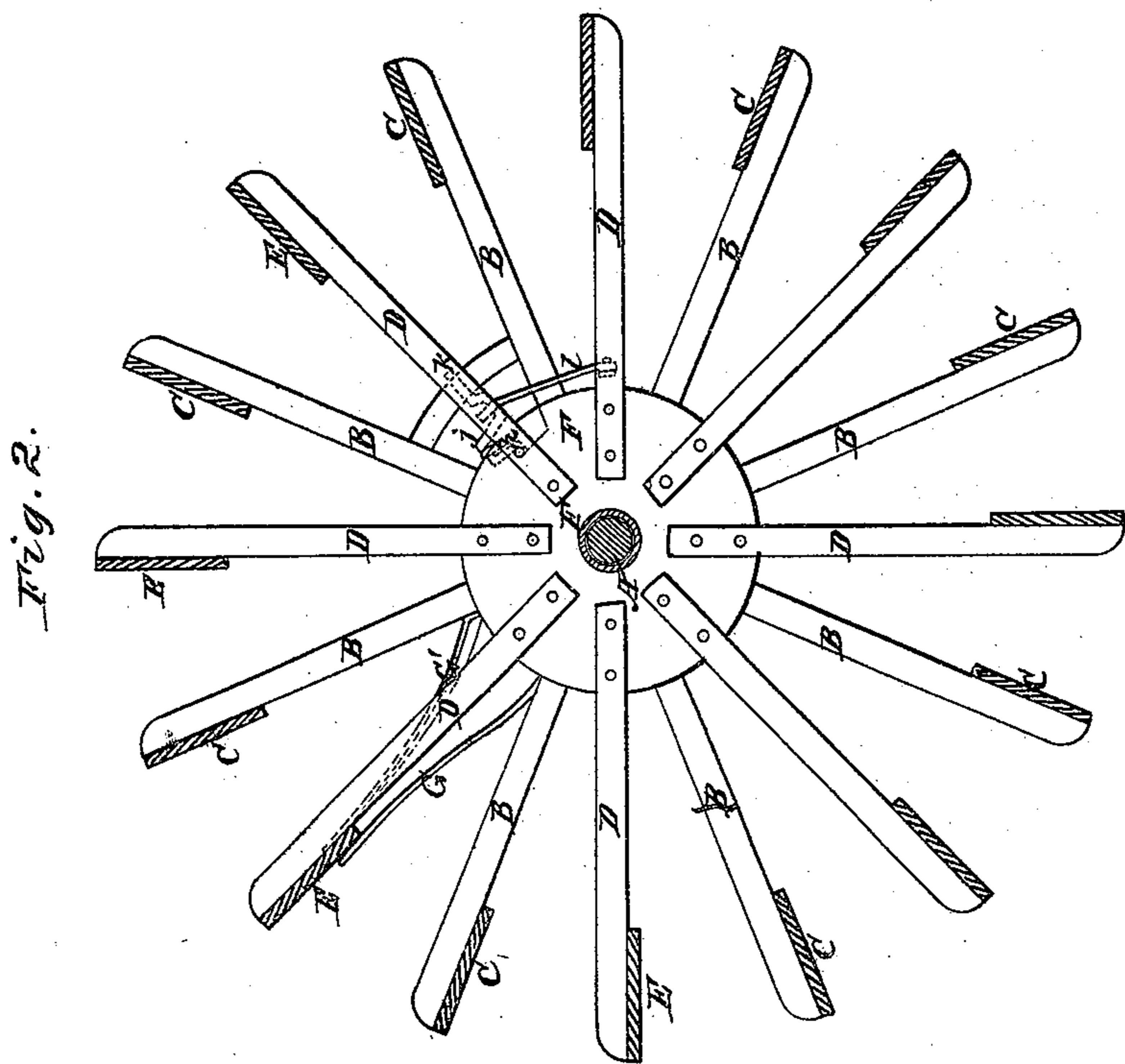
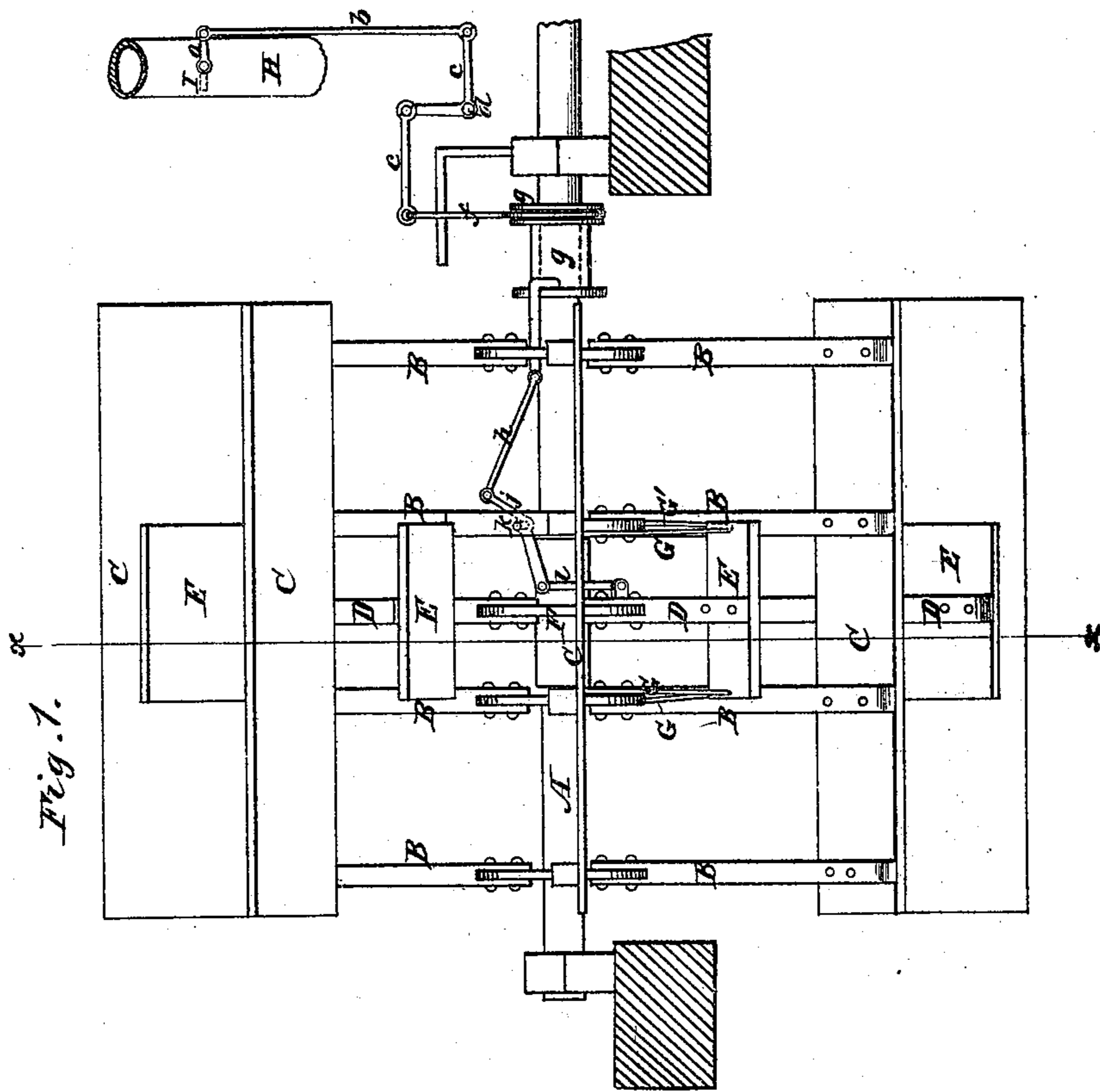


W. B. Godfrey.
Paddle Wheel.

N^o 14,954

Patented May. 27, 1856



UNITED STATES PATENT OFFICE.

WILLIAM B. GODFREY, OF AUBURN, IOWA.

ENGINE-GOVERNOR FOR SIDE-WHEEL OCEAN-STEAMERS.

Specification of Letters Patent No. 14,954, dated May 27, 1856.

To all whom it may concern:

Be it known that I, WILLIAM B. GODFREY, of Auburn, in the county of Mahaska and State of Iowa, have invented a new and Improved Governor for Marine Paddle-Wheel Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This governor consists of a wheel with small paddles, fitted to the paddlewheel shaft within the propelling paddle wheel and so controlled by springs and connected with the throttle valve or cut-off gear that when the propelling paddle wheel is out of the water the governor wheel will be held by the springs in such a position as to close the throttle valve or cut-off but that when the paddles of the propelling wheel are submerged the paddles of the governor wheel will be so acted upon by the resistance of the water to their revolution as to give the throttle valve or cut off the requisite opening.

Figure 1, in the drawing is a front view of the propelling water wheel and governor complete. Fig. 2, exhibits a section of the propelling wheel and governor wheel in the line *x, x*, of Fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

A, is the paddle shaft.

B, B are the arms and C, C the paddles of the propelling paddle wheel which are secured to the shaft in the usual or any convenient manner.

F, is the hub; D, D, are the arms, of which there are only a single set, and E, E, are the paddles of the governor wheel. The paddles E, E, are of the same depth as the paddles C, C, of the propelling paddle wheel and stand at the same distance from the shaft (as is shown in Fig. 2) but they are quite narrow, (as is shown in Fig. 1). The hub F, is fitted loosely to the shaft within the propelling paddle wheel so that the paddles E, E, stand between the paddles C, C, which serve as a protection to them.

G, G' are springs which are attached to the propelling paddle wheel and bear against opposite sides of one of the paddles E, E, and which, when the paddles are not submerged or are stationary hold the paddles E, E, in a position midway between the paddles C, C, as shown in Fig. 2. These

springs are represented as being of steel, but air springs, consisting of india rubber bags filled with air and placed in cylinders which are fitted with pistons may be used.

H, Fig. 1, is the induction steam pipe of the steam engine by which the shaft is driven. I, is a throttle valve in the said pipe, carrying a lever, *a*, which is connected by a rod *b*, with one arm of an elbow lever *c*, which works upon a fixed fulcrum *d*. The other arm of this elbow lever is connected by a rod *e*, with an arm *f*, which is fitted to a groove in a sleeve *g*, which is fitted to the paddle shaft A, in such a manner as to turn only with the shaft but to slide freely thereon in a longitudinal direction. The arm *f*, is prevented turning by means of a guide rod *i*, which passes through a hole in it. The sleeve *g*, is connected by a rod *h*, with one end of a lever *j*, whose fulcrum *k*, is secured to the propelling wheel. The other end of the lever *j*, is connected by a rod *l*, with one of the arms of the governor wheel.

The above described connections between the governor wheel and the throttle valve are all so adjusted that when the governor wheel is not exposed to other influence than that of the springs G, G', and is in the condition relatively to the propelling wheel shown in Fig. 2 the throttle valve is closed.

The operation of the governor is as follows: When the paddle wheel has its paddles submerged and is in motion, the resistance of the water to the revolution of the paddles of the governor wheel overcomes the force of the spring G, or G', as the case may be, according to the direction of the revolution, and drives the governor wheel paddles toward the propelling paddles on either side of them and by this movement of the governor wheel either way, the lever *j*, is acted upon to cause the rod *h*, to move the slide *g*, along the shaft in one direction or the other and by that means the arm *f*, is caused to act through the rod *e*, elbow lever *c*, and rod *b*, to open the throttle valve. The strength of the springs may be so regulated that the degree of opening of the valve may be exactly proportioned to the dip of the wheels. The governor wheel is intended to be prevented moving farther than is necessary to open the throttle valve wide by its paddles coming to a bearing against the paddles of the propelling wheels when the valve is open. As soon as the propelling

paddles cease to be submerged or their motion ceases the springs G, G', instantly throw the governor wheel to the position to close the throttle valve.

- 5 One governor will be required for each propelling paddle wheel, each connected with a throttle valve in a separate branch of the steam pipe.

- 10 The governor may be employed in connection with a cut-off by a suitable connection with the cam or other device by which the cut off is varied.

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

- 15 The employment, in connection with a propelling paddle wheel, of a second paddle wheel herein termed the governing wheel, fitted loosely to the same shaft and having applied to it springs G, G' to control its position relatively to the propelling wheel
- 20

when the wheel is out of the water or not in motion, and being connected with a lever j, or its equivalent which works on a fulcrum secured to the propelling wheel and which is connected with the throttle valve or cut 25 off in such a manner that when the propelling wheel is out of water or not in motion the governor wheel will close the throttle valve or cut-off, but when it is in operation in the water the resistance of the water to 30 the paddles of the governor wheel will cause the said wheel to move relatively to the paddle wheel and by that means give the throttle valve or cut-off more or less opening substantially as herein described.

WILLIAM B. GODFREY.

Witnesses:

JAMES RHINEHART,
W. S. EDGAR.