

K. JOHANSEN.
GOVERNOR.

APPLICATION FILED OCT. 27, 1908.

924,234.

Patented June 8, 1909.

2 SHEETS—SHEET 1.

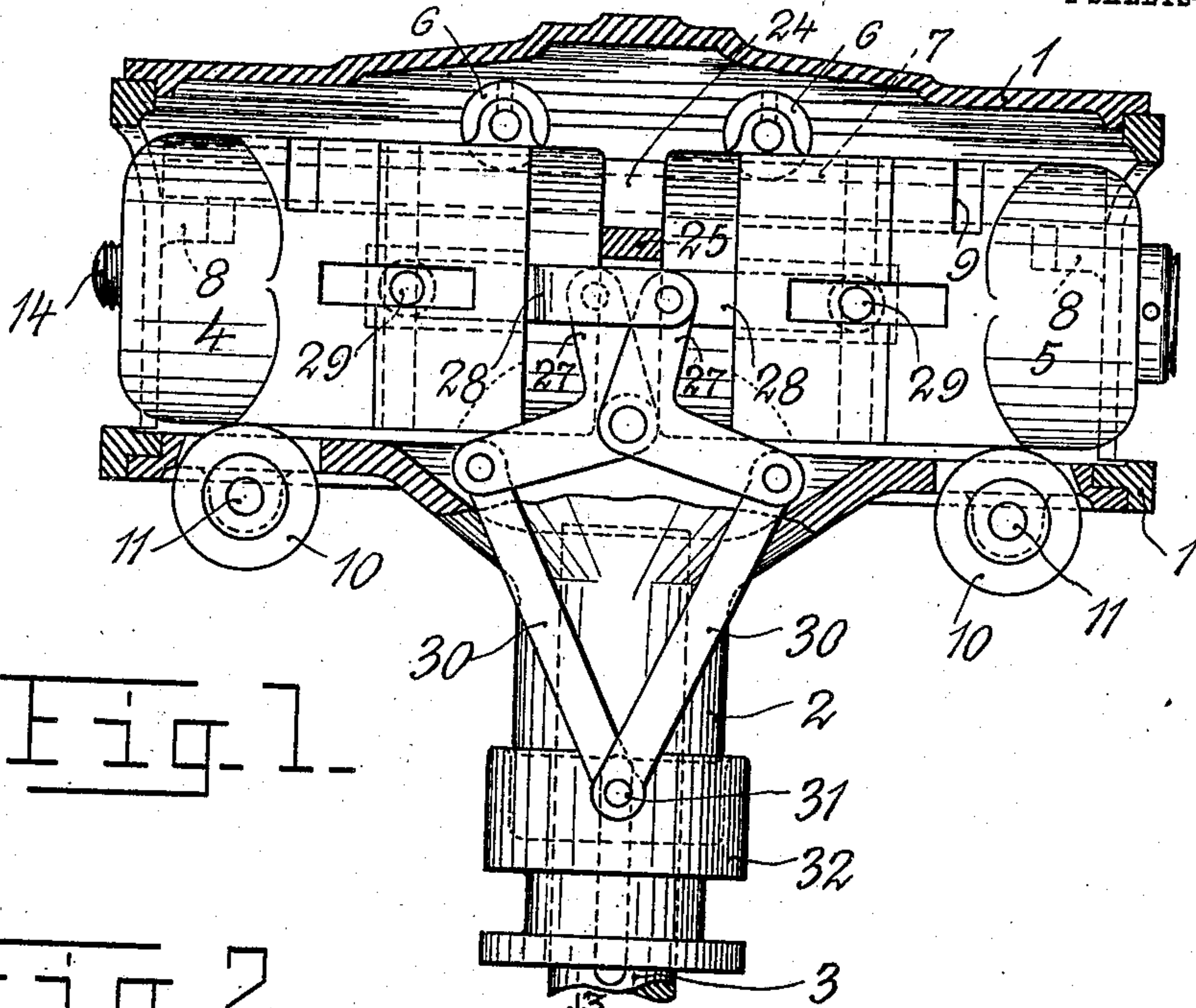
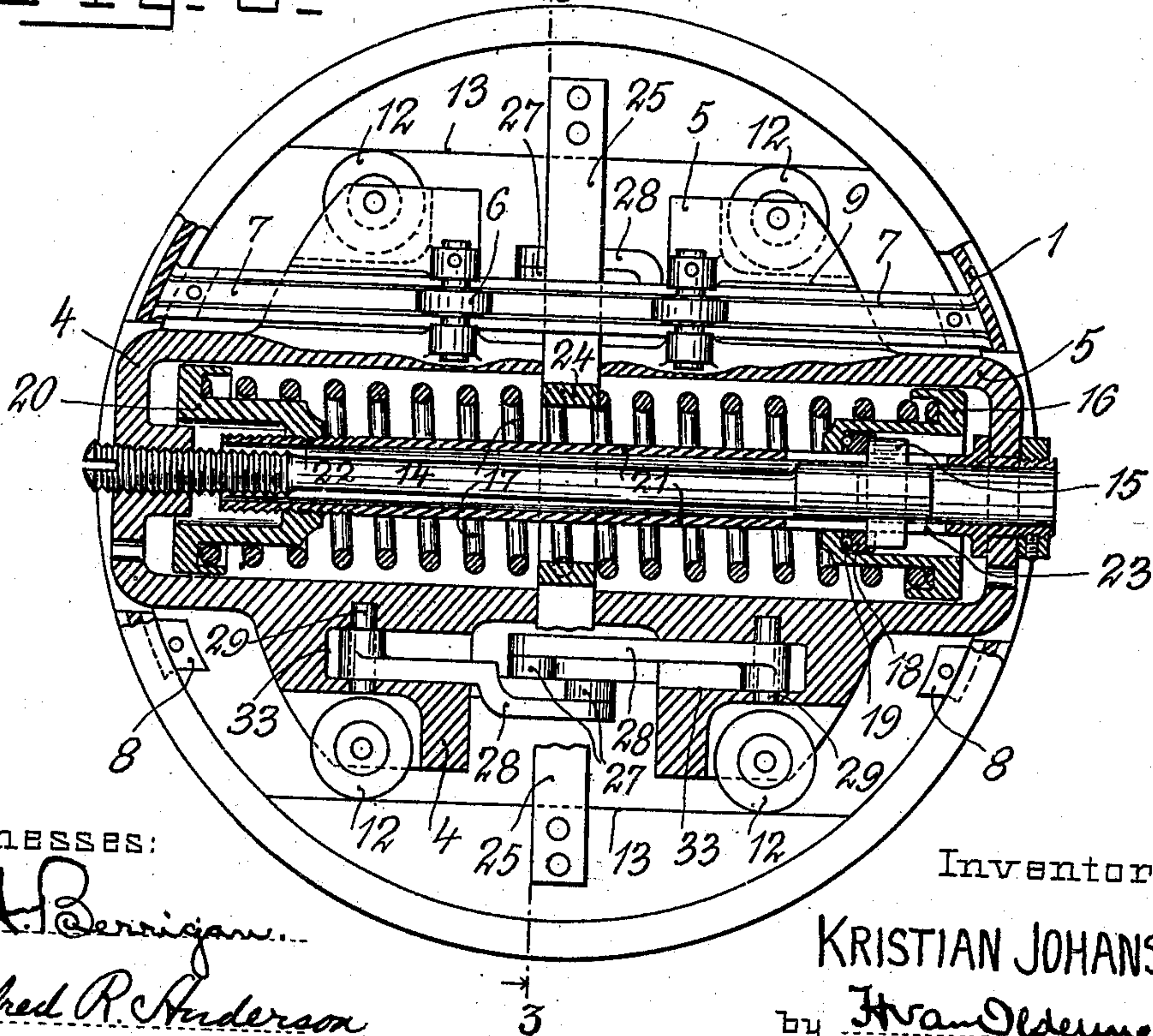


Fig. 1.

Fig. 2.



Witnesses:

Wm. H. Berrigan

Alfred R. Anderson

Inventor:

KRISTIAN JOHANSEN,

by *Ivan Olden*

Attorney

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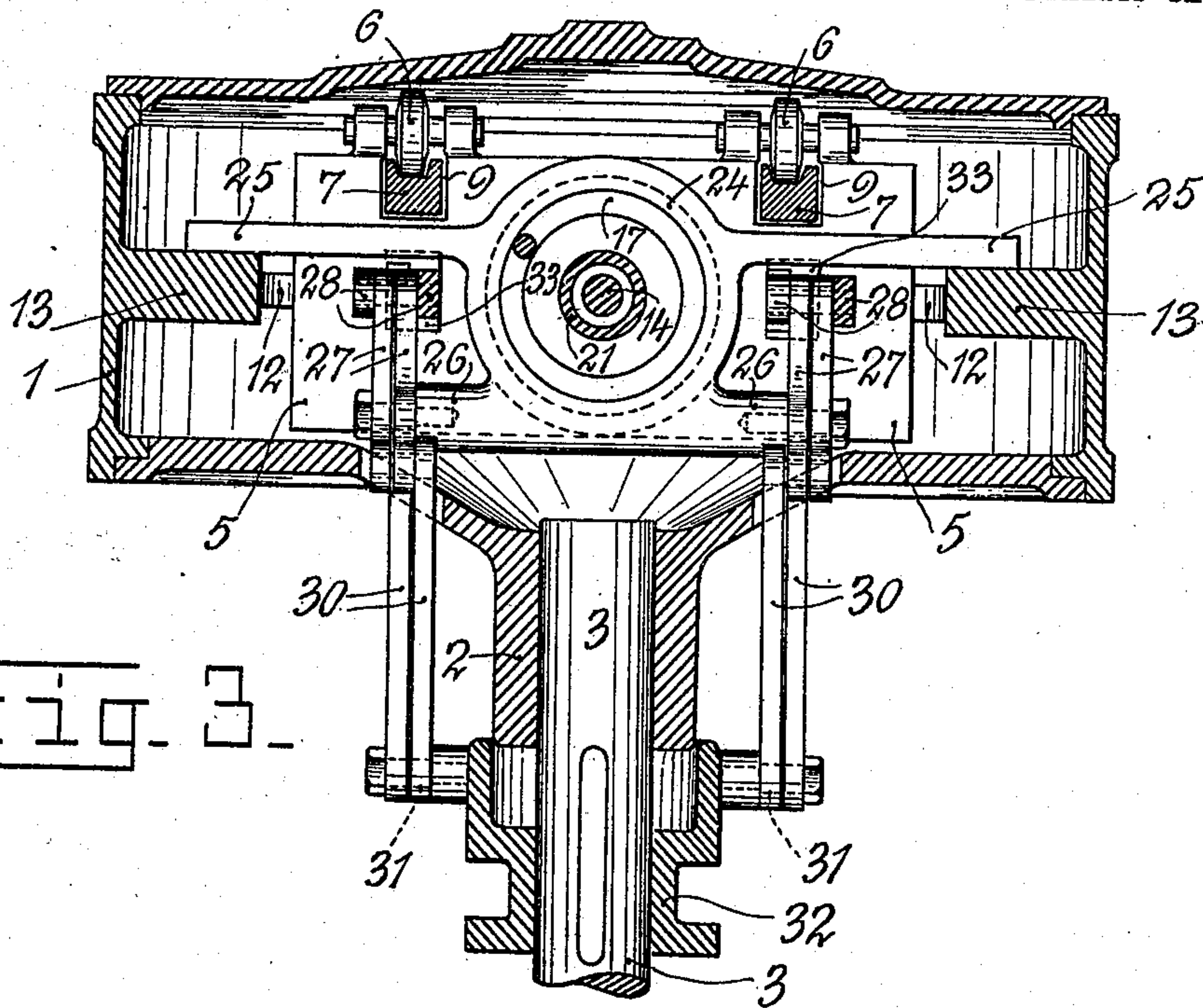


Fig. 3.

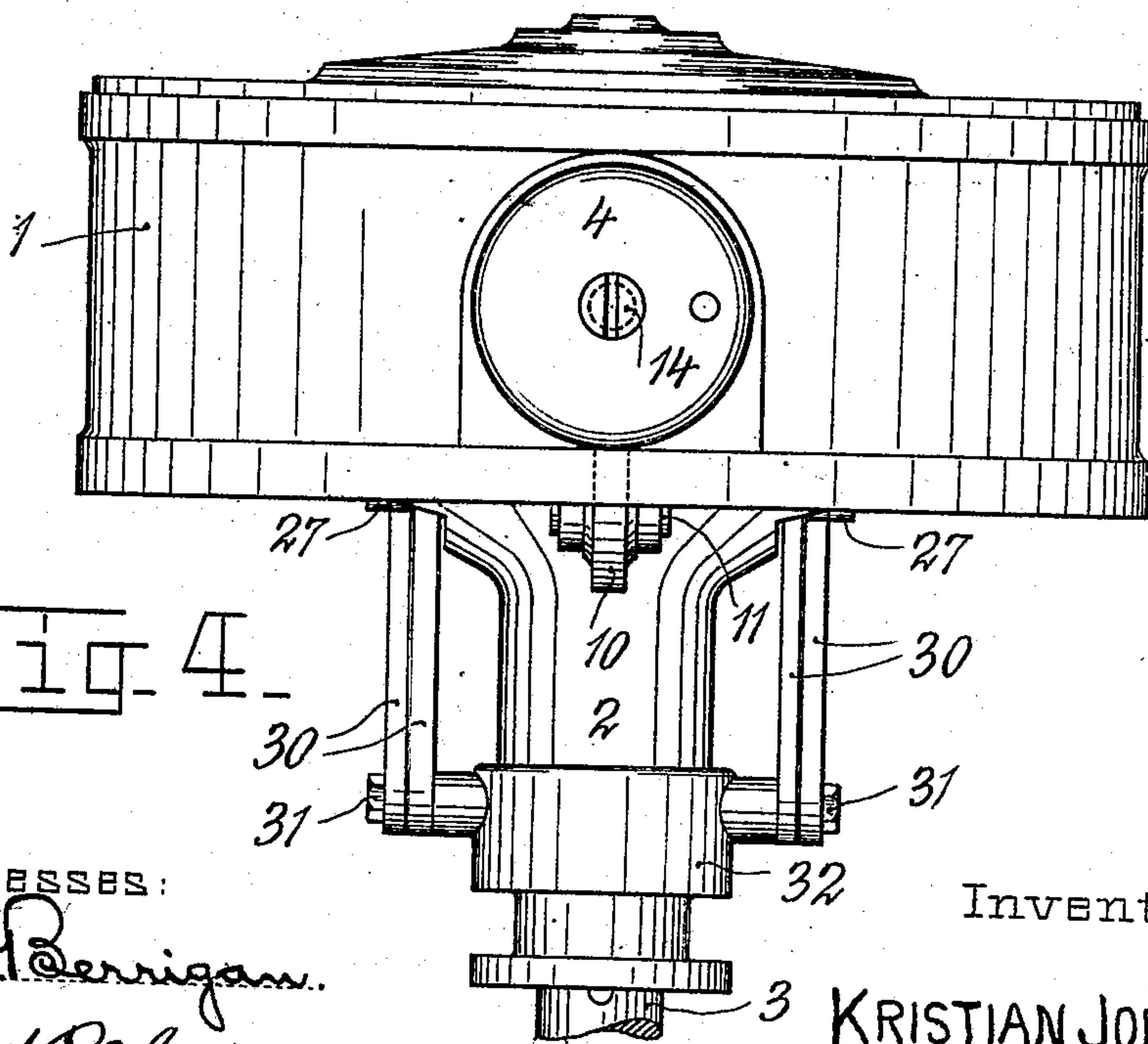


Fig. 4.

Witnesses:

W. H. Berrigan.

Alfred R. Anderson.

Inventor:

KRISTIAN JOHANSEN,

by *Ivan Olden*

Attorney

UNITED STATES PATENT OFFICE.

KRISTIAN JOHANSEN, OF HAMAR, NORWAY.

GOVERNOR.

No. 924,234.

Specification of Letters Patent.

Patented June 8, 1909.

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To all whom it may concern:

Be it known that I, KRISTIAN JOHANSEN, a citizen of the Kingdom of Norway, residing at Nybakkens Villa, Hamar, Norway, have
5 invented a new and useful Improvement in Motor-Governors; and I do hereby declare the following to be a full, clear, and exact description of the same.

Centrifugal governors having telescopic
10 weights acted upon by a common spring are known. According to my invention, however, I arrange, between the weights and the active or loading spring, means which enables adjustment of the spring from either
15 end. As a result, the mass of the spring is, at any time, balanced in relation to the axis of revolution, whereby the exactness of the governor is considerably increased. Another result assured, is that the weight and
20 other parts at the side of the axis opposite that at which adjustment is effected are not disturbed when the spring is adjusted or retightened. The illustrated form of the improved governor has the loading spring ar-
25 ranged around the telescopic connection of the centrifugal weights, one end of the spring pressing against a part connected with the foremost part of one (the inner) telescopic member through a slot in the rear part of the
30 other (outer) telescopic member, while the other end of the spring presses against a part on the outer telescopic member.

The invention is illustrated in the accompanying drawing in which:

35 Figure 1 is a side elevation of the governor, the casing being shown in section. Fig. 2 is a plan view partly in section, with the casing cover removed. Fig. 3 is a vertical section on the line 3—3 in Fig. 2, and Fig. 4 is a side
40 view of the governor.

The invention may be utilized in fly wheel governors as well as in vertical governors. The drawings illustrate a governor of the last-mentioned type.

45 The governor casing —1—, the hub —2— of which is keyed on the upper end of a vertical shaft —3— driven from the motor is circular and has no projecting parts. The centrifugal weights —4, 5— are guided radially
50 and are supported near the middle of the casing —1— by four rollers —6— traveling in grooves in two parallel rails —7— attached to projections —8— on the casing wall. Recesses —9— for the rails —7— are provided
55 in the upper sides of the weights. The outer ends of the centrifugal weights travel on roll-

ers —10— arranged loosely beneath the same on pins —11— journaled in lugs projecting from the under side of the casing —1— (Fig. 1). Each weight is provided
60 with side rollers —12— traveling on two parallel ribs —13— cast on the inner side of the governor casing.

By means of a diametrically located threaded bar —14— passing through the
65 centrifugal weight —4— and by means of a key —15— arranged in one end of said bar the weight —4— is connected with the thrust sleeve —16— forming the support for one end of the spring —17—, the key engaging a
70 ring —18— supported by the sleeve —16— through intermediate balls —19—. The other centrifugal weight —5— is connected with the other spring supporting sleeve
75 —20— by means of the rotatable sleeve —21— and its threads —22—, the sleeve —21— surrounding the bar —14—. The key —15— slides in longitudinal slots —23— in the sleeve —21—.

It will be seen that the spring is quite in-
80 cased in the centrifugal weights and its tension may be adjusted from outside by rotating the bar —14—. This rotation is by means of the key 15, transferred to the sleeve —21— but not to the supporting
85 sleeve —16—, because the latter is journaled on balls. On the one hand the left end of the bar —14— hereby is screwed out from the weight —4—, whereby the supporting
90 sleeve —16— is moved to the left, but on the other hand the rotation of the sleeve —21— by means of the threads —22— will cause the supporting sleeve —20— to move to the
95 right, because said sleeve does not partake of the rotation. As now the threads —22— and those of the bar —14— have the same pitch, both of the spring ends are moved together exactly the same distance, whereby a
100 displacing of the central and symmetrical position of the spring is prevented during the tightening of the same.

From the drawing it is seen, that the spring —17— is compressed, as soon as the weights —4, 5— move apart. The spring
105 normally holds the weights in their inner position in engagement with the sides of a cross ring —24— attached by horizontal arms —25— to the ribs —13—. The ring also serves to guide and support the spring.

On pins fixed in sockets —26— (Fig. 3) on
110 the supporting ring —24— are pivoted two pairs of bell crank levers —27— which are

connected, at one end, by links (28) with pins —29— in the centrifugal weights —4, 5— and at the other end by links (30) with two pins (31) on a sleeve —32— on the shaft —3—. This sleeve slides on the shaft —3— and is in a well-known manner connected to the controlling organ of the motor. The links —28— project through recesses —33— into the centrifugal weights as illustrated in Fig. 2. The sleeve —32— is raised as soon as the weights are separated, and vice versa.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a centrifugal spring governor, the combination of two centrifugal weights, transmission connections therefor, an inner telescoping member diametrically disposed and connected at its outer end through threads with one of said weights and connected at its inner end rotatably with a sleeve, an outer telescoping member connected at its outer end with the second weight and connected at its inner end through threads with a second sleeve, and a loading spring surrounding the telescopic members and engaging with its ends the said sleeves.

2. In a centrifugal governor, the combination of two centrifugal weights, transmission connections therefor, an outer diametrically disposed telescoping member connected at its outer end rotatably with one of said weights and connected at its inner end through threads with a sleeve, longitudinal slots arranged in said member near its outer end, an inner telescoping member connected at its outer end through threads with the second weight, a cross key attached to the inner end of said inner telescoping member and having ends projecting through the said longitudinal slots, a second sleeve in rotatable engagement with the said projecting ends of the cross key, and a loading spring surrounding the telescoping members and supported at its ends by the said sleeves.

3. In a centrifugal governor, the combination of two centrifugal weights, transmission connections therefor, an outer diametrically disposed telescoping member connected at its outer end rotatably with one of said weights and connected at its inner end through threads with a sleeve, longitudinal slots arranged in said member near its outer end, an inner telescoping member connected at its outer end through threads with the second weight, a cross key attached to the inner end of said inner telescoping member and having ends projecting through the said longitudinal slots, a second sleeve surrounding the outer telescoping member near its outer portion,

a ball bearing inserted between said second sleeve and the projecting ends of the cross key, and a loading spring surrounding the telescopic members and supported at its ends by the said sleeves.

4. In a centrifugal governor, the combination of two centrifugal weights, transmission connections therefor, an outer diametrically disposed telescoping member connected at its outer end rotatably with one of said weights and connected at its inner end through threads with a sleeve, longitudinal slots arranged in said member near its outer end, an inner telescoping member connected at its outer end through threads with the second weight, said threads having the same pitch as that of the threads first mentioned, a cross key attached to the inner end of said inner telescoping member and having ends projecting through the said longitudinal slots, a second sleeve surrounding the outer telescoping member near its outer portion, a ball bearing inserted between said second sleeve and the projecting ends of the cross key, and a loading spring surrounding the telescopic members and supported at its ends by the said sleeves.

5. In a centrifugal governor the combination of two centrifugal weights, transmission connections therefor, an outer diametrically disposed telescoping member connected at its outer end rotatably with one of said weights and connected at its inner end through threads with a sleeve, longitudinal slots arranged in said member near its outer end, an inner telescoping member connected at its outer end through threads with the second weight, said threads having the same pitch as that of the threads first mentioned, a cross key attached to the inner end of said inner telescoping member and having ends projecting through the said longitudinal slots, a second sleeve surrounding the outer telescoping member near its outer portion, a ball bearing inserted between said second sleeve and the projecting ends of the cross key, a loading spring surrounding the telescopic members and supported at its ends by the said sleeves, and a rigidly attached supporting ring serving partly as a support for the middle portion of the spring and partly as a stop for the centrifugal weights in their inner position.

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

KRISTIAN JOHANSEN.

Witnesses:

RICHARD STOKKE,
MOGENS BRIGGE.