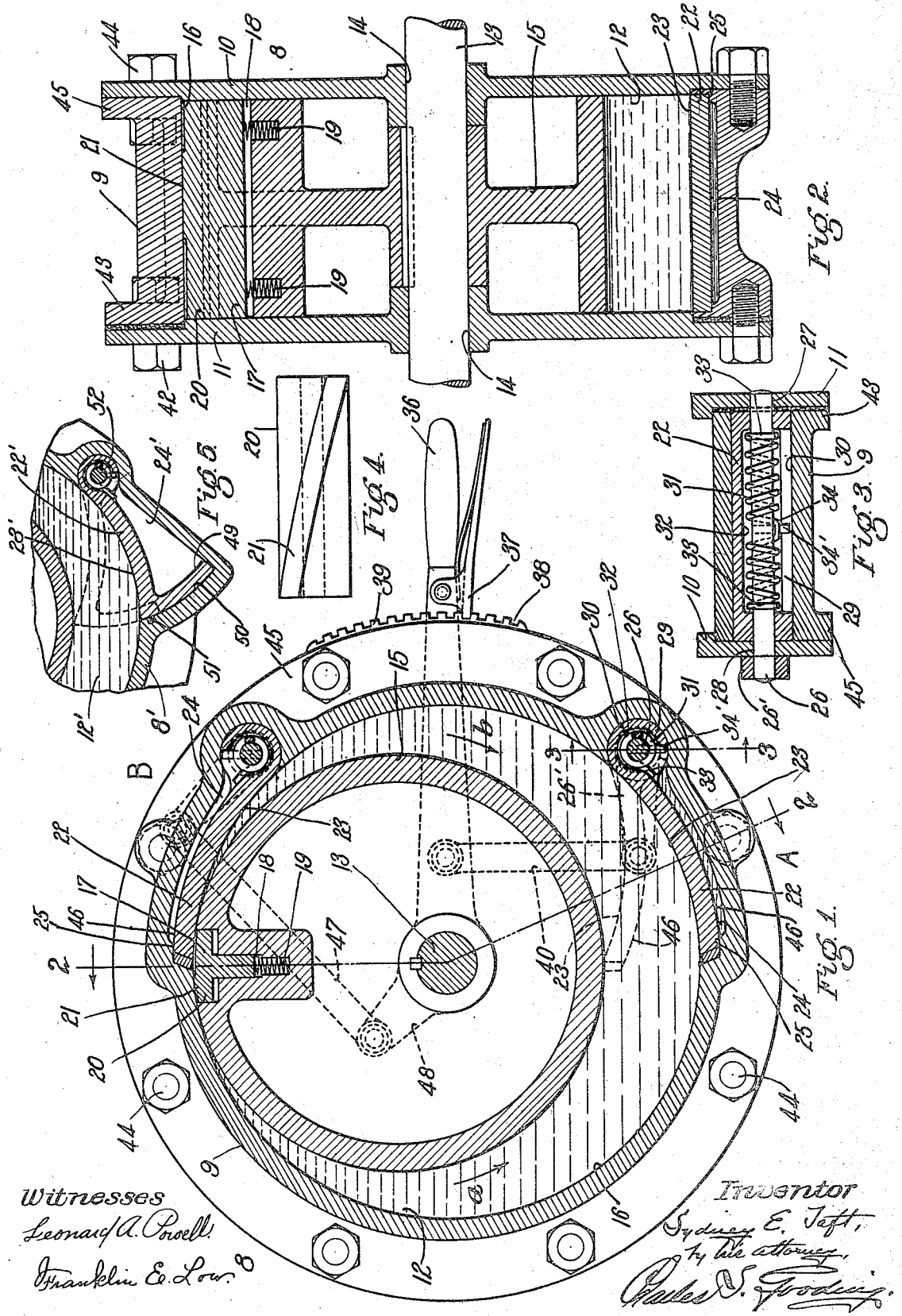
S. E. TAFT.

BRAKE MECHANISM.

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Patented Aug. 10, 1915.



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BRAKE MECHANISM.

1,149,969. Specification of Letters Patent. Patented Aug. 10, 1915.

Application filed December 11, 1913. Serial No. 805,875.

To all whom it may concern:

Be it known that I, SYDNEY E. TAFT, a citizen of the United States, residing at Holliston, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Brake Mechanisms, of which the following is a specification.

This invention relates to improvements in brake mechanisms and has particularly for its object the production of a device adapted to retard and check the relative movements between a fluid containing casing and an eccentrically disposed member arranged within said casing, which during said relative movements revolves the fluid in said casing about the axis of said eccentrically disposed member, said checking movement resulting from the introduction of one or more abutments directly into the path of more or less of said fluid according to the degree of retardation or checking required between said members.

The invention still further has for its object the production of manually operable means for controlling or setting said abutments at the desired location and adapted to be operated from the exterior of said casing and means to lock said setting means in such a position.

The invention consists in the combination and arrangement of parts whereby the above objects and certain other objects hereinafter appearing may be attained, as set forth in the following specification and particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a transverse sectional elevation of a brake mechanism embodying my invention. Fig. 2 is a sectional elevation taken on line 2—2 of Fig. 1 as viewed in the direction of the arrows on said line. Fig. 3 is a detail sectional elevation taken on line 3—3 of Fig. 1. Fig. 4 is a detail plan view of the piston blade. Fig. 5 is a detail view of a modified form of abutment.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 8 is a casing which preferably comprises a cylindrical portion 9 and end walls 10 and 11 which together form a cylindrical fluid chamber 12. A shaft 13 extends through said chamber 12 and is preferably journaled in bearings 14 formed in said casing 8. A cylindrical piston 15 is arranged within said chamber 12 and eccentrically disposed on and adapted to rotate with said shaft 13, this being the preferred arrangement, although if desired said piston and said shaft may be held stationary while the casing 8 may be revolved relatively thereto. By arranging the piston 15 eccentrically relatively to said shaft a certain portion of the periphery thereof will engage the inner periphery 16 of the casing 8 and cause the remaining portion of the chamber 12 not occupied by said piston to assume the form of a crescent, consequently as said piston 15 is revolved about the axis of the shaft 13 the fluid contained in said chamber will also be revolved or agitated, said fluid being preferably oil although, if desired, air or gas may be employed.

To provide a more perfect contact between the piston 15 and the periphery 16 during the rotation of said piston a piston blade 17 is slidably arranged in a radially disposed slot 18, while springs 19 interposed between the inner edge of said blade and the bottom of said slot cause said blade to yieldingly engage said periphery. The outer end of the piston blade 17 is somewhat enlarged at 20 and provided with a helically arranged contacting surface 21 to enable said blade to easily and smoothly pass over any uneven places in the periphery 16.

In the normal operation of the device the piston 15 is rotated about the axis of the shaft 13, and as hereinbefore stated, causing the oil contained in the chamber 12 to be revolved therewith, and practically the only resistance to said rotary movement will be the friction between the piston blade and the periphery 16.

To check or retard the movements of said piston relatively to said casing abutments are provided which may be, in form, similar to any of the wellknown types of abutments used in connection with devices of this character which would be introduced into said chamber and in the path of the fluid as it is being revolved therethrough by said piston. The preferred type of abutment however is that illustrated in Fig. 1 and comprises a curved blade 22 whose inner face 23 constitutes a continuation of the periphery 16 when said blade 22 is locked

without the path of rotation of the piston 15 in the recess 24 formed in the casing 8 to receive the same, said recess having a stop 25 to limit the movement of said blade outwardly.

The blade 22 is pivoted along one edge upon a shaft 26 which is journaled to rock in bearings 27 and 28 in the end walls 10 and 11 respectively, said shaft protruding beyond one of said walls, preferably 10 for the purpose hereinafter set forth. The end of said blade encircling the shaft 26 is cylindrically formed as at 29 and fits a correspondingly shaped recess 30 in the casing 8 and is of such a fit that the oil will be prevented from leaking therethrough to any great extent. Means are provided for securing the blade 22 to the shaft 26 which, upon the rocking of said shaft, causes said blade 22 to move radially toward the axis of the rotary piston 15 but permits said blade to be moved outwardly relatively to said shaft when the free end thereof is engaged by said piston. This means preferably consists of a helical spring 31 encircling the shaft 26 within a recess 32 formed in the cylindrical portion 29, portions of said spring, preferably the ends 33, engage said blade, while the middle portion 34 of said spring engages a pin 34′ fast to the shaft 26, and causes said pin to yieldingly engage the edge of the cylindrical portion 29 of said blade.

With the exception of the time when the movements of the piston 15 and the fluid in the chamber 12 are being retarded, the blade 22 is retained without the path of rotation of said piston and bridges the gap formed by the chamber 24. To retain said blade in such a position, I have preferably provided a lever 26′ secured to the protruding end of the shaft 26.

A hand lever 36 is arranged in pivotal relation to the casing 8, preferably upon the shaft 13, said hand lever having a latch 37 pivoted thereto and adapted to detachably engage notches 38 formed in the periphery of a quadrant 39 in turn fast to the casing 8, thus permitting said hand lever to be moved and locked in various positions relatively to said casing. A link 40 connects said hand lever with said lever 26′, said link transmitting the movement imparted to the hand lever 36 to said lever 26′, thus rocking the shaft 26.

To take up the wear at the ends of the blade 22 one of the end walls, preferably the wall 11, is made adjustable by the insertion of a resilient gasket between said wall and the end of the cylindrical portion 9 of the casing 8, which permits said wall 11 to be drawn toward the cylindrical member by bolts 42 extending through said wall and through the annular flange 43 in the member 9, the wall 10 being rigidly secured to the member 9 by bolts 44 extending through said wall and engaging the annular flange 45.

It will be possible to retard the rotary movements of the piston 15 by means of the abutment shown at "A" Fig. 1, only when said piston is being rotated in the direction of the arrow "*a*" for in revolving in said direction the fluid or oil contained in the chamber 12 will be forced against the upper side 46 of the blade 22 and tend to press said blade more firmly against the periphery, or in the direction of the periphery, of said piston 15. Should said piston be rotated in the direction of the arrow "*b*" said oil will engage the face 23 of said blade and as said blade is held in that direction only by the tension of the spring 31, said blade will be forced outwardly or toward the position illustrated in full lines, and should it be necessary to apply the device to a motor vehicle or machine which is operated in both directions it will be necessary to provide a second abutment such as has been illustrated at "B," Fig. 1, which points in the opposite direction to the abutment illustrated at "A" relatively to the inner periphery 16 of the casing 8, but constructed in identically the same manner as is the abutment at "A" and operated by the same hand lever through a connecting link 47 and arm 48.

In Fig. 5 I have illustrated a modified form of abutment which is similar in all respects to those illustrated in Fig. 1 with the exception of the outer free end thereof which in said modified form is provided with a segmental extension 49 constituting a part of the blade 22′ and engaging a correspondingly shaped face 50 in the casing 8′. The outer faces of the segmental extension 49 are arranged concentric with the axis of the shaft 52 and as said blade is rocked about said axis said surfaces substantially contact one with the other and prevent the fluid contained within the chamber 12′ from passing into the chamber 24′ provided to receive said abutment 22′ when the inner face 23′ thereof alines with the inner periphery of the casing 8′. To still further seal or make tight the interstice between the member 49 and the wall 50 a packing rod 51 may be provided if desired.

The general operation of the device is as follows: A rotary motion is imparted to the piston 15, which causes the fluid contained within the chamber 12 to be revolved about the axis of said piston, and assuming that the abutments 22 are in the positions illustrated in full lines without the path of rotation of said piston, said fluid will be carried around uninterruptedly with said piston. When it is desired to check or retard the movements of said piston the abutments 22 are permitted to be rocked upon their

pivots 26 through the instrumentalities of the springs 31 by removing the tooth of the latch 37 on the hand lever 36 from the notch engaged thereby in the quadrant 39. Should said hand lever be rocked far enough to permit said spring 31 to move the abutment to the position illustrated in dotted lines Fig. 1 or engaging the periphery of the member 15, one-half a rotation of said piston will be practically all that is necessary to stop the rotation of said member. When it is desired to only partially check or retard the rotation of said piston 15, said abutment may be released by the lever 36 to extend only a portion of the distance between the extreme position illustrated in dotted and full lines Fig. 1, thus permitting the free end of said abutment to be engaged by only a portion of the periphery of said rotary piston and permitting a portion of the fluid contained in the chamber 12 to escape thereby.

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

1. A device of the class described having, in combination, a fluid casing, an eccentrically disposed piston rotatably arranged within said casing adapted to revolve the fluid therein about the axis of said piston, an abutment pivotally mounted in said casing adapted to yieldingly engage the periphery of said piston, and means adapted to position said abutment to engage said piston at predetermined points on the periphery thereof during the rotation of said piston.

2. A device of the class described having, in combination, a fluid casing, an eccentrically disposed piston arranged within said casing, one of said members adapted to be rotated relatively to the other to agitate the fluid contained in said casing, an abutment arranged within said casing, and means operable from the exterior of said casing adapted to move said abutment a predetermined amount to retard the movement of said fluid whereby the relative movement between said casing and said piston will be more or less retarded.

3. A device of the class described having, in combination, a fluid casing, a piston arranged within said casing one of said members adapted to be rotated relatively to the other to agitate the fluid contained therein, an abutment arranged within said casing normally adapted to be retained without the path of said fluid, means adapted to yieldingly force said abutment against the periphery of said piston, to intersect the path of said fluid, and means operable from the exterior of said casing adapted to limit the inward movement of said abutment toward said piston whereby more or less of said fluid will be permitted to escape thereby.

4. A device of the class described having, in combination, a fluid casing, a rotatable member eccentrically disposed within said casing, a piston blade carried by said rotatable member adapted to yieldingly engage the inner periphery of said casing, the face of said blade contacting with said periphery being helically disposed relatively to the axis of said rotatable member, abutments arranged within said casing adapted to be moved radially relatively to said rotatable member to yieldingly engage the periphery of said rotatable member, and means operable from the exterior of said casing adapted to limit the inward radial movements of said abutments.

5. A device of the class described having, in combination, a fluid casing, an eccentrically disposed rotatable piston arranged within said casing adapted to engage the inner periphery of said casing, oppositely disposed abutments pivotally arranged in said casing without the path of rotation of said piston, means to yieldingly force the free ends of said abutments toward the periphery of said piston, and means adapted to limit the movements of said ends inwardly toward said piston, said means including a hand lever mounted to rock on said casing, means to operatively connect said lever with said abutments, a quadrant, and a latch carried by said hand lever adapted to engage said quadrant to detachably lock said lever in predetermined relation thereto.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SYDNEY E. TAFT.

Witnesses:
CHARLES S. GOODING,
MARGARET E. HORN.