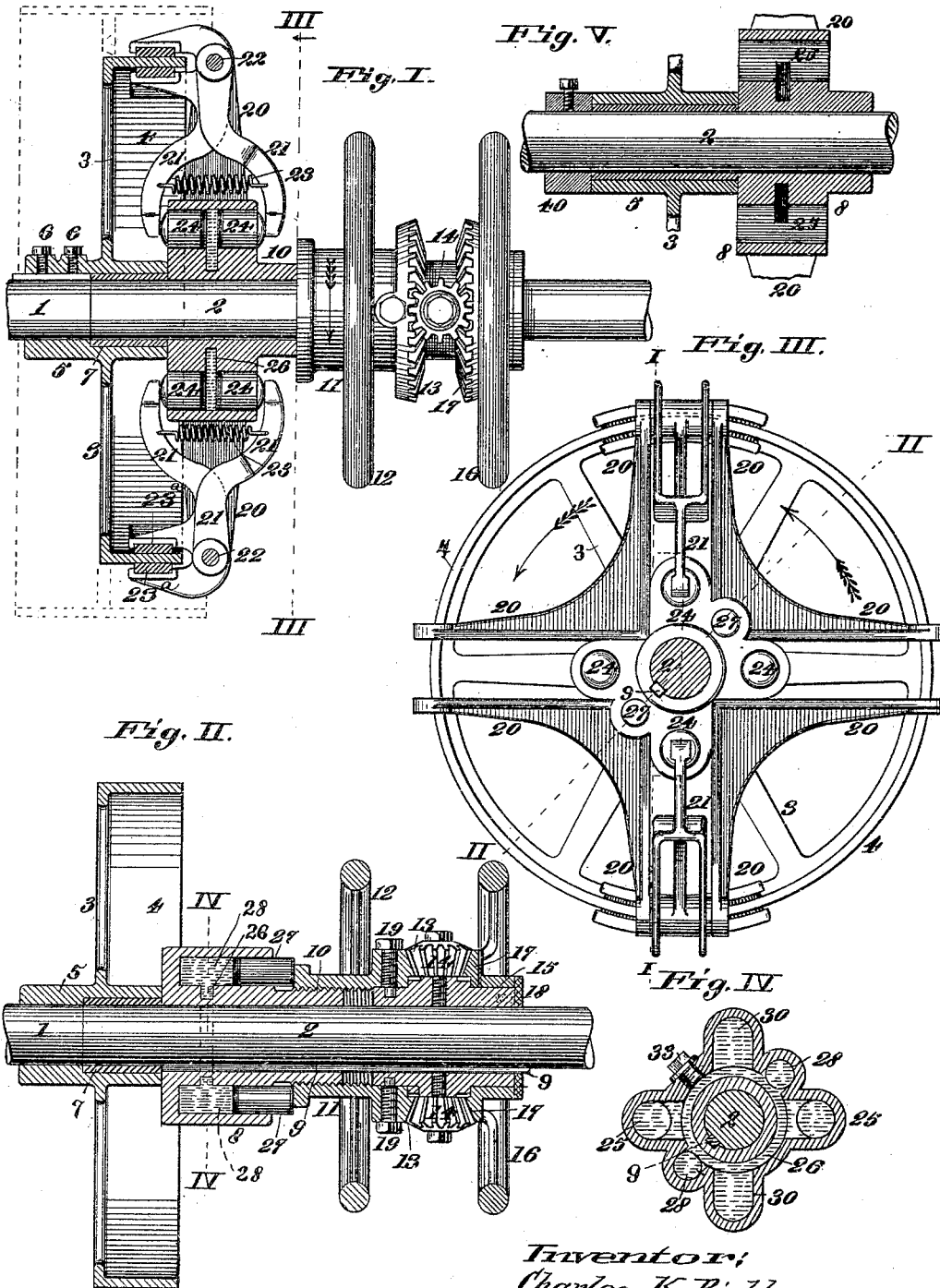


(No Model.)

C. K. PICKLES.
CLUTCH.

No. 491,444.

Patented Feb. 7, 1893.



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UNITED STATES PATENT OFFICE.

CHARLES K. PICKLES, OF ST. LOUIS, MISSOURI, ASSIGNOR OF TWO-THIRDS
TO JOHN O'BRIEN AND SAMUEL J. WEAVER, OF SAME PLACE.

CLUTCH.

SPECIFICATION forming part of Letters Patent No. 491,444, dated February 7, 1893.

Application filed May 3, 1892. Serial No. 431,643. (No model.)

To all whom it may concern:

Be it known that I, CHARLES K. PICKLES, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful
5 Improvement in Friction Clutches or Pulleys, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 My invention relates to certain improvements in friction clutches or pulleys, and my invention consists in features of novelty hereinafter fully described and pointed out in the claims.

15 Figure I is a view, illustrative of my invention, part in vertical section, and part in elevation, the sectional part being taken on line I—I, Fig. III. Fig. II is a vertical section, taken on line II—II, Fig. III. Fig. III is a
20 section taken on line III—III, Fig. I, and looking in the direction of the arrow. Fig. IV is a section taken on line IV—IV, Fig. II. Fig. V is a detail, longitudinal section, showing how the invention may be applied to a friction
25 pulley.

Referring to the drawings, 1, 2, represent the shaft. To the part 1 of the shaft is secured a disk or spider 3 having a flange or rim 4. This spider has a hub 5, held to the
30 shaft 1 by set screws 6 and which preferably laps over onto the end of the shaft 2, a suitable bushing 7 being placed between them. The shaft 2 turns freely in the hub, except when the clutch is engaged.

35 8 represents a cylinder mounted on the shaft 2, and which is keyed to the shaft as shown at 9, so as to turn with the shaft, while being free to move endwise thereon. This cylinder has an external threaded neck 10, engaged by an internal threaded sleeve 11, as
40 shown clearly in Fig. II. Upon the sleeve 11 is a wheel 12, by which the sleeve can be turned, so as to move it forward on the neck 10 of the cylinder, and upon the outer face 13 of the sleeve is a series of cogs which are engaged by pinions 14 journaled to a collar 15,
45 which fits on the shaft 2 and is held from turning on the shaft, by means of the key 9, while it is free to move longitudinally with the
50 sleeve 11.

16 represents a second wheel journaled on

the outer end of the collar 15, and which is provided with a series of cogs which pass through the sleeve and enter a circumferential groove in the collar at 17, which engage
55 the pinions 14. This wheel is held on the collar by a disk or washer 18. The sleeve 11 is held to the collar 15 by means of set screws 19.

20 represents arms cast upon or secured to
60 the cylinder 8, and they are preferably arranged in pairs, as shown in Fig. III.

21 represents levers, pivoted to the arms 20, and 22, and provided with springs 23 which draw their inner ends together. The outer
55 ends of these levers, are preferably provided with suitable bushings 23^a, and engage the flange or rim 4 of the spider.

24 represents pistons located in chambers 25 of the cylinder 8, and the outer ends of
70 which bear against the inner ends of the levers, as shown clearly in Fig. I.

26 represents an annular space within the cylinder, and which communicates with the
75 chambers 25.

27 represents pistons located in chambers
75 28 in the cylinder 8, and against the outer end of which the inner end of the sleeve 11 bears as shown in Fig. II. The chambers 28 communicate with the annular space 26 of
80 the cylinder. This annular space of the cylinder, as well as the chambers 25 and 28 are filled with a suitable liquid, and if it is desired to increase the amount of liquid, it may be
85 done by providing the cylinder with additional chambers 30, see Fig. IV., which communicate with the annular space 26.

The operation is as follows:—When it is desired to apply the clutch, the wheel 12 is turned to move the sleeve 11 forward on the
90 neck of the cylinder. This produces an inward movement of the pistons 27, and the force is transmitted to the pistons 24, causing them to move outwardly and by pressing the inner ends of the levers 21 apart, the outer ends
95 of the lazy-tongs are brought into frictional contact with the rim or flange 4, and thus the rim or flange, with its shaft 1, is made to turn with the shaft 2. When it is desired to release the clutch, friction is applied to the
100 wheel 16 (which is now turning with the shaft, and other parts) and by retarding its move-

ment a backward movement of the sleeve 11 on the neck of the cylinder is effected, thus permitting the pistons 27 and 24 to recede under the pressure of the liquid, and permitting the inner ends of the lazy-tongs to be drawn together by the springs 23 to release the outer ends of the levers from the flange or rim.

33 represents a plug closing an opening in the cylinder through which the liquid may be applied.

In Fig. V I have shown how the invention can be applied to a friction pulley, the only difference being that the shafts 1 and 2 are one shaft, and the hub of the spider 3 is loose on the shaft, and is held between the cylinder 8 and a collar 40, and the spider 3 would be provided with a rim to receive the belt, as shown by dotted lines in Fig. I.

I claim as my invention:—

1. In a friction clutch or pulley, the combination of a spider having a rim or flange, a cylinder having a liquid space, and chambers provided with pistons, levers pivoted to arms on the cylinder and against the inner ends of which said pistons bear, a movable sleeve, pistons fitting in chambers of the cylinder, and against which said sleeve bears, and means for moving the sleeve, substantially as and for the purpose set forth.

2. In a friction clutch or pulley, the combination of a spider having a rim or flange, a cylinder provided with radial arms, levers pivoted to said arms, pistons located in chambers of said cylinder, and which bear against the inner ends of the tongs, a sleeve threaded on the neck of the cylinder, pistons fitting in chambers in said cylinder, and against which the sleeve bears, and a wheel for turning said sleeve; said cylinder having a space to contain liquid, substantially as and for the purpose set forth.

3. In a friction clutch or pulley, the combination of a spider having a flange or rim, a cylinder having a liquid space, levers for engaging the rim or flange of said spider, pistons fitting in chambers in said cylinder and bearing against the ends of said levers, a sleeve threaded on the neck of said cylinder, pistons located in chambers in said cylinder, and against which said sleeve bears, a wheel for moving said sleeve forward, a collar connected to said sleeve, pinions journaled in said collar and geared to said sleeves, and a second wheel journaled on said collar, and geared to said pinions, all substantially as and for the purpose set forth.

4. In a friction clutch or pulley, a liquid cylinder provided with pistons, mechanism located between said pistons and the friction rim of the clutch or pulley to engage said rim, and means for compressing the liquid in said cylinder to displace said pistons, substantially as and for the purpose set forth.

5. In a friction clutch or pulley, the combination of a liquid cylinder provided with pistons, mechanism adapted to be moved by said pistons to engage the friction rim of the clutch or pulley, and a second piston or pistons, and means for moving the same, substantially as and for the purpose set forth.

6. In a friction-clutch or pulley, in combination, with mechanism for engaging the friction rim of the clutch or pulley, and means for moving said mechanism, consisting of a sliding collar, two cog wheels, and a pinion located between the cogs of said wheels and journaled on said collar; substantially as described.

CHARLES K. PICKLES.

In presence of—

ALBERT M. EBERSOLL,
ED. S. KNIGHT.