

R. WHITAKER.
COUPLING.

APPLICATION FILED MAR. 31, 1905.

Patented Mar. 23, 1909.

916,382.

Fig. 1

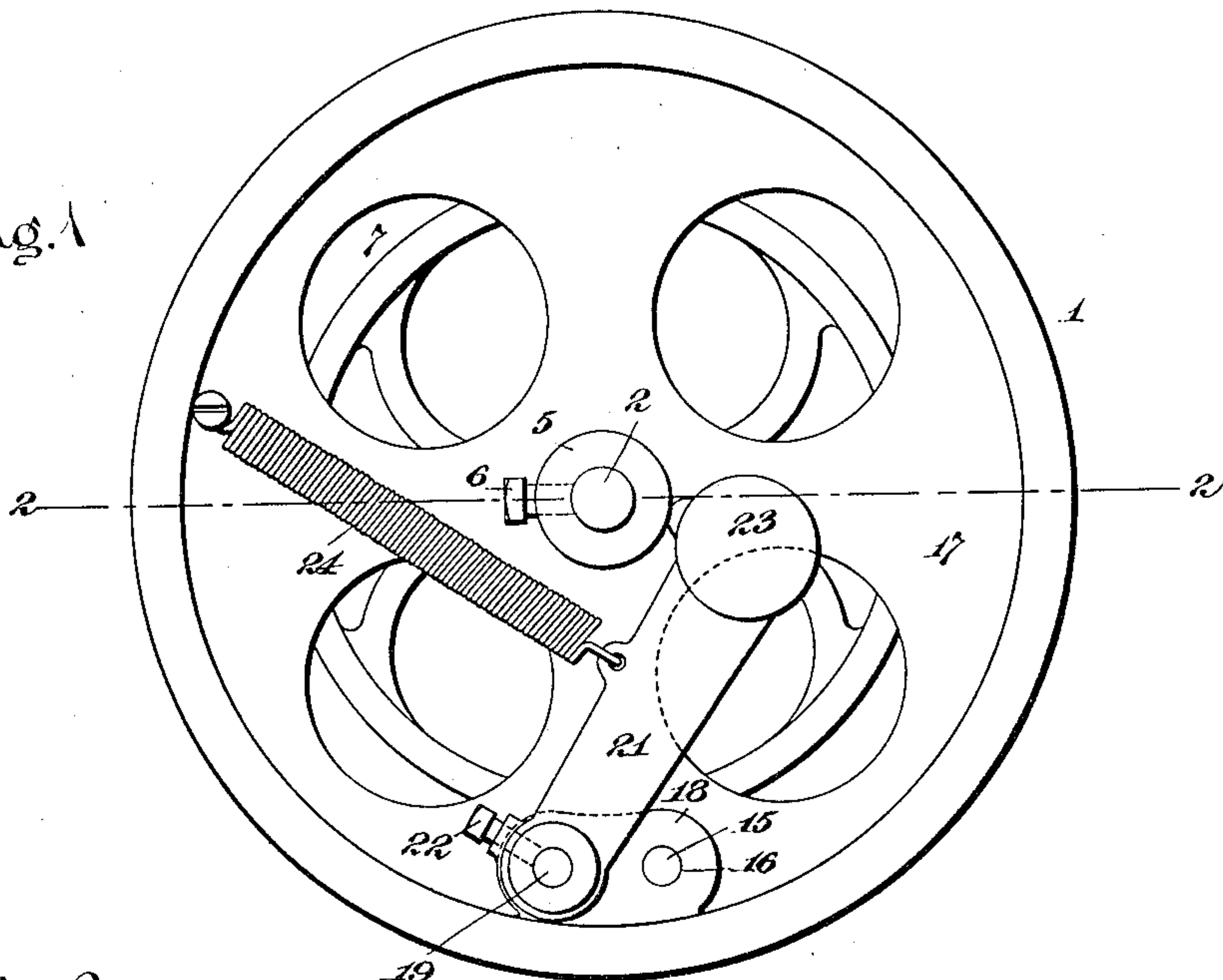


Fig. 2

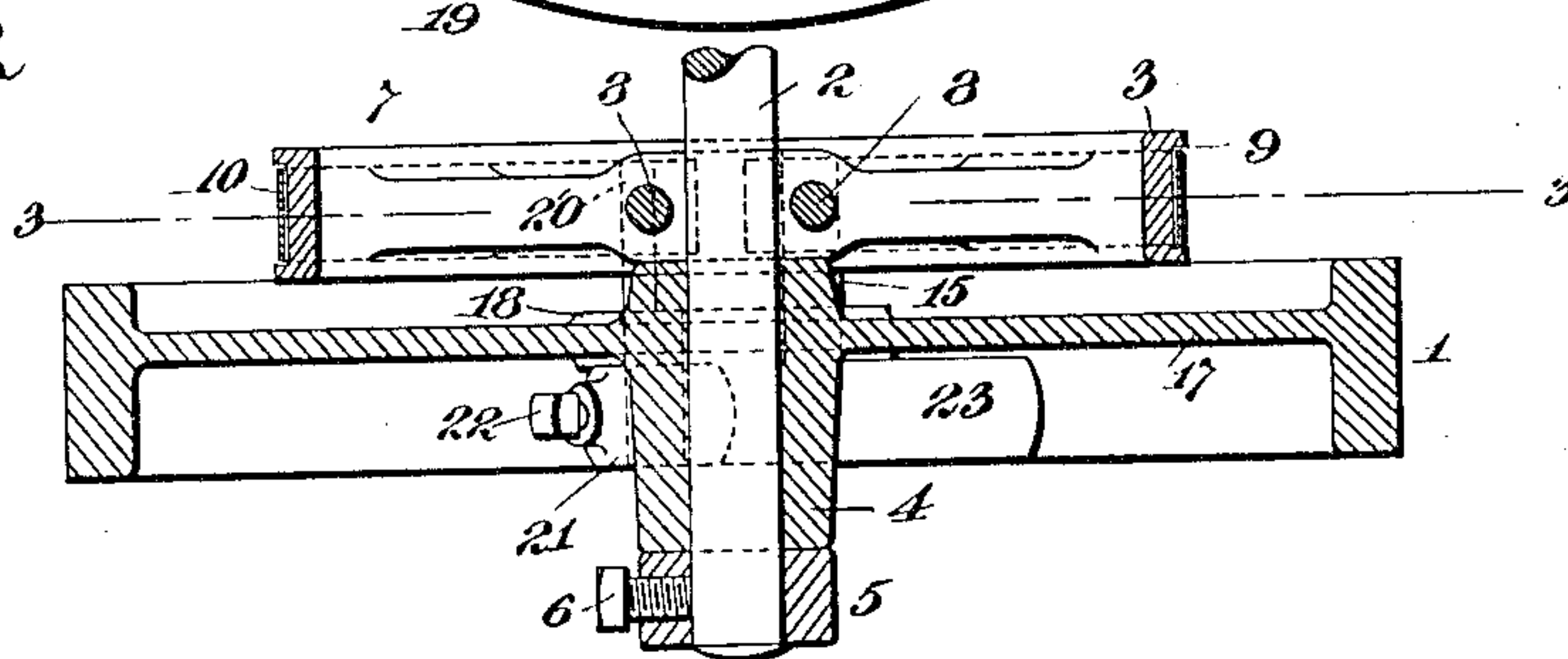


Fig. 3

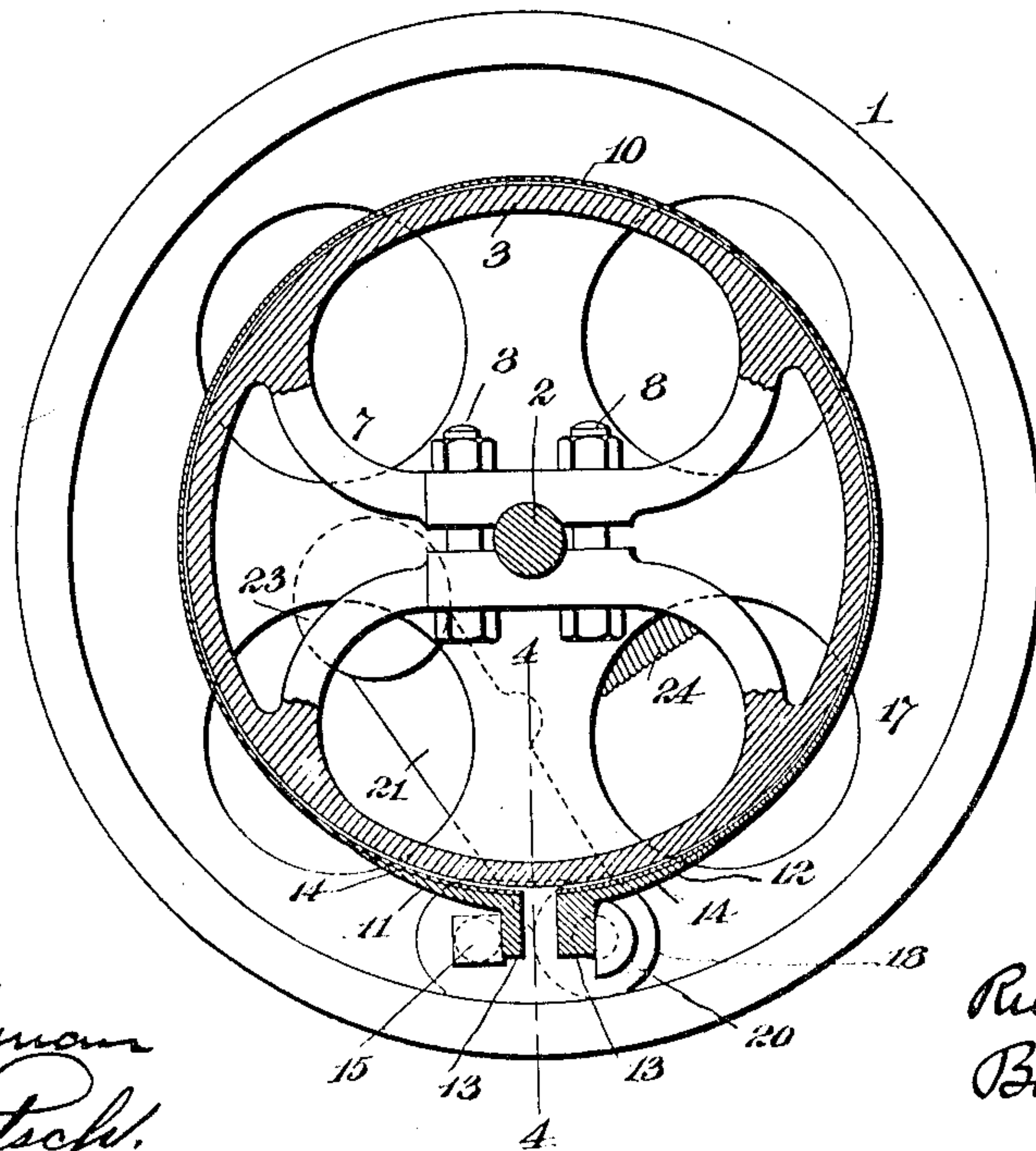
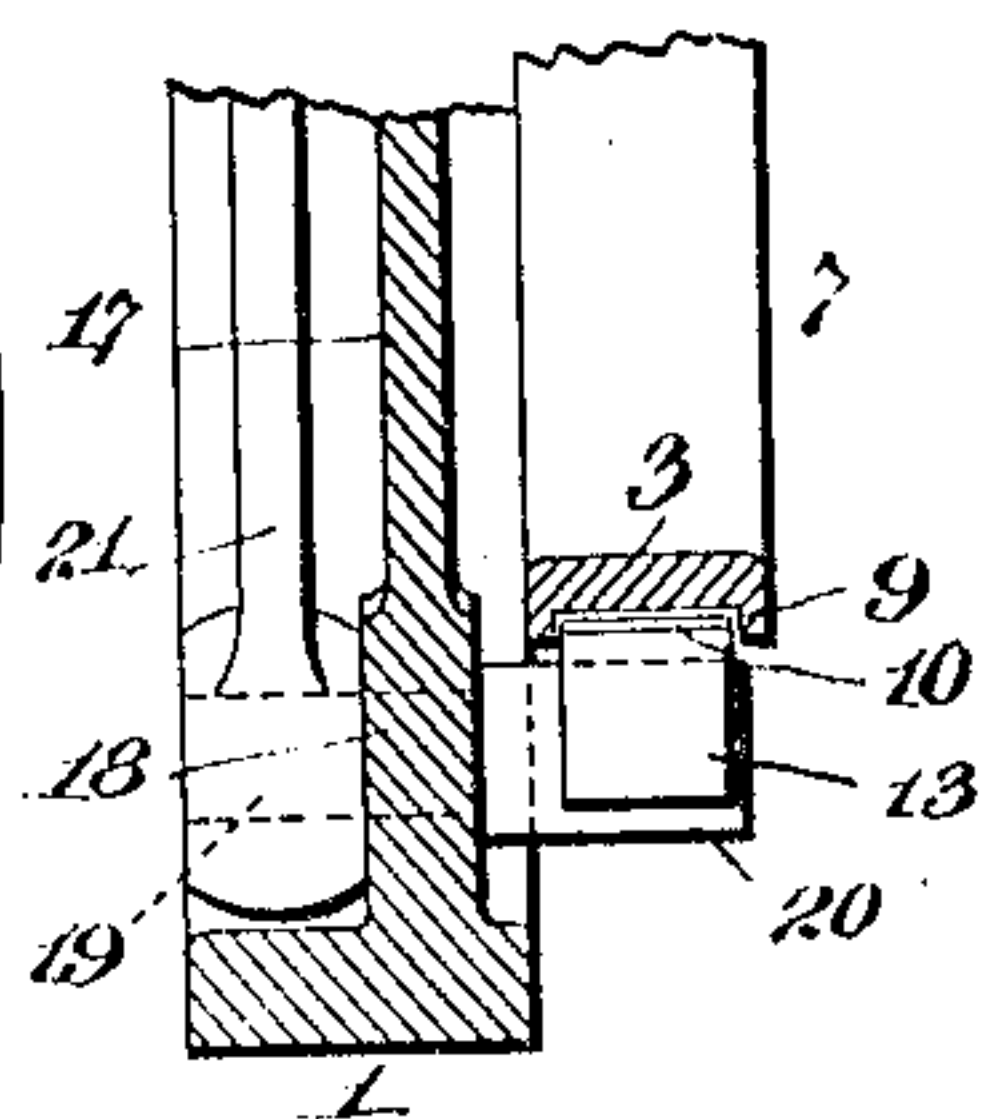


Fig. 4



Witnesses:

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UNITED STATES PATENT OFFICE.

RICHARD WHITAKER, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO BRUNSWICK REFRIGERATING COMPANY, A CORPORATION OF NEW JERSEY.

COUPLING.

No. 916,382.

Specification of Letters Patent.

Patented March 23, 1909.

Original application filed January 25, 1905, Serial No. 242,594. Divided and this application filed March 31, 1905. Serial No. 253,188.

To all whom it may concern:

Be it known that I, RICHARD WHITAKER, a citizen of the United States, residing in the city of New Brunswick, county of Middlesex, and State of New Jersey, have invented a certain new and useful Improvement in Couplings, of which the following is a description.

The object I have in view is the production of an improved form of coupling which may be used to automatically connect two rotating members. This coupling has but few moving parts, is very certain in action, may be readily examined, and is very compact.

The present case is a division of an application filed by me January 25, 1905, Serial No. 242,594. In that application I disclose my improved form of coupling in connection with a refrigerating apparatus of the compression type employing a pump and an operating motor, the parts being so arranged that they may be started after being stopped and without danger of being stalled. As in apparatus of this type are comprised small isolated plants operated by an electric motor, the latter usually has insufficient torque to start the pump, after it has been stopped for some hours, unless the pump is first started by hand.

The present invention comprises a coupling which may be arranged between the motor and the pump for automatically coupling them after the motor has been started and has developed sufficient power to actuate the pump, although the coupling may be used in other situations, as is apparent.

In the accompanying drawings, which show one embodiment of my invention, Figure 1 is an end view of the coupling; Fig. 2 is a sectional view thereof taken on the lines 2—2 of Fig. 1; Fig. 3 is a sectional view taken on the lines 3—3 of Fig. 2; and Fig. 4 is a sectional view taken on the lines 4—4 of Fig. 3.

In all of the several views like parts are designated by the same reference characters.

In carrying out my invention I provide a wheel 1, which is adapted to be connected to the shaft 2 and rotate the latter by mechanism which will be thrown into action after the wheel has been started, and rotates at a sufficiently high rate of speed to overcome the inertia of the resistance to the shaft 2. The wheel 1 is preferably formed with a thick or weighted rim, as shown, so that it

may perform the duty of a fly-wheel, and by preference said rim presents a broad flat peripheral surface to receive a belt by which said wheel may be connected with the operating motor, said wheel then serving both as a fly-wheel and a pulley.

As shown in the drawings, the wheel 1 is provided with an elongated hub 4, which surrounds the shaft 2 and freely turns thereon unless otherwise prevented. A collar 5 held in place by a set-screw 6 prevents endwise movement in one direction, while a band pulley 7 formed of two parts clamped together and upon the shaft 2 by bolts 8 prevents movement in the other direction. The band pulley 7 is intended to be secured to the shaft 2 so that it will rotate therewith. The rim 3 of the band pulley 7 is grooved at 9, and within this groove lies a band 10 similar to that of a band brake. This band is made preferably of flexible steel and has angular fittings 11 and 12 secured at its extremities. Each of these fittings comprises an ear 13 and a shank 14, the shank being riveted or otherwise secured to the band. By means of these fittings the band will have angular extremities. An abutment 15 is formed integral with, or separate and rigidly secured to, the body of the pulley 1 in such a position that it will engage with the fitting 11. As shown in the drawing, the abutment 15 is in the form of a pin, which passes through an opening 16 in the body of the wheel 1. The web 17 of the wheel 1 is thickened at 18 so as to form a seat for the pin 15. Another opening in this seat forms a bearing for a pin 19. This pin has a squared or flattened extremity 20 which engages with the fitting 12 and constitutes a cam. The other extremity of the pin 19 enters an opening in an arm 21, to which it is secured by a set-screw 22. This arm 21 has an enlarged head 23, which forms a weight and is normally drawn into contact with the hub 4 by means of a spring 24. The other extremity of the spring 24 is secured to the web 17 of the wheel 1.

The parts are so arranged that upon the weight 23 and arm 21 being moved outward against the tension of the spring 24 by centrifugal action, the pin 19 will be oscillated within its bearings, and its cam end 20 engaging with the ear of the fitting 12 will move it toward the ear of the fitting 11,

the latter being fixed, thus tightening the band 10 upon the pulley 7. This will cause the wheel 1 and pulley 7 to turn together. The device is adjusted so that as soon as the wheel 1, which is rotated by a belt or other means from a source of power, attains a sufficiently high speed to store up energy in its rim, the weight 23 will be moved outward against the tension of the spring 24 and clamp the band brake upon the drum. By this means it will be seen that the wheel will be connected or coupled to the shaft after it attains a certain definite and predetermined speed and thus entirely automatically. The device is adjusted so that the wheel 1 will be free to turn without turning the shaft 2 until sufficient energy has been stored in the fly-wheel to overcome the inertia of the work. When this occurs, the weight will be thrown outward against the tension of the spring, and the band will be tightened upon the wheel 7, coupling the two wheels together.

The web 17, as will be seen in Fig. 2, is located at one side of the medial line of the wheel, the major portion extending on the other side. The hub 4 is similarly located, that is to say, its longer portion is coincident with that side of the fly-wheel which extends the greater distance beyond the web. The moving arm and weight are arranged upon the side of the web on which the longer portion of the hub is located. By this construction the device is rendered very compact and occupies a minimum length upon the shaft.

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

1. The combination of a shaft, a wheel loosely mounted thereon, the said wheel having a thickened flat rim so that it serves both as a fly-wheel and a pulley and having a fixed abutment, and a cam, a wheel secured to the shaft so as to turn with it and surrounded by a band, the band having angular extremities, one of the said extremities engaging with the

fixed abutment, and the other with the cam, an arm secured to the cam, and a retracting spring for moving the arm.

2. The combination of a fly-wheel, the said fly-wheel having an elongated hub, a web and a thickened and broadened rim, the said web being located at one side of the medial line of the wheel, the hub being similarly located with its longer portion coincident with that side of the fly-wheel which extends the greater distance beyond the web, a lever and weight on that side of the web on which the longer portion of the hub is located, a second wheel secured to the shaft on the other side of the hub, a band surrounding the second wheel, and means actuated by the lever for tightening the band.

3. The combination of a shaft to be driven, a wheel loosely mounted thereon and having a fixed abutment and a cam, a wheel fixedly secured on said shaft, a band encompassing said fixed wheel and having angular extremities one of which engages said abutment and the other said cam, an arm secured to said cam, and a retracting spring for moving said arm and cam in one direction; substantially as set forth.

4. The combination of a shaft to be driven, a wheel loosely mounted thereon, a wheel fixedly secured on said shaft, a band encompassing said fixed wheel and having one end connected with said loosely mounted wheel and its other end provided with an angular extremity, a pivotally mounted cam carried by said loosely mounted wheel and engaging said angular band-extremity, a weighted arm connected with said cam, and a retracting spring for moving said arm and cam in one direction; substantially as set forth.

This specification signed and witnessed this twenty third day of March, 1905.

RICHARD WHITAKER.

Witnesses:

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