

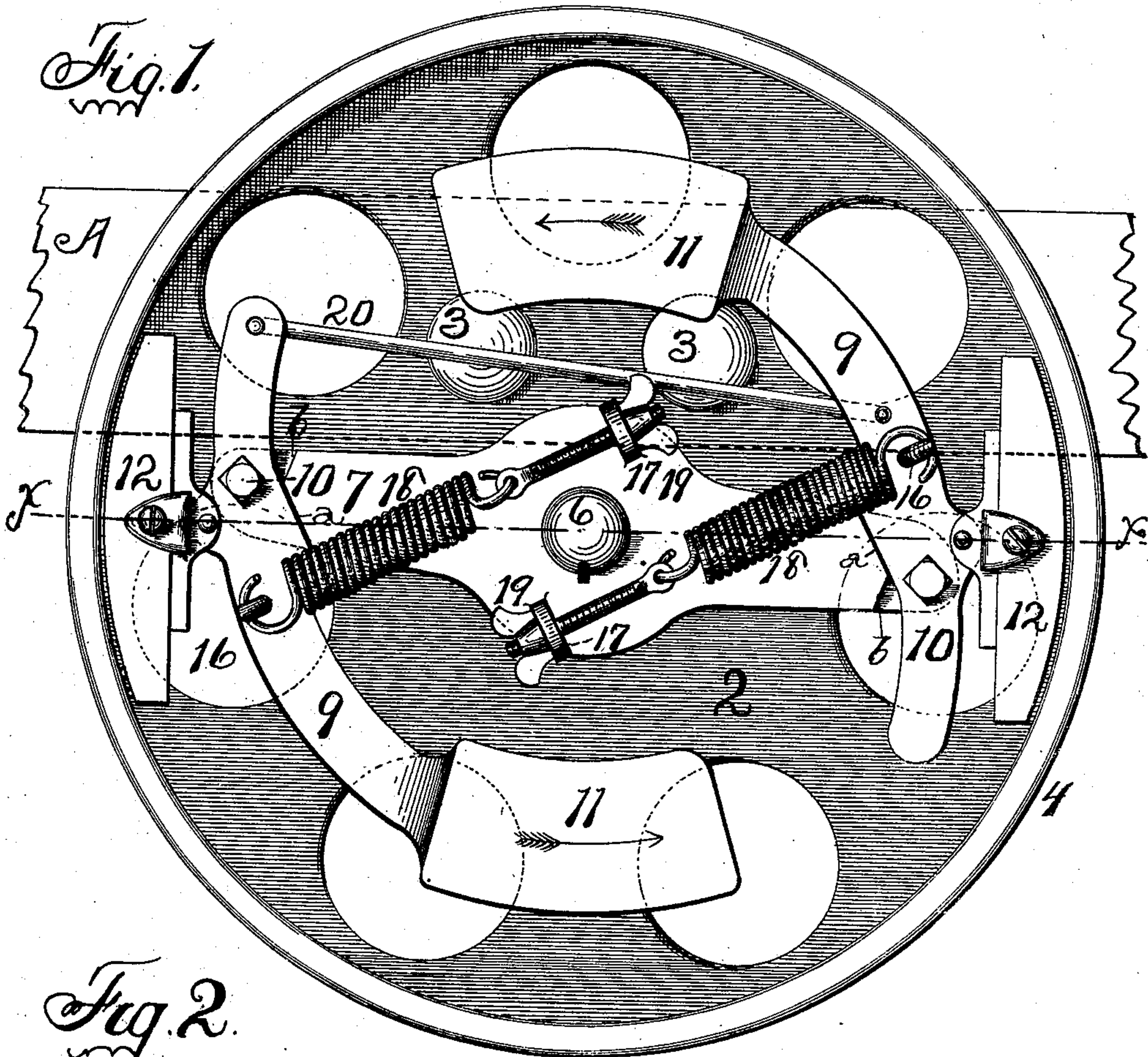
(No Model.)

A. B. IRELAND.  
GOVERNOR.

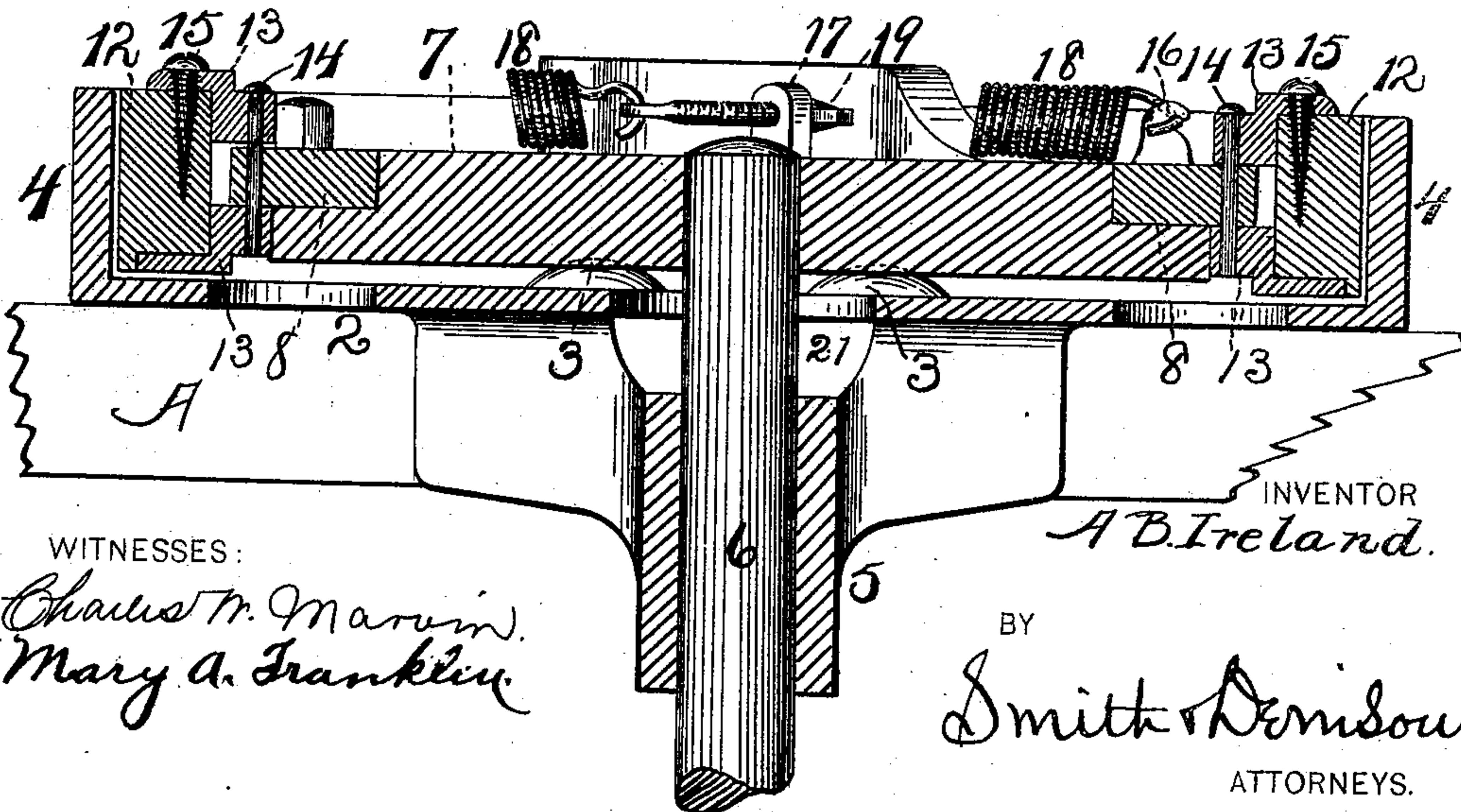
No. 603,363.

Patented May 3, 1898.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

*Charles M. Marvin.*  
*Mary A. Frankley*

BY

*Smith & Denison*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

A BERTSELL IRELAND, OF GREENE, NEW YORK.

## GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 603,363, dated May 3, 1898.

Application filed November 11, 1897. Serial No. 658,121. (No model.)

*To all whom it may concern:*

Be it known that I, A BERTSELL IRELAND, of Greene, in the county of Chenango, in the State of New York, have invented new and useful Improvements in Governors, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to engine-governors of the type in which the centrifugal swing of a pivoted lever induced by the revolution of a shaft operates to regulate the speed of such revolution.

My object is to produce a governor embodying a stationary friction disk or shell provided with a suitable bearing-surface, combined with a governor-bar transverse radial to said disk and secured upon a shaft central to said disk, centrifugal levers pivoted upon the opposite ends of said bar, governor-blocks pivoted upon said levers and adapted to be brought into frictional contact with said bearing-surface by the swing of said levers, springs connecting said levers to said governor-bar and normally holding them in such position that said blocks are out of contact with said surface, a connecting-rod connecting the extremity of one lever to the central portion of the other one, and means to prevent the oil from the shaft-bearing flowing into said shell and working onto the bearing-surface to permit the governor-blocks to slip, and thus more or less destroy their governing force and effect. The friction disk or shell is mounted upon a suitable support, and the securing means, as bolts, are at one side of the center of said shell.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation of the shell, shaft, and governor mechanism. Fig. 2 is a horizontal section thereof on line *x x*.

A is a beam or other suitable support upon which a friction disk or shell 2 is secured in a stationary position, as by bolts 3, said shell having a suitable friction-surface, as a flange 4. The securing-bolts and support are at one side of the center. This shell is provided with a central boss 5, in which the shaft 6 is suitably mounted or journaled. A governor-bar 7 is suitably secured upon said shaft, having

its extremities rabbeted, as at 8, so as to form the two stop-shoulders *a b*, which limit the movement of the levers 9 in both directions. Upon these extremities the centrifugal levers 9 are suitably pivoted, as upon bolts or pins 10, and are provided with the weights 11, either integral therewith or suitably secured thereon by any ordinary and suitable means, said weights being upon the long arms of said levers. When these levers are normally in position, the springs 18 hold them pressed against the shoulders *a*; but when the levers have reached the extreme of their outward movements their short ends bear against the shoulders *b*, and thus prevent the weighted ends of the levers from coming in contact with the flanges 4.

Upon each lever a rocking shoe or block 12 is suitably mounted, as by means of the interiorly-rabbeted holders or brackets 13, and a pivot pin or bolt 14 is inserted through them and said lever. A screw or other suitable fastening 15 secures said shoe in said bracket.

The shoes or blocks 12 are secured to the levers 9 at a point beyond the pivotal bolt 10, and hence but a slight outward movement of the weighted ends of the bolt is necessary to move these shoes or blocks in contact with the flange 4. By means of the brackets 13, which are pivoted upon the levers 9, the shoes are enabled to adjust themselves to the flange 4 no matter what position the levers 9 may assume. Suitable ears are provided, marked 16 on said levers and 17 on said governor-bar, and 18 18 are suitable springs and threaded bolts suitably mounted in or upon said ears, and 19 19 are suitable nuts by which the tension of said springs is adjusted and equalized, whereby said shoes are normally retained out of contact with said friction-surface and at equal distances therefrom. Two of these springs are necessary, one for each lever 9, or the levers will act unequally, as is the case where but a single spring is used.

A rod 20 is suitably connected to the extremity of the short arm of one lever and to the long arm of the other at a suitable point between the weight and pivot.

The space 21 around the shaft prevents the oil from the shaft-bearing flowing into the shell and there working around and getting onto the bearing-surface to make it slippery,



and thus render the governor more or less inoperative.

It will be seen that at up to a certain speed the governor does not operate to retard the 5 revolution of the shaft and that when it passes that speed the centrifugal force will swing said weights outward, swinging said levers, and as the shoes are mounted between the weight and pivot of each lever said shoes 10 will be brought into frictional contact with the surface of said shell, bearing thereon with a pressure according to the centrifugal force exerted, which is dependent upon the speed above a certain rate; that said shoes when in 15 such contact act as brake-shoes to retard their own movement and through said bar exert a force to retard the revolution of the shaft; that as soon as the speed is reduced to a certain rate the tension of the springs will have 20 overcome the centrifugal force and will retract said shoes out of such contact; that the connecting-rod acts as an equalizer to force said levers to swing equally either to exert equal frictional force against the shell 25 or to retract the shoes equally to insure the simultaneous contact of the shoes with the shell, and that the rocking of said shoes insures a perfect bearing of each shoe against said shell.

It will be further seen that pivots 10 and 14 are upon different radial lines, one longer than the other, from which it results that when a block comes into contact with the shell the resistance will exert a leverage upon 35 the lever 9 to assist the centrifugal force to throw the weight still farther out and increase the retarding force exerted, whereby the governor responds very quickly as soon as the increase of revolution above the normal rate is sufficient to bring a block into contact, and 40 if there is any liability of variation whereby one block will make such contact first the connecting-rod 20 will cause the other to immediately make a like contact.

The space 21 is created by offsetting the 45 boss 5 upon suitable ribs or brackets in any ordinary way, leaving an opening substantially as shown for the purpose aforesaid.

Having described my invention, what I claim, and desire to secure by Letters Patent, 50 is—

1. In a governor, a shell having a flange 4, and provided with a central boss by means of which the shell is secured to the driving-shaft, a governor-bar secured upon the end 55 of the driving-shaft, and two pivoted weighted levers pivoted upon the rabbeted ends of the governor-bar, and the two spiral springs 17 having their inner ends secured to the governor-bar, and their outer ends attached to 60 the weighted levers at a short distance beyond their pivotal points, combined with the brackets pivoted upon the outer edges of the levers, also beyond the pivotal points, and the shoes which are secured to the brackets, 65 and which shoes are moved outwardly in contact with the flange 4, of the shell when the levers are moved outwardly, substantially as shown and described.

2. In a governor, a shell provided with the 70 flange 4, and a central boss 5, a driving-shaft to which the shell is secured by means of the boss, a governor-bar secured upon the end of the shaft, and which bar has rabbeted ends and stop-shoulders to limit the movement of the 75 levers, and is provided with the ears 17; and the two curved weighted levers 9 which are pivoted upon the outer ends of the bars, and which are adapted to strike against said stop-shoulders, and which levers are provided 80 with ears or hooks 16, combined with the two springs 18, one of which is secured to each of the levers, a suitable adjusting device for each spring, a rod 20 for connecting the short end of one of the levers with the long end of 85 the other, the two brackets 13 pivoted upon the levers, and the shoes 12 secured in said brackets, substantially as shown and described.

In witness whereof I have hereunto set my 90 hand this 16th day of October, 1897.

A BERTSELL IRELAND.

In presence of—

FRANK G. HOLDRIDGE,  
L. GARDNER BOLT.