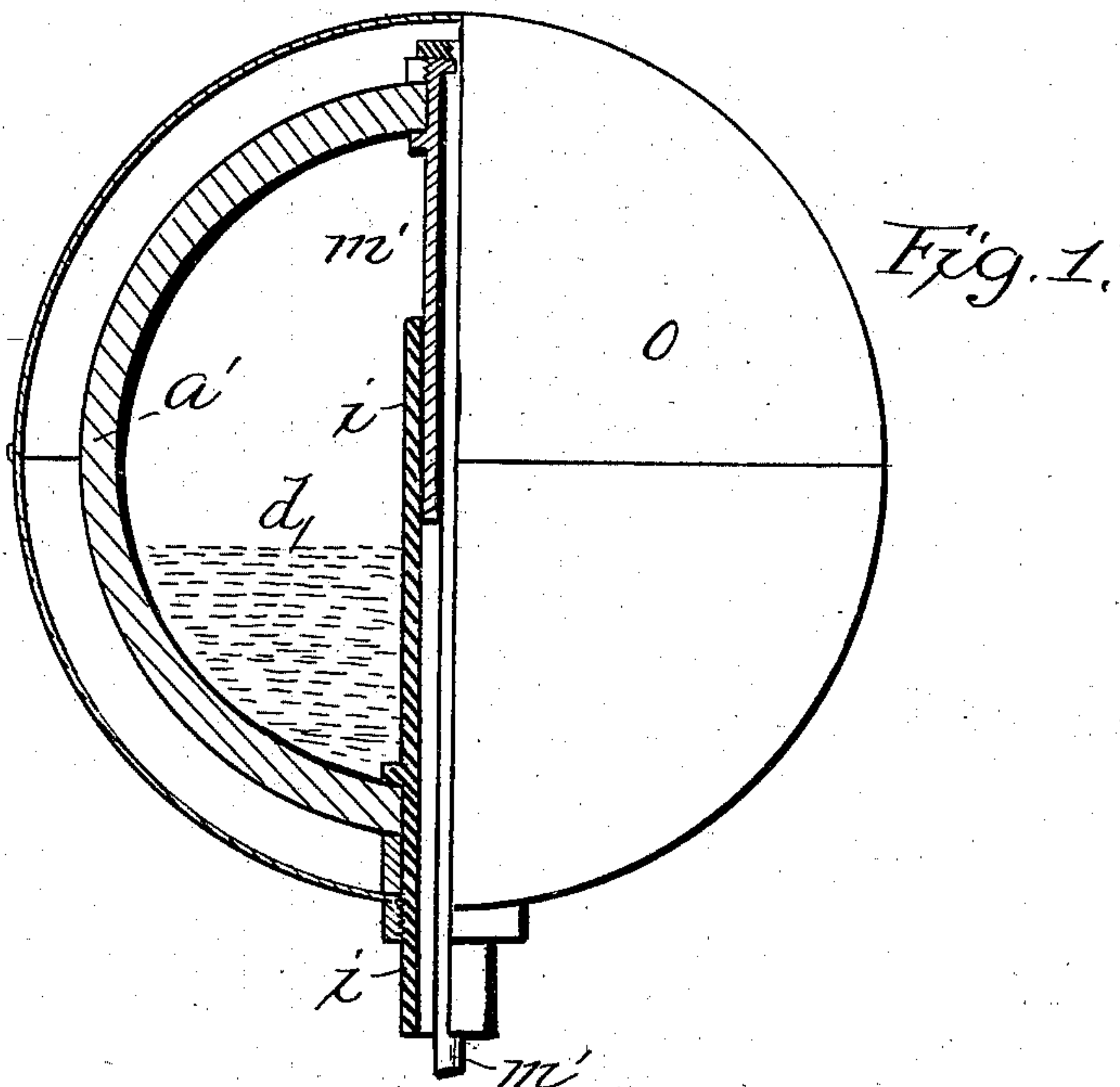


(No Model.)

R. M. MACDONALD.  
AUTOMATIC GOVERNOR.

No. 559,181.

Patented Apr. 28, 1896.



Attest  
R. M. MacDonald  
C. S. Middleton

Inventor  
R. M. MacDonald  
by Richard  
Atty

# UNITED STATES PATENT OFFICE.

RANALD MACINTOSH MACDONALD, OF CHRISTCHURCH, NEW ZEALAND.

## AUTOMATIC GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 559,181, dated April 28, 1896.

Application filed December 18, 1894. Serial No. 532,230. (No model.) Patented in New Zealand October 15, 1894, No. 7,209; in England December 10, 1894, No. 23,999, and in France March 26, 1895, No. 243,509.

*To all whom it may concern:*

Be it known that I, RANALD MACINTOSH MACDONALD, of 32 Cathedral Square, Christchurch, in the Provincial District of Canterbury, in the Colony of New Zealand, have invented an Improved Automatic Governor, of which the following is a specification.

Patents have been granted in Great Britain, No. 23,999, dated December 10, 1894; in France, No. 243,509, dated March 26, 1895, and in New Zealand, No. 7,209, dated October 15, 1894.

My invention includes a rotary receptacle for containing a movable medium adapted to be affected by centrifugal force and to affect the flexible wall of the receptacle, the change in which is communicated through suitable connections to a valve or other device controlling the speed of the machine.

In the drawings, Figure 1 is a part elevation and part sectional view of one form of my invention, and Fig. 2 is a similar view of a modification.

In Fig. 1 the vessel  $\alpha'$  is of spherical form and composed of flexible material, and is rotated through power applied to the bearing  $i$ , which is tubular and extends up within the vessel above the level of the mercury. The valve-rod  $m'$  extends from the top of the receptacle down through the tubular bearing. A metallic protecting-casing  $O$  incloses the

vessel. The vessel will expand in a horizontal plane and contract vertically when the speed increases above that determined upon, and the valve-controlling rod  $m'$  will be moved vertically. This action is due to the centrifugal action of the contained quicksilver or other medium when affected by the centrifugal force.

In Fig. 2 the vessel and other parts are substantially the same, the rod  $m''$  extending upward from the vessel, and radial paddles or arms  $n$  being used, attached to a rotary shaft  $k$  driven from the engine, said arms setting the mercury in rapid movement. In this instance the vessel  $\alpha'$  may be fixed in position.

I do not wish to limit myself to mercury, as any equivalent centrifugal means may be used.

I claim—

A centrifugal governor comprising a spherical receptacle of flexible material containing mercury or the like adapted to expand the receptacle by centrifugal force and the valve-rod connected to the flexible wall of the receptacle, substantially as described.

Dated this 30th day of October, 1894.

RANALD MACINTOSH MACDONALD.

Witnesses:

HENRY HAMPTON RAYWARD,  
SAMUEL CUMING.