

Feb. 14, 1933.

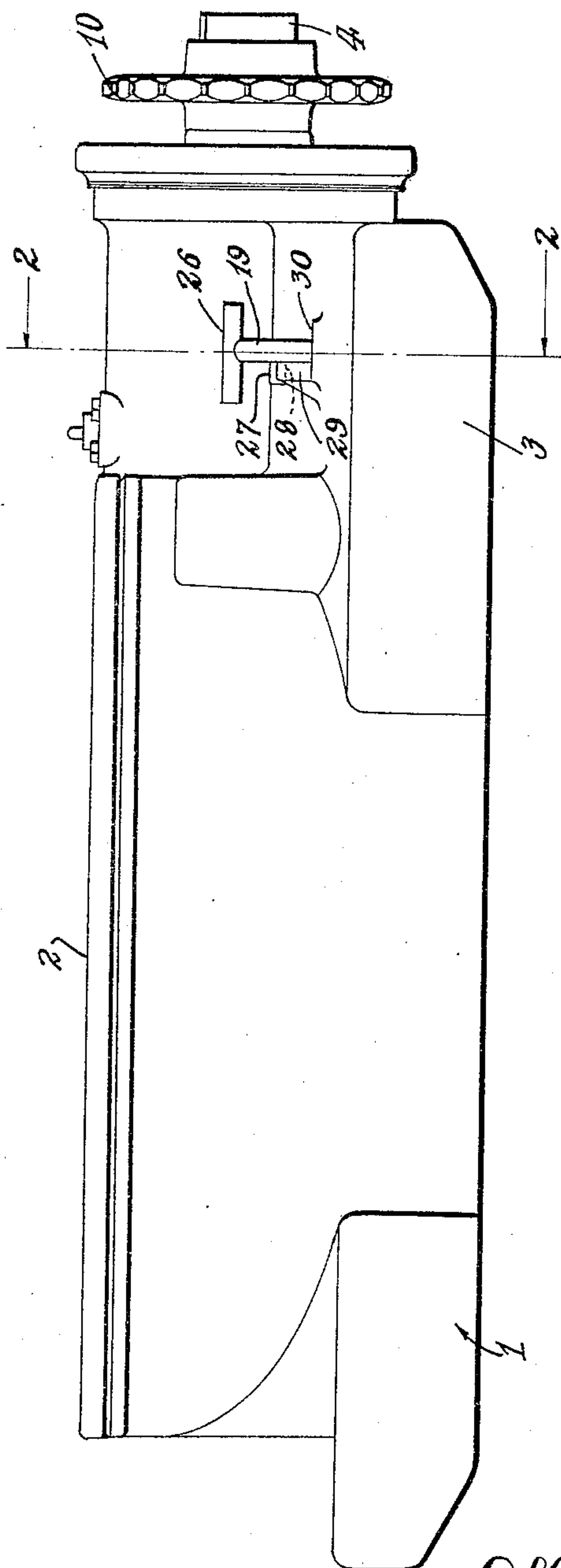
A. E. RICE

1,897,622

GRAVITY SPRING LOCKING PAWL

Filed Sept. 13, 1930

2 Sheets-Sheet 1



Inventor  
Allen Erwin Rice

By *Lyon & Lyon* Attorneys

Feb. 14, 1933.

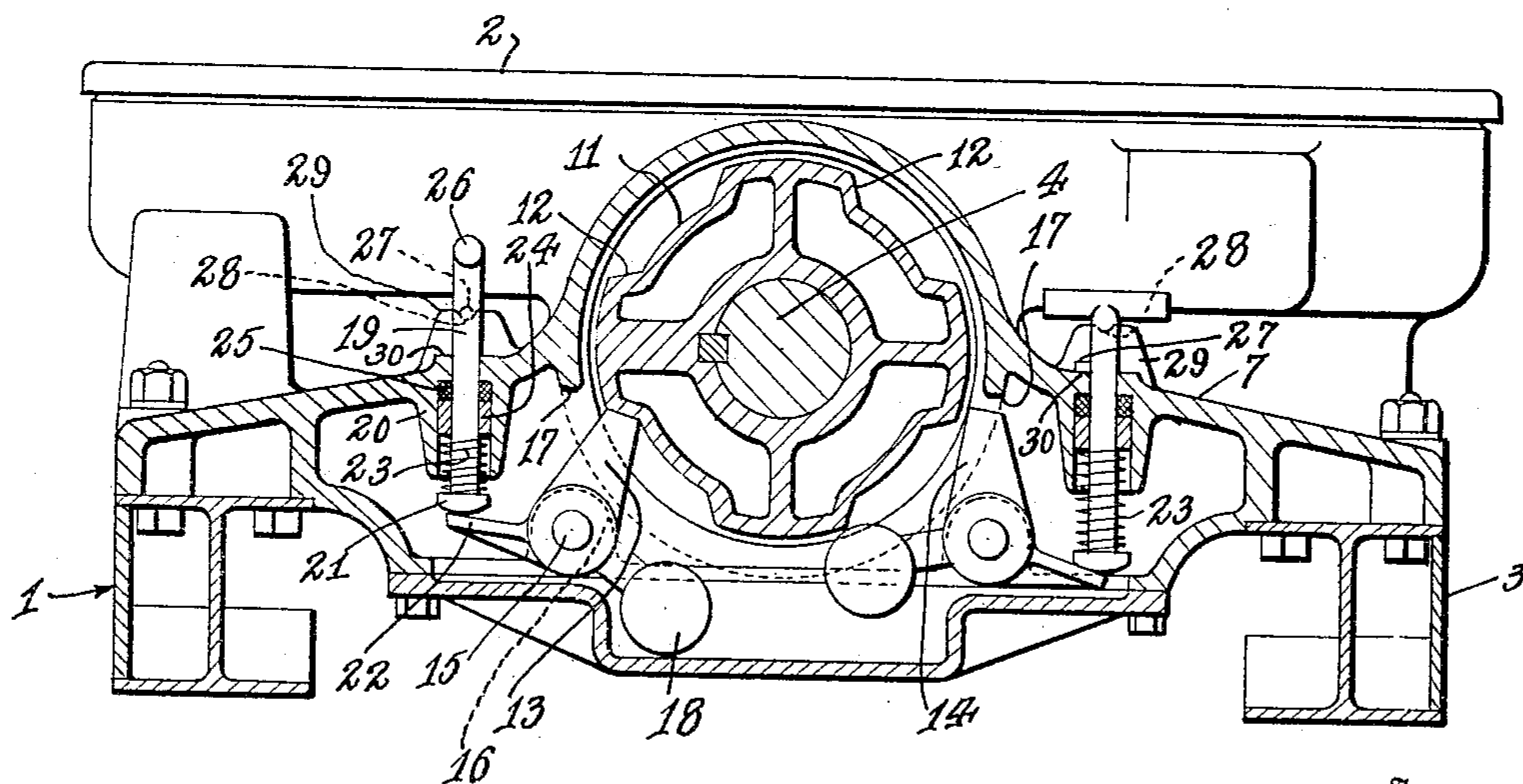
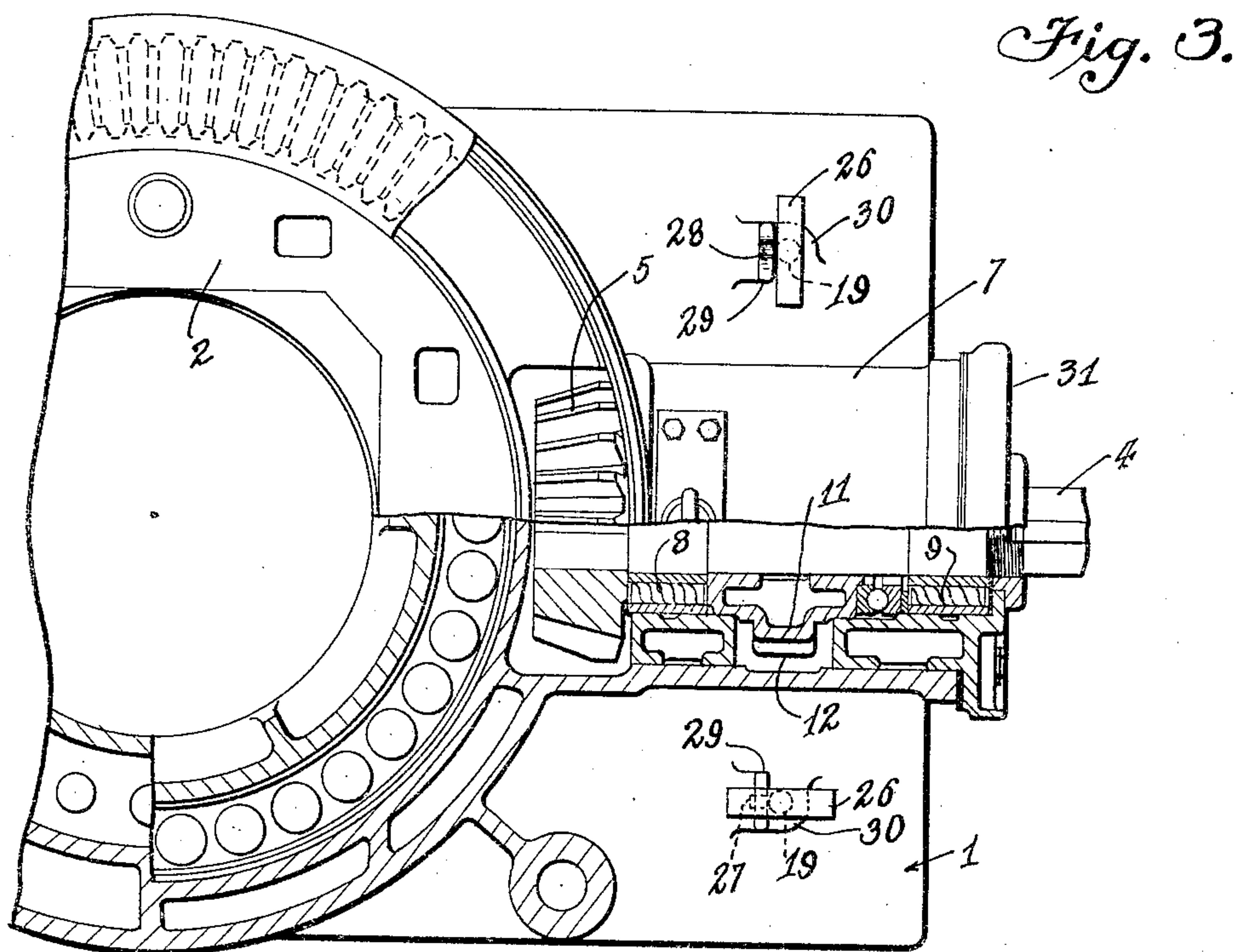
A. E. RICE

1,897,622

GRAVITY SPRING LOCKING PAWL

Filed Sept. 13, 1930

2 Sheets-Sheet 2



*Fig. 2.*

Inventor  
Allen Erwin Rice

By

Lyon & Lyon

Attorneys



## UNITED STATES PATENT OFFICE

ALLEN ERWIN RICE, OF HERMOSA BEACH, CALIFORNIA, ASSIGNOR TO THE NATIONAL  
SUPPLY COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO

## GRAVITY SPRING LOCKING PAWL

Application filed September 13, 1930. Serial No. 481,730.

This invention relates to gravity-spring locking pawls and more particularly to a rotary machine wherein there is provided a gravity-spring locking pawl for locking the pinion shaft of the rotary machine to hold the same from rotation.

An object of this invention is to provide in a rotary machine means for locking the pinion shaft to hold the rotary table from rotation in relation to the rotary base, including a gravity pawl which is normally urged by a counterweight means into locking position and which is yieldably urged from locking position by means of a spring latch means.

Another object of this invention is to provide in a rotary machine, including a rotary table, a rotary table base upon which the rotary table is supported and which rotary table is driven from a pinion shaft which is enclosed upon an extension of the rotary table base, and including counterbalance pawls adapted to engage lock means supported on the shaft and to hold the pinion shaft from rotation, and spring actuated latch means supported in the housing enclosing the pinion shaft which are yieldably urged in position to move the pawls from the locking position.

Other objects and advantages of this invention it is believed will be apparent from the following detailed description of a preferred embodiment thereof as illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a side elevation mainly in vertical mid-section of a rotary machine including lock means embodying this invention.

Figure 2 is an end elevation thereof in section taken substantially on the line 2—2 of Figure 1.

Figure 3 is a top plan view of a fragment of the rotary table base illustrating the latch means embodying this invention.

In the preferred embodiment of this invention illustrated in the accompanying drawings, 1 indicates the base of a rotary machine upon which there is rotatably supported a rotary table 2. The base 1 is of one-piece construction and includes a laterally extending portion 3 upon which the pinion shaft 4 which drives the rotary table through the pinion

gear 5 is rotatably supported. The pinion 5 of the rotary table meshes with gear teeth carried by the rotary table.

Mounted upon the extension 3 of the base 1 is a housing 7 within which spaced bearings 8 and 9 are mounted for rotatably supporting the pinion shaft 4. The pinion shaft 4 extends from the housing 7 and is provided with an overhanging sprocket 10 by means of which the shaft 4 is driven.

Mounted upon the shaft 4 between the bearings 8 and 9 is a lock ring 11 which is provided with a plurality of diametrically opposed locking shoulders 12 adapted to be engaged by lock or locking pawls 13 and 14 supported within the housing 7 upon opposite sides of the shaft 4. The lock pawls 13 and 14 are of the same construction and are positioned upon the opposed sides of the shaft 4 for the purpose of locking the shaft 4 to prevent rotation in either direction.

As the lock pawls 13 and 14 are of the same construction, it is believed that it will be essential to define the construction of only one of these lock pawls and its accompanying actuating mechanism, it being understood that the other pawl and actuating mechanism is of the same construction.

The locking pawl 13 is journaled on a shaft 15. Bearing bosses 16 are formed in the casting providing the housing 7. The locking pawls 13 and 14 project through cut-out portions 17 of the housing 7 positioned to engage the lock ring shoulders 12. The lock pawl 13 is provided with a counterweight 18 which is formed integral with the pawl 13 and extends from the shaft 15 at an angle to the pawl 13 within the housing 7, and normally acts to urge the locking pawl 13 in position to engage the lock shoulders 12 formed on the lock ring 11.

In order to hold the lock pawl 13 out of locking position, spring latch means are provided including a plunger 19 which projects through the housing 7 through a guide boss 20, and is provided with a head 21 adapted to engage the lateral extension 22 which extends outwardly from the pawl 13. A spring 23 is interposed between the head 21 of the plunger 19 and a packing gland follower 24



and normally urges the plunger 19 in position to engage the lateral extension 22 of the pawl 13 and to yieldably urge the pawl 13 out of locking position.

5 The packing gland follower 24 is mounted within the guide boss 20 and engages packing 25 providing a fluid tight connection where the plunger 19 extends through the housing 7. The upper end of the plunger 19 is provided with a laterally extending head 26 and a lock pin 27. The lock pin 27 is adapted to engage in a lock recess 28 formed within a lock stand 29 cast integral with the housing 7 and extending vertically upward therefrom to hold the plunger 19 out of engagement with the lateral extension 22 of the pawl 13 when the pawl 13 is in locking position. When it is desired to hold the locking pawl 13 out of locking position, the plunger 19 is rotated to release the lock pin 27 from engagement within the locking recess 28, and the plunger is allowed to be pushed downwardly by the spring 23 to engage the extension 22 of the pawl 13 until the pin 27 engages upon the flat boss 30 of the housing 7.

The housing 7 completely encloses the pinion shaft 4 and the bearings 8 and 9 upon which the pinion shaft is rotatably supported, and the positioning of the locking pawls within this housing in the manner herein illustrated enables me to provide a complete pinion shaft assembly for the rotary machine which is fully enclosed and which does not permit dirt or other foreign matter to find its way into the bearings supporting the shaft 4 or into a position within the rotary machine.

The end of the housing 7 is provided with a closure cap 31 which encloses the housing from this end and through which end of the housing 7 the shaft 4 may be withdrawn with its supporting bearings. In this manner the housing 7 may, if desired, be cast as an integral portion of the base 2 of the rotary machine. This application is directed to an improvement over the rotary machine as illustrated in the copending application of David S. Faulkner, et al., Serial No. 504,758, filed December 26, 1930.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. In a rotary machine, a rotary table having gear teeth carried thereby, a base upon which said table is supported, a pinion shaft, a pinion mounted on the shaft to engage the gear teeth carried by the rotary table, a pinion shaft rotation lock, including a lock ring secured to the shaft, a locking pawl pivotally supported in position to engage said lock ring, a balancing weight connected with the locking pawl to rotate said pawl into position to engage said lock ring, an extension

formed on the locking pawl, and a plunger yieldably urged into position to engage said extension and move said pawl to disengaging position.

2. In a rotary machine, a rotary table and a base upon which said table is supported, a pinion shaft, a pinion mounted in position to drive the rotary table, and a pinion shaft lock including a lock ring secured to said shaft, a locking pawl pivotally supported in position to engage said lock ring, a plunger for engaging the said locking pawl and adapted to move the locking pawl to disengaging position, and means for yieldably urging the plunger into position to engage said locking pawl.

3. In a rotary machine a rotary table, a base upon which the table is supported, a pinion shaft, a pinion mounted on the shaft for driving the rotary table, spaced bearings for supporting the pinion shaft, a pinion lock between the spaced bearings including a lock ring secured to the shaft, a locking pawl pivotally supported in position to engage said locking ring, an extension formed from the locking pawl, and a plunger yieldably urged into position to engage said extension and move said pawl to disengaging position.

4. In a rotary machine, the combination of a rotary table, a base upon which said table is supported, a pinion shaft, spaced bearings on the base in which the shaft is journaled, a housing enclosing the bearing and pinion shaft assembly, a lock ring mounted on the shaft intermediate said bearings within said housing, a locking pawl pivotally supported in position to engage said lock ring, a balancing weight connected with said locking pawl to rotate said pawl into position to engage said lock ring, and means extended through the housing and adapted to engage said locking pawl and to yieldably urge the locking pawl to disengaging position.

5. In a rotary machine, the combination of a base, a rotary table rotatably supported by the base, a pinion shaft, a housing enclosing the pinion shaft, means for driving the rotary table from the pinion shaft, means mounted within the housing for locking the shaft from rotation, means for actuating said locking means including spring urged means for actuating the locking means to one position, and gravity actuated means for actuating the locking means to the other position.

6. In a rotary machine, the combination of a base, a rotary table rotatably supported by the base, a pinion shaft, a housing enclosing the pinion shaft, means for driving the rotary table from the pinion shaft, means mounted within the housing for locking the shaft from rotation, means for actuating said locking means including spring urged means for actuating the locking means to one position, gravity actuated means for actuating



the locking means to the other position, means to hold the spring actuated means in retrieved position to permit the gravity actuated means to hold the locking means in its  
5 latter said position.

7. In a rotary machine, the combination of a base, a rotary table rotatably supported by the base, a pinion shaft, a housing enclosing the pinion shaft, means for driving the  
10 rotary table from the pinion shaft, means mounted within the housing for locking the shaft from rotation, means for actuating said locking means including spring urged means for actuating the locking means to one posi-  
15 tion, gravity actuated means for actuating the locking means to the other position, means to hold the spring actuated means in retrieved position to permit the gravity actuated means to hold the locking means in its  
20 latter said position, the spring actuated means extending through the housing to permit its being retrieved manually, and means for packing the spring actuated means to prevent entrance of foreign matter into said  
25 housing.

Signed at Torrance, Calif., this 5th day of Sept. 1930.

ALLEN ERWIN RICE.

30

35

40

45

50

55

60

65