

J. H. SCHOOOP.
 DEVICE FOR CONTROLLING POWER OF EXPLOSIVE ENGINES.
 APPLICATION FILED JAN. 2, 1906.

955,916.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

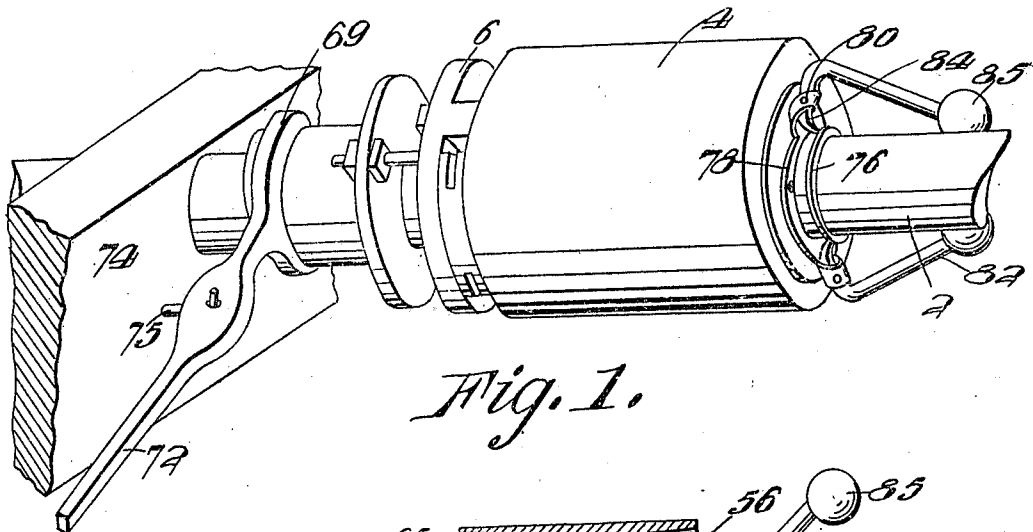


Fig. 1.

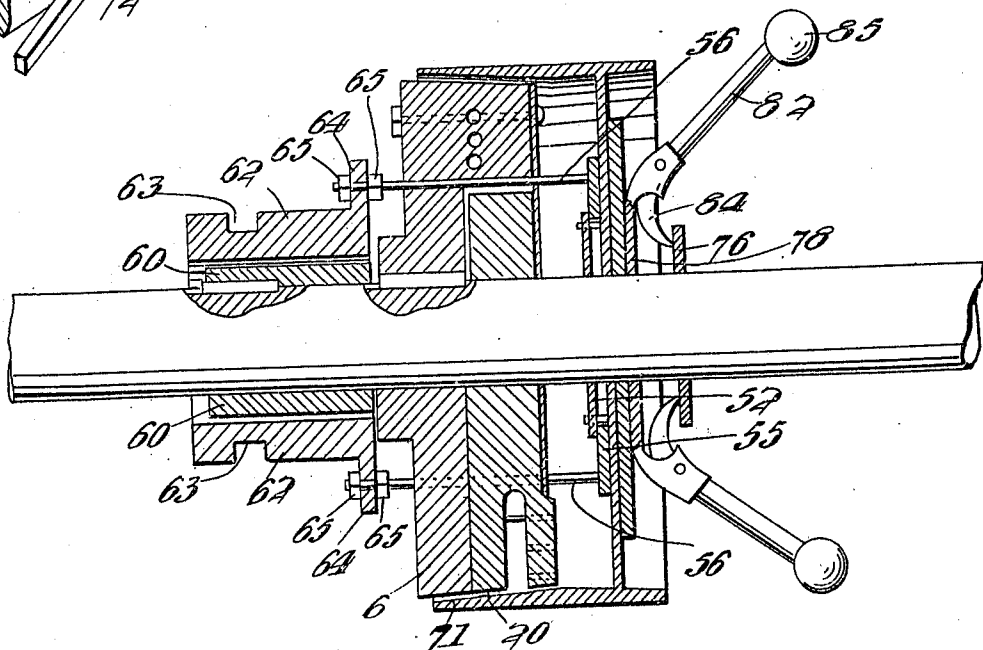


Fig. 2.

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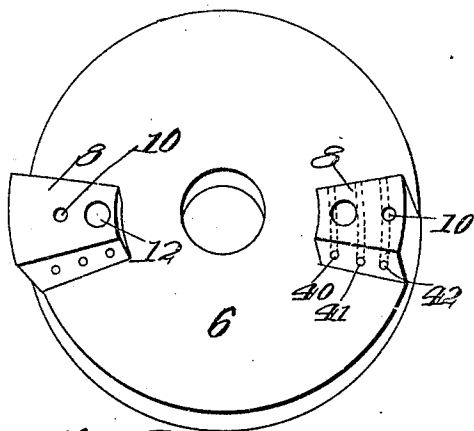


Fig. 3.

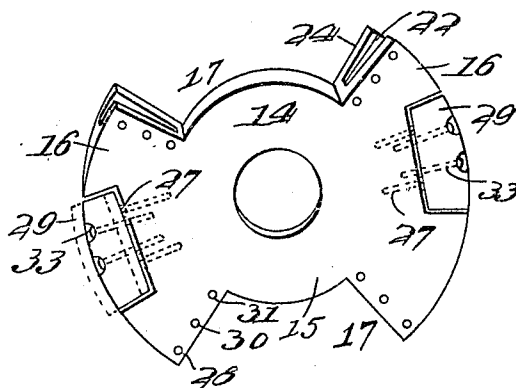


Fig. 4.

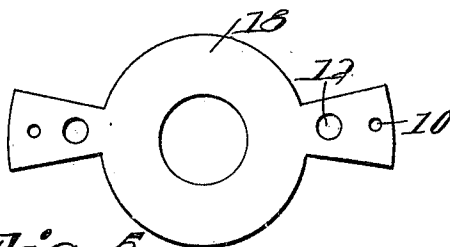


Fig. 5.

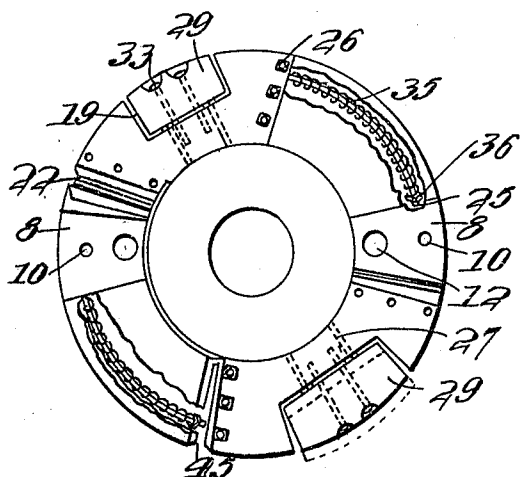


Fig. 6.

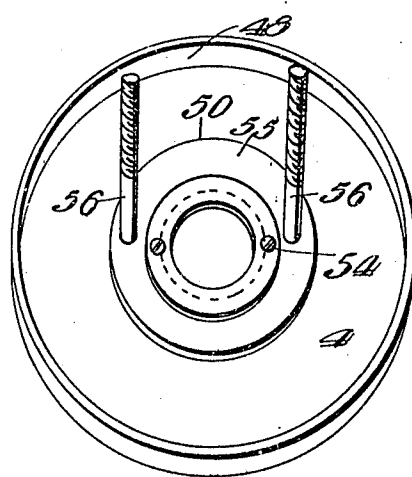


Fig. 7.

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UNITED STATES PATENT OFFICE.

JOHN H. SCHOOP, OF LAMOTTE, IOWA.

DEVICE FOR CONTROLLING POWER OF EXPLOSIVE-ENGINES.

955,916.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed January 2, 1906. Serial No. 294,071.

To all whom it may concern:

Be it known that I, JOHN H. SCHOOP, citizen of the United States, residing at Lamotte, in the county of Jackson and State of Iowa, have invented new and useful Improvements in Devices for Controlling Power of Explosive-Engines, of which the following is a specification.

In the use of explosive engines, at each explosion of the engine, there is a sudden increase of power and a consequent jerk and jar of the machinery operated thereby. To overcome this annoyance and difficulty in the operation of this class of engines and to transmit the power evolved evenly and unvaryingly to the machinery is the leading object of my invention.

Another object is to so connect the drive shaft, which is operated by the engine, with the machinery to be operated, that there will be an automatic control of the machinery and it may be started at a low rate of speed, the speed increased and then diminished until it shall come to a stop.

It consists broadly in a driving shaft with a pulley loosely secured thereon and said pulley and shaft yieldingly connected together, and also in means for automatically controlling the power transmitted to the machinery to be operated.

For a more full understanding of my invention, attention is called to the following specification and drawings accompanying the same and forming a part hereof.

Figure 1 is a perspective view of my device. Fig. 2, is a longitudinal section through Fig. 1. Fig. 3, is a front elevation of the fly-wheel. Fig. 4, is a side elevation of the block upon Fig. 3. Fig. 5, is a plan view of the retaining plate. Fig. 6, is a partial front elevation of the wheel with the block shown in Fig. 4 and the plate shown in Fig. 5, thereon securing block upon the wheel. Fig. 7, is an end elevation of the pulley, showing its mode of attachment with the other machinery.

Referring to the drawings, 2 designates the drive shaft which is rotated by its connection with an explosive engine. Loosely mounted upon said shaft is a pulley 4 and rigidly fixed upon the shaft is a fly-wheel 6.

The fly wheel 6 is provided with the lugs or blocks 8 having holes or openings 10 and 12. Against this wheel is placed a block 14 provided with a hole through which the shaft 2 projects. The block 14 is circular in

the center at 15 and has the crescent shaped wings 16 leaving spaces 17 between the blocks 8 and the wings 16. This block 14 is held in position by the plate 18 (shown in Fig. 5), screwed to the blocks 8 of the fly-wheel 6 through the holes 10. The block is beveled at 20 and is provided with slots 22 in the face 24 of the wings 16. In these slots are loosely secured rods 25 by the pin 26. The rods 25 extend through holes in the blocks 8. Around each of these rods 25 is coiled a spring 35 and upon the rod 25 is also loosely set a washer 36 and when the block 14 is forced around in one direction it compresses the spring 35 between the face of the wings 16 and the washer 36 and at same time, the end of the rod will then be forced through one of the holes in the block 8.

In order to adjust the wings 16 when the beveled edge 20 becomes worn and allows the pulley to slip, the wings 16 are recessed out at 19 and in the base of the recess are set screws 27 having flat heads that just come flush with the base of the recess and in the recess on the heads of the screws is secured a block 29 which is held in by bolts 33. When the outer edge of the wings become worn the bolts 33 are loosened and the heads of the screws 27 are raised by reversing the screw and at the same time the blocks 29 are adjusted outwardly till they fully engage the pulley. The bolts 33 are then tightened and hold the blocks 29 firmly on the screw heads 27.

In order to adjust the position in which the spring 35 shall act and control the application of the power, there are placed numerous openings 28, 30 and 31 in the wings 16 and numerous holes 40, 41 and 42 in the block 8. There is also formed in the edge of the wing 16 a slot 45, similar to and opposite of the slot 22, in which the end of the rod 25 may project whenever the spring is sufficiently compressed to cause the rod 25 to more than pass through the block 8.

The pulley 4 is recessed out leaving the rim 48 and a circular groove 50 is cut in the end of the pulley. Around the groove 50 and the opening for the shaft 2 is secured a circular washer 52 by the screw 54 and in the groove 50 and partly beneath and held in by the washer 52 is a circular plate 55 through which project the rods 56 screw-threaded at their outer ends. This plate 55 with the rods 56 thereon is adapted to be

rotated around in the groove 50 and held in position beneath the washer 52.

On the shaft 2 is fixed a sleeve 60 and over this sleeve a flanged collar 62, having a flange 64. The flange is provided with two openings through which the rods 56 project and are secured by nuts 65, one on the inside and one on the outside of the flange 64, holding the pulley 4 and the flanged collar 62 together but as the plate 55, which carries the rods 56, is adapted to rotate, the pulley 4 can be rotated without the rotation of the flanged collar 62 and since the rods 56 project through the wheel 6 and the collar 62 the fly-wheel 6 may rotate without rotating the pulley.

For the purpose of starting the pulley slowly and increasing its rapidity of revolution, the wings 16 are beveled on their periphery at 70, and when the pulley that is beveled on the inner portion at 71, is brought into engagement with those wings there will be sufficient friction to hold and control the pulley, but when the pulley is to be started it is brought slightly into engagement with the wings 16 and then it will slip on these bearings and gradually the speed of the pulley may be increased until it has the same rapidity as the shaft by forcing the pulley entirely over the wings.

The flanged collar 62 is grooved at 63 and in this groove is a clutch shifter 69 provided with a handle 72 which is pivoted to a bracket or bearings 74 for the shaft, by the pivot pin 75 whereby the pulley 4 is brought into engagement with the wings 16 or disengaged since the flanged collar 62 is bolted to the pulley by the rods 56 held by the nuts 65.

In order to control the action of the pulley and keep it automatically in engagement with the wings 16 there is secured around the shaft 2 a washer 76 and to the pulley 4 a collar 78. The collar is provided with ears 80 through which are pivoted the arms 82 of the governor. These arms are bent into hooks 84 and project beneath the washer 76 and are provided with weighted knobs 85 upon the outer ends of the arms 82 and when the pulley 4 is rotated rapidly the arms 82 will be carried by centrifugal force outward and the ends 84 will engage the washer 76 upon the rear side and force the pulley onto the wheel 6. In this manner the pulley will constantly be kept in engagement with the wings 16.

The manner of operating my device is substantially as follows: Starting the machine shown in Fig. 1, with the pulley 4 out of engagement with the wings 16, power is applied to the shaft to rotate the same. When the shaft has come to the speed desired the operator grasps the handle 72 of the clutch 69 and draws it toward the pulley 4. This movement draws the flanged col-

lar 62 and with it the pulley 4 by its connection with the rods 56 slightly upon the wings 16, and as the wheel 6 is fixed upon the shaft and as the wings rotate with the wheel, the pulley will be rotated the same as the wheel with the exception that the pulley not being forced fully upon the wings will slip at first, then as the operator closes it more fully upon the wings it will have the same rapidity of motion as the wheel 6 and the shaft 2. As the engine imparts a jerky or uneven motion to the shaft the spring 35 will be compressed between the washer 36 and the wings 16 and impart a yielding and steady motion to the pulley. When the pulley has engaged the wings 16 the centrifugal motion of the wheel will throw out the balls 85 on the arm 82 and bring the points 84 into engagement with the underside of the washer 76 and always hold the pulley in engagement with the wings 16.

Having now described my invention what I claim is:—

1. In a device of the character described, a rotating shaft, a rotating pulley loosely mounted on the shaft, a fly-wheel rigidly mounted on the shaft, a block loosely mounted on the shaft, means connecting the fly wheel and block and yieldingly secured to the fly wheel and rigidly secured to the block, means for bringing the pulley into engagement with the block, and means for holding the pulley in engagement with the block and causing the pulley to rotate with the shaft.

2. In a device of the character described, a rotating shaft, a rotating pulley loosely mounted on the shaft, a fly-wheel rigidly fixed on the shaft, a block provided with wings beveled on their outer edges loosely mounted on the shaft, spring connections between the fly-wheel and the block, and means for bringing the pulley into frictional relation with the wings of the block.

3. In a device of the character described, a rotating shaft, a pulley loosely mounted on the shaft, a fly-wheel rigidly fixed on the shaft, a block provided with wings beveled on their outer edges loosely mounted on the shaft, spring connections between the fly-wheel and the block, and means for bringing the pulley into frictional relation with the wings of the block.

4. In a device of the character described, a rotating shaft, a pulley loosely mounted on the shaft, a fly wheel rigidly fixed on the shaft, a spring connected to the fly wheel and engaging the shaft, a clutch on the shaft, a lever attached to the clutch to bring the pulley into frictional engagement with the periphery of the fly wheel and be rotated thereby, and a governor for holding the pulley in engagement with the periphery of the fly wheel.

5. In a device of the character described,
a rotating shaft, a pulley loosely mounted
on the shaft, a wheel rigidly mounted on
the shaft, a block loosely mounted on the
5 shaft and adapted to be engaged by the pul-
ley, yielding connections between the wheel
and block, means for bringing the pulley
into engagement with the block, and means
for automatically holding the pulley in en-
10 gagement with the block consisting of a

plate secured to the shaft, a governor piv-
oted to the pulley and adapted to engage
the plate on the shaft and when rotated force
the pulley onto the block.

In testimony whereof I affix my signature, 15
in presence of two subscribing witnesses.

JOHN H. SCHOOP.

Witnesses:

M. M. Cady,

B. KENNEDY.