

**No. 689,762.**

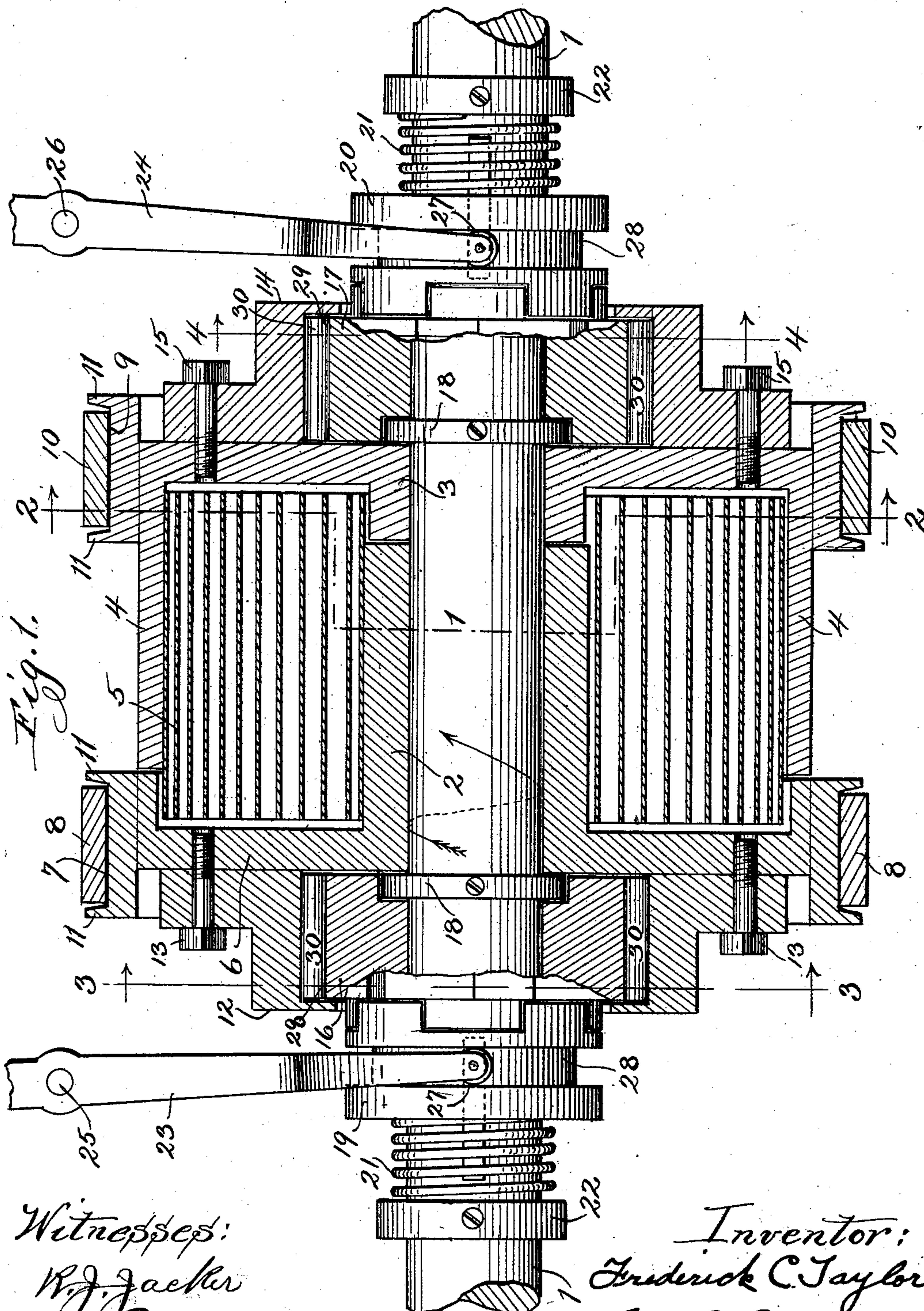
**Patented Dec. 24, 1901.**

**F. C. TAYLOR.**  
**BRAKE.**

(Application filed Mar. 7, 1901.)

(No Model.)

**2 Sheets—Sheet 1.**



Witnesses:

W. J. Jacker

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*Inventor:*

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his Atty.

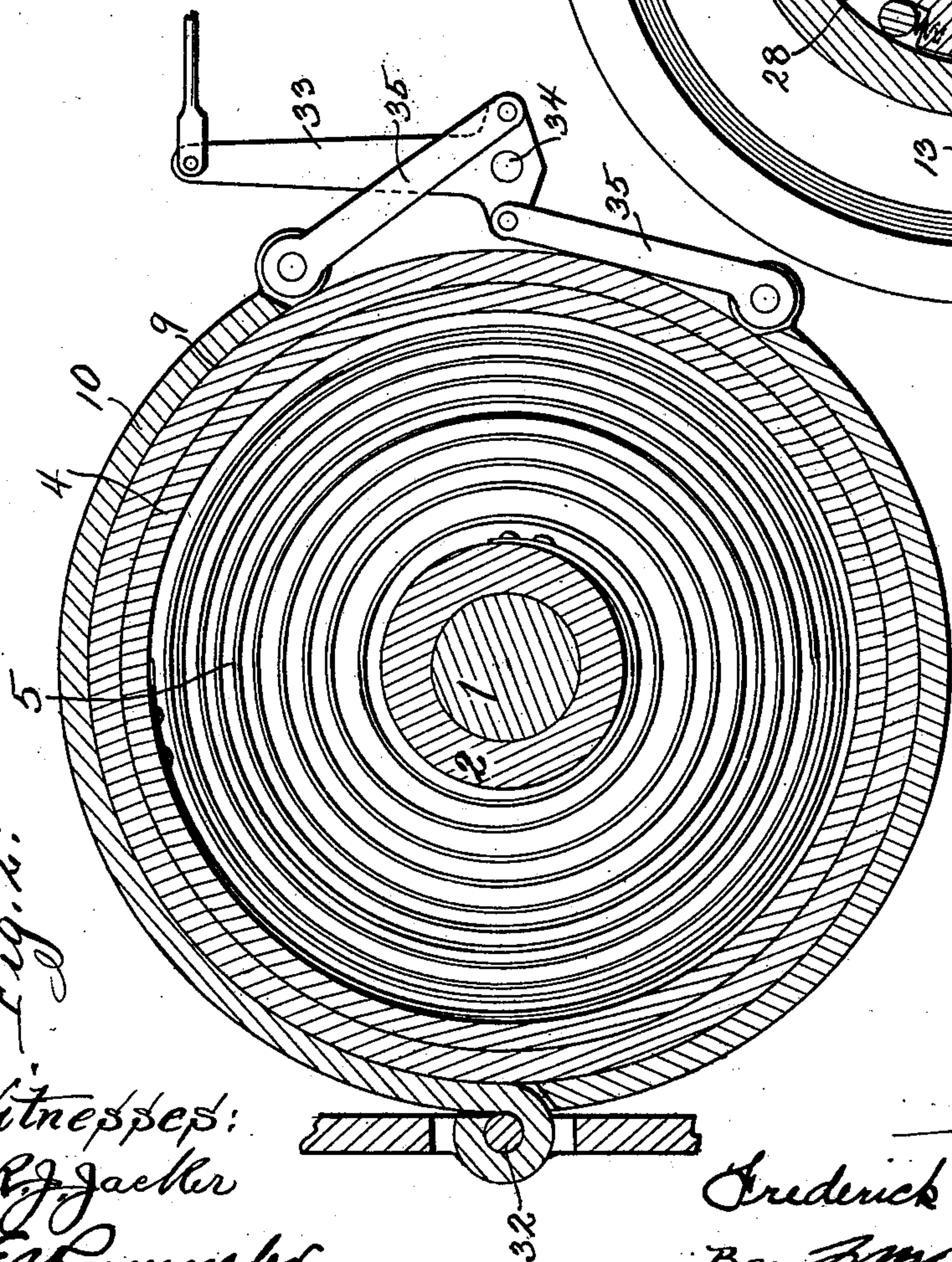
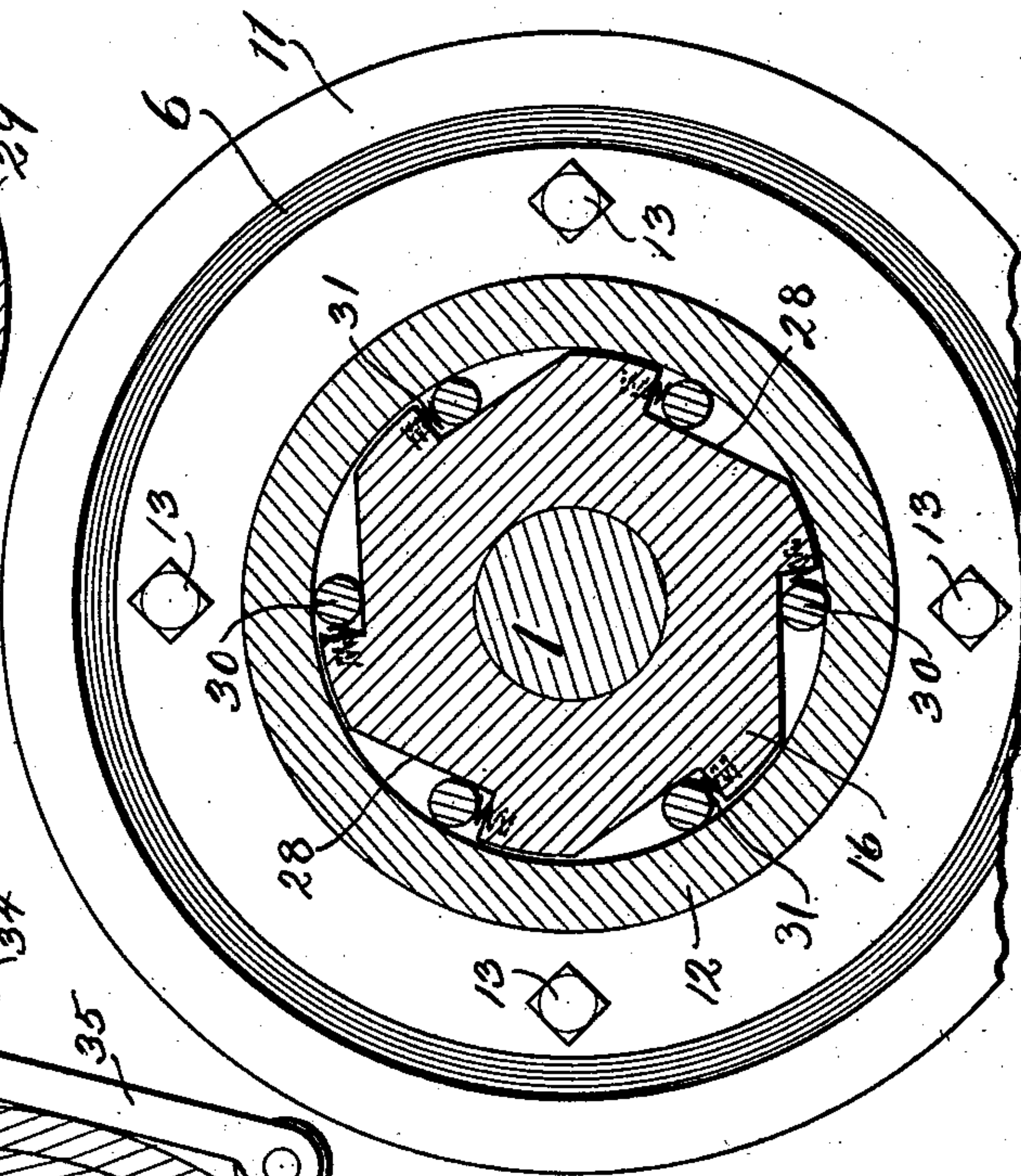
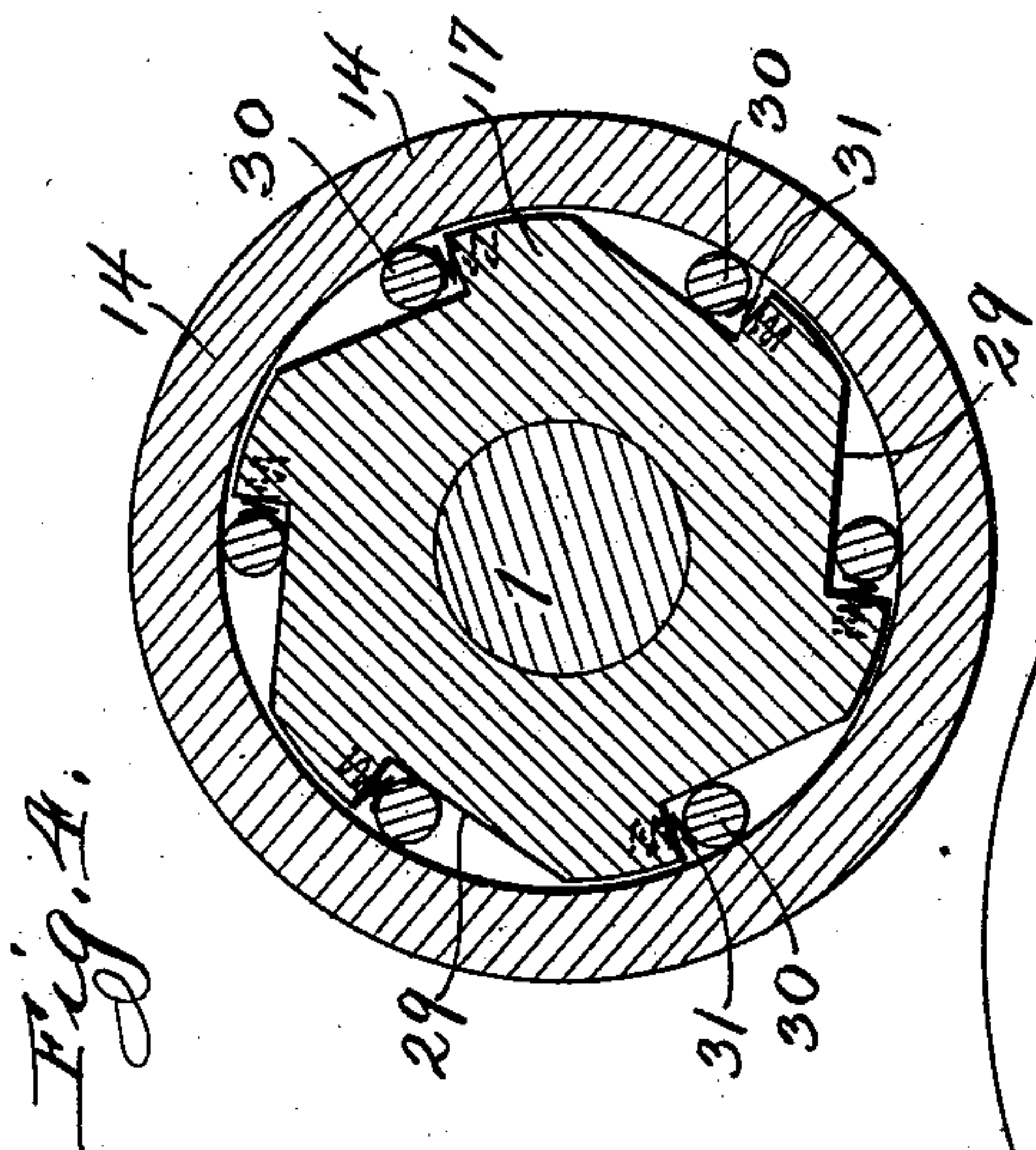


F. C. TAYLOR.  
BRAKE.

(Application filed Mar. 7, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:  
R. J. Jaeger  
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# UNITED STATES PATENT OFFICE.

FREDERICK C. TAYLOR, OF CHICAGO, ILLINOIS.

## BRAKE.

SPECIFICATION forming part of Letters Patent No. 689,762, dated December 24, 1901.

Application filed March 7, 1901. Serial No. 50,182. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK C. TAYLOR, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brakes, of which the following is a specification.

The main objects of my invention are, first, to provide a suitable device for storing and afterward utilizing the power which is ordinarily wasted in operating a brake, and, second, to provide a device of this class in compact form and of suitable structure to operate upon either a forward or a backward rotation of the shaft to which said device is applied. I accomplish these objects by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a brake constructed according to my invention. Fig. 2 is a vertical section on the broken line 2 2 of Fig. 1. Fig. 3 is a vertical section, partly broken away, on the line 3 3 of Fig. 1. Fig. 4 is a reduced vertical section on the line 4 4 of Fig. 1.

The device shown in the drawings consists mainly of an axle, a sleeve loosely mounted on said axle, a wheel loosely mounted on said axle and having a flange overlapping said sleeve, a coil-spring connecting said sleeve with said wheel, suitable clutches for independently connecting said axle with said sleeve and said wheel, and suitable mechanism for stopping either said wheel or said sleeve.

The axle 1 is partly broken away in the drawings, the car-wheels being omitted on each side. The sleeve 2 and wheel 3 are each loosely journaled on said axle. The flange 4 is rigid on the wheel 3 and has the outer end of the coil-spring 5 secured thereto. The inner end of the spring 5 is secured to the sleeve 2. The sleeve 2 is provided with a web 6, having an outer annular surface 7 for engagement with the brake-band 8. The wheel 3 has an outer annular surface 9 for engagement with the brake-band 10. The annular surfaces 7 and 9 are each preferably confined between the annular flanges 11. The sleeve 2 has a flange 12 secured thereto by means of the bolts 13. The wheel 3 has a similar flange 14 secured thereto by means of the

bolts 15. The collars 16 and 17 are loose on the axle 1 and are cut away for the collars 18, which are tight on the axle 1 and which serve to prevent the shifting of the parts longitudinally of the axle 1. The clutches 19 and 20 are splined to the axle 1 and normally held in engagement with the collars 16 and 17 by means of the springs 21. Said springs act against the collars 22, which are tight on the axle 1. The levers 23 and 24 are pivoted at 25 and 26, respectively, to the framework of the car, which is not shown. Said levers are forked and provided with rollers 27, operating in the grooves 28 of the clutches 19 and 20. The collars 16 and 17 are provided with the recesses 29, carrying the rollers 30. Said rollers are normally urged forward by the springs 31, so as to bind between said collars and the respective flanges 12 and 14. Each of said collars in connection with its rollers forms a clutch permitting its rotation in one direction with respect to the opposed flange acted upon by said rollers and preventing reverse rotation.

The brake-band 10 is preferably made of spring metal and is secured at 32 to a suitable part of the frame of the car. The lever 33 is pivoted at 34 to said frame and has the links 35, pivotally connecting same with the brake-band 10. When the upper end of the lever 33 is in the position shown, said band will be tight on the surface 9, and will thus stop the rotation of the wheel 3. When the upper end of the lever 33 is moved toward the left of the position shown in Fig. 2, the band 10 will be loose around said surface 9. The brake-band 8 is constructed and operated in similar manner to the brake-band 10.

The operation of my device is as follows: When the parts are in the position shown in Fig. 1 and with the brake-bands 8 and 10 loose on their respective surfaces, the entire device will rotate with the axle 1 in the direction of the arrow. To stop the car, the operator will set the brake-band 10 tight upon the annular surface 9, and thus stop the rotation of the wheel 3. The axle 1, with the sleeve 2 and collars 16 and 17, will continue to rotate and wind up the spring 5 around said sleeve 2. The tension of the spring acting between the wheel 3 and the sleeve 2 will tend to stop the rotation of the sleeve 2. The



roller-clutch will act upon the collar 16, so as to stop the axle 1 with the sleeve 2. The clutch 19 prevents the relative rotation of the axle 1 and the collar 16. After the car is stopped the operator will release the brake-band 10. The roller-clutch between the collar 17 and the flange 14 serves to hold the wheel 3 against such rotation of the axle 1 as would unwind the spring 5. To utilize the spring-power in helping to start the car, the operator will now set the brake-band 8 and then release the clutch 19 from the collar 16. The wheel 3 will now be acted upon by the spring 5, so as to rotate in the direction of the arrow shown on the axle in Fig. 1. The roller-clutch acting between the wheel 3 and the collar 17 will rotate the axle 1 in the direction of the arrow, the clutch 20 being in engagement with the collar 17. If the bands 8 and 10 are both released after the spring has been wound up and while both clutches 19 and 20 are in engagement with the collars 16 and 17, the power of the spring will not be utilized in propelling the axle, but may remain stored for future use. To aid in backing the car after the power has been stored, the operator will set the brake-band 10 and release the clutch 20.

It will be understood that numerous details of the device shown may be altered without departing from the spirit of my invention. I therefore do not confine myself to such details except as hereinafter limited in the claims.

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

1. In a brake, the combination of a rotatable axle having a sleeve loosely journaled thereon; a wheel loosely journaled on said axle and having a flange overlapping said sleeve; a coil-spring having one end secured to said sleeve and the other end secured to said flange; a clutch connecting said sleeve and axle; an independent clutch connecting said flange and axle; and means for stopping either said sleeve or said wheel against rotation in either direction, during the rotation of said axle in either direction.

2. In a brake, the combination of a rotatable axle having a sleeve loosely journaled thereon; a wheel loosely journaled on said axle and having a flange overlapping said sleeve; a coil-spring having one end secured to said sleeve and the other end secured to said flange; a clutch connecting said sleeve and axle; an independent clutch connecting said flange and axle; said sleeve and wheel having each an annular surface adapted for contact with a friction-brake; and a friction-brake adapted by contact with its respective annular surface to stop either said sleeve or said wheel, against rotation in either direction, during the rotation of said axle in either direction.

3. In a brake, the combination of a rotatable axle having a sleeve loosely journaled

thereon; a wheel loosely journaled on said axle and having a flange overlapping said sleeve; a coil-spring having one end secured to said sleeve and the other end secured to said flange; a clutch connecting said sleeve and axle; an independent clutch connecting said flange and axle; said sleeve and wheel having each a peripheral annular surface adapted for contact with a brake-band; a brake-band for each of said annular surfaces; and means for independently operating said brake-bands upon their respective annular surfaces, and thereby stopping the rotation of either said sleeve or wheel in either direction, during the rotation of said axle in either direction.

4. In a brake, the combination of a rotatable axle having a sleeve loosely journaled thereon; a wheel loosely journaled on said axle and having a flange overlapping said sleeve; a coil-spring having one end secured to said sleeve and the other end secured to said flange; one collar loosely journaled on said axle and having a clutch adapted to permit the relative rotation of said one collar and sleeve in one direction and to prevent their reverse relative rotation; a second collar loosely journaled on said axle and having a clutch adapted to permit the relative rotation of said second collar and said wheel in a direction opposite to the relative rotation of said one collar and sleeve but to prevent their reverse relative rotation; independent clutches connecting said collars with said axle; and means for stopping either said sleeve or said wheel against rotation with said axle.

5. In a brake, the combination of a rotatable axle having a sleeve loosely journaled thereon; a wheel loosely journaled on said axle and having a flange overlapping said sleeve; a coil-spring having one end secured to said sleeve and the other end secured to said flange; one collar loosely journaled on said axle and having a clutch adapted to permit the relative rotation of said one collar and sleeve in one direction and to prevent their reverse relative rotation; a second collar loosely journaled on said axle and having a clutch adapted to permit the relative rotation of said second collar and said wheel in a direction opposite to the relative rotation of said one collar and sleeve but to prevent their reverse relative rotation; independent clutches connecting said collars with said axle; said sleeve and wheel having each an annular surface adapted for contact with a friction-brake; and a friction-brake adapted to stop either said sleeve or said wheel, against rotation with said axle, through contact with its respective annular surface.

6. In a brake, the combination of a rotatable axle having a sleeve loosely journaled thereon; a wheel loosely journaled on said axle and having a flange overlapping said sleeve; a coil-spring having one end secured to said sleeve and the other end secured to said flange;



one collar loosely journaled on said axle and having a clutch adapted to permit the relative rotation of said one collar and sleeve in one direction and to prevent their reverse relative rotation; a second collar loosely journaled on  
 5 said axle and having a clutch adapted to permit the relative rotation of said second collar and said wheel in a direction opposite to the relative rotation of said one collar and sleeve  
 10 but to prevent their reverse relative rotation; independent clutches connecting said collars with said axle; said sleeve and wheel having each a peripheral annular surface adapted for contact with a brake-band; a brake-band  
 15 for each of said annular surfaces; and means for independently operating said brake-bands upon their respective annular surfaces.

7. In a brake, the combination of a rotatable axle having a sleeve loosely journaled  
 20 thereon; a wheel loosely journaled on said axle; a coil-spring having one end secured to said sleeve and the other end secured to said wheel; a clutch connecting said sleeve and axle; an independent clutch connecting said  
 25 wheel and axle; and means for stopping either said sleeve or said wheel against rotation in either direction, during the rotation of said axle in either direction.

8. In a brake, the combination of a rotatable axle having a sleeve loosely journaled  
 30 thereon; a wheel loosely journaled on said axle, and rotatable independently of said sleeve; a coil-spring having one end secured to said sleeve and the other end secured to said wheel;  
 35 one collar loosely journaled on said axle and

having a clutch adapted to permit the relative rotation of said one collar and sleeve in one direction and to prevent their reverse relative rotation; a second collar loosely journaled on  
 40 said axle and having a clutch adapted to permit the relative rotation of said second collar and said wheel in a direction opposite to the relative rotation of said one collar and sleeve but to prevent their reverse relative rotation;  
 45 independent clutches connecting said collars with said axle; and means for stopping either said sleeve or said wheel against rotation with said axle.

9. In a brake, the combination of a rotatable axle having a sleeve loosely journaled  
 50 thereon; a wheel loosely journaled on said axle; a coil-spring having one end secured to said sleeve and the other end secured to said wheel; a clutch connecting said sleeve and axle; an independent clutch connecting said  
 55 wheel and axle; and means for stopping either said sleeve or said wheel against rotation during the rotation of the axle; said parts being adapted to wind up said spring while the axle  
 60 is rotated in either direction, and adapted when the spring is wound up, to permit said spring to unwind and thereby urge the rotation of the axle in either direction.

Signed at Chicago this 5th day of March, 1901.

FREDERICK C. TAYLOR.

Witnesses:

WM. R. RUMMLER,  
 EUGENE A. RUMMLER.