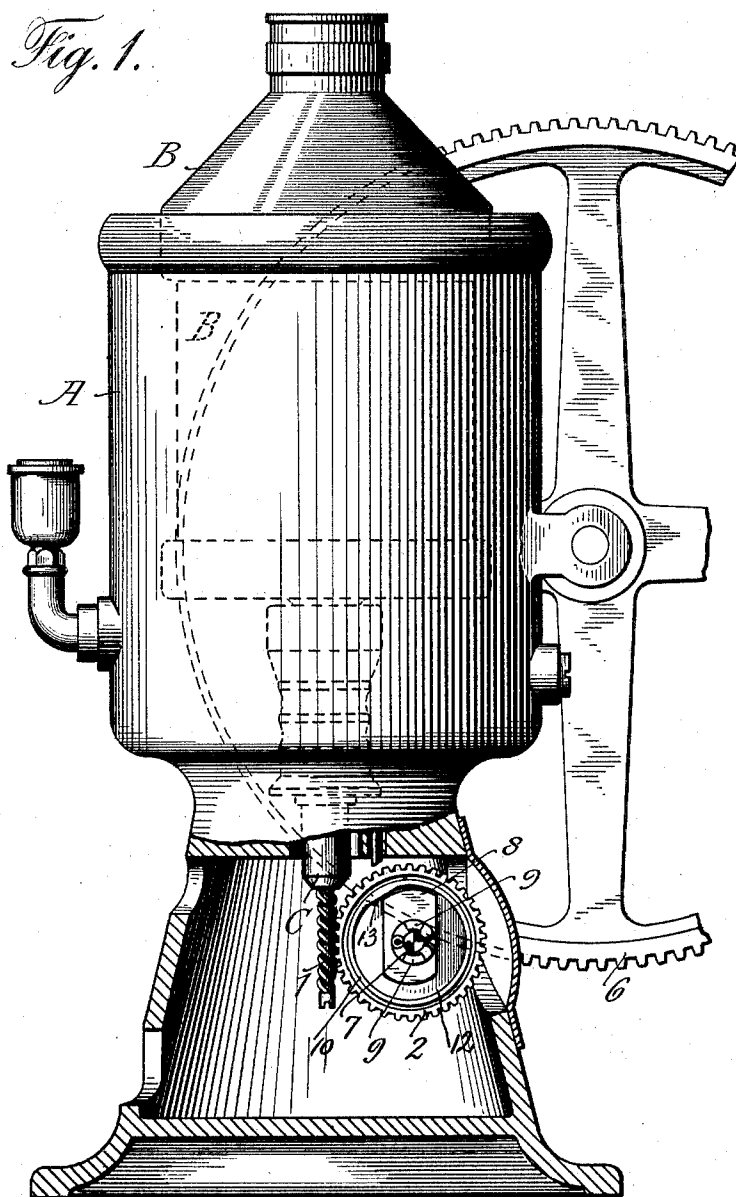


No. 788,554.

PATENTED MAY 2, 1905.

O. OHLSSON.
FRICTION CLUTCH.
APPLICATION FILED SEPT. 8, 1903.

3 SHEETS—SHEET 1.



Witnesses
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3 SHEETS—SHEET 2.

Fig. 2.

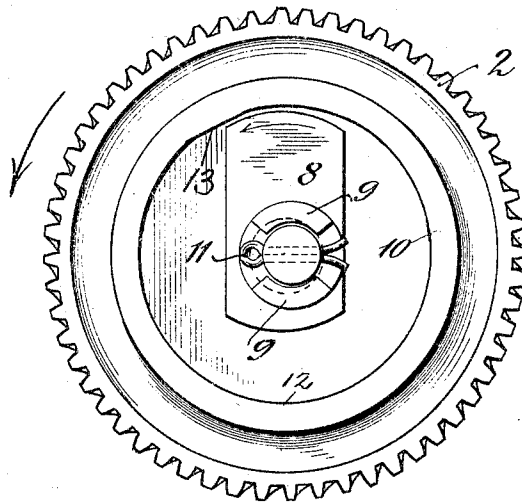
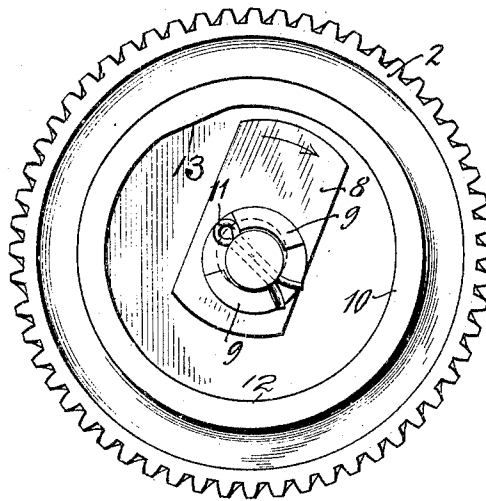


Fig. 3.



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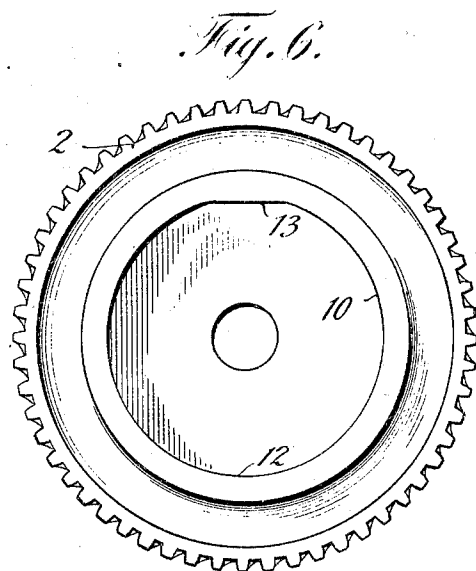
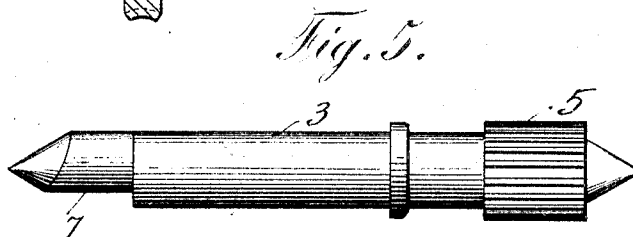
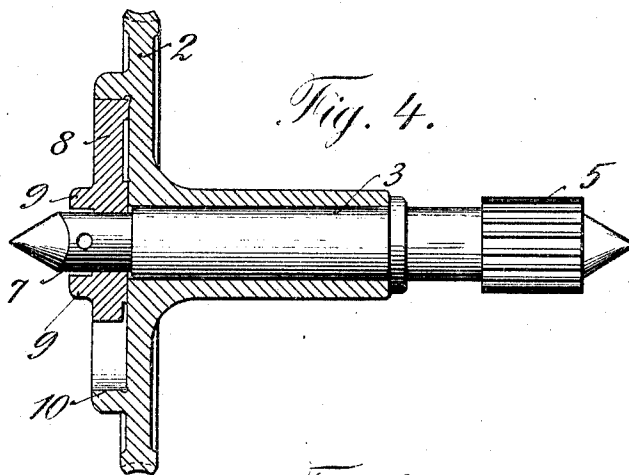
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UNITED STATES PATENT OFFICE.

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FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 788,554, dated May 2, 1905.

Application filed September 8, 1903. Serial No. 172,215.

To all whom it may concern:

Be it known that I, OLOF OHLSSON, a subject of the King of Sweden and Norway, and a resident of Storgatan 14^B, Södertelge, in the Kingdom of Sweden, have invented certain new and useful Improvements in Friction-Clutches, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to friction-clutches; and it has for its principal objects to provide a simple and inexpensive clutch that will effectively operate when rotated in one direction and without the danger of becoming disengaged from its cooperating device and will become and remain released from said device when operated in the reverse direction.

In the accompanying drawings, Figure 1 illustrates in elevation a centrifugal cream-separator with an embodiment of my invention applied thereto. Fig. 2 is a front view, greatly enlarged, of the clutch mechanism shown in Fig. 1 and with the clutch in operative position. Fig. 3 is a similar view to Fig. 2, showing the clutch in inoperative or disengaged position. Fig. 4 is a partial longitudinal section of the clutch mechanism and with the key for holding the clutch to the shaft removed. Fig. 5 is a side elevation of the shaft portion of the clutch. Fig. 6 is a front elevation of the wheel member of the clutch.

Similar characters represent like parts in all the figures of the drawings.

A, Fig. 1, is the casing or cylinder of a centrifugal cream-separator.

B is the revolving bowl of the separator, and C is the shaft of the same.

I is a worm secured to or forming part of said shaft C and by means of which the bowl B is rotated.

2 is a worm-wheel loosely journaled upon a shaft 3, which is supported in suitable bearings to the frame of the machine. This wheel is preferably provided with an oblong hub (see Fig. 4) in order that said wheel shall have a more stable support upon its shaft. The shaft 3 is provided with a pinion 5, with which the driving-wheel 6 of the separator (see Fig.

1) engages. The object of the clutch mechanism, which will now be described, is to engage the wheel 2 with the shaft 3 or to disengage it from said shaft. The end of the shaft 3 opposite the pinion 5 extends beyond the wheel 2 and is provided with an eccentric 7.

8 is a block or arm loosely journaled upon the eccentric 7 and is provided with a plurality of lugs 9, extending outward in the direction of said eccentric. The wheel 2 is provided with a rim or flange 10, with which the block 8 is adapted to frictionally engage.

11 is a key which passes through a hole in the eccentric 7 and projects laterally between the projections 9 of the block 8. This key 11 and lugs 9 form stops to limit the relative rotation of each other, so that either the pin comes in contact with the lugs, or vice versa, the continuation of such rotation causing the two to move together, or, in other words, causing the eccentric 7 and its shaft 3 to move with the block 8, or vice versa. This construction of lugs and key is not essential, as any connection which will permit the block 8 and the eccentric 7 to have limited play relatively to each other will be all that is required. The movement of the block will be very similar to that of a pitman, getting its movement from the rotary eccentric 7 and to and away from the rim or flange 10 on the partial rotation of the shaft 3. It will be seen that when the shaft 3 moves in the direction of the arrow in Fig. 2 the eccentric-journal 7 will cause the block 8 to bind against the rim or flange 10, and consequently the wheel 2 will be rotated, and the worm 1 will consequently be rotated, as also the revolving drum B of the separator. If, however, the shaft 3, and consequently the eccentric 7, be moved in the opposite direction, the eccentric 7 will cause the block 8 to move away from the rim 10, as shown in Fig. 3, and the continuation of the movement of the shaft 3 will cause the key 11 to strike against one of the lugs 9, and the block 8 will be rotated with the shaft 3 in this position and with the binding or outer portion of the block 8 separated at the same distance from the rim 10 as when it first became disengaged from the same, so

that the rim 10 being out of engagement with the block 8 the wheel 2 will remain stationary. Of course similar movements of the wheel in regard to the block will cause the same results. The inner surface 12 of the rim or flange of the wheel 2 is formed so that a portion of it is nearer to its axis or to the shaft 3 or its journal than any other portion of the rim, and I have shown such portion in the form of a chord 13 to said inner surface 12. This part 13 will always insure a complete binding contact of the block 8 with said rim. The positions of the lugs and the projecting key or pin 11 should be placed relatively to each other, so that the course through which the block 8 can move on its eccentric-spindle 7 between the positions shown by parts in Figs. 2 and 3 will constitute such a part of the eccentric-stroke that the block 8 cannot pass beyond the center, as said block would otherwise, when it binds the rim 10, cause too great a pressure on the eccentric 7, so if such movements of the block extended beyond the center it would not engage the rim 10, but would remain inactive. The movement of the shaft 3 in the direction of the arrow, Fig. 2, will cause the block 8 to turn in the same direction, and when it first touches the rim 10 said block may slide a short distance along said rim; but it will get tighter and tighter and finally bind the rim or the chord 13, so that the wheel 2 will be forced to rotate with the shaft 3, the block 8 binding said shaft and wheel firmly together. On the reverse movement of either the wheel or shaft the block may slide a short distance along the rim or the chord 13 before it becomes entirely disengaged from the same, when a continued revolution of either the wheel or the shaft will prevent the other part from revolving. The eccentric connection of the block 8 with the shaft 3 provides efficient and perfect means of clutching the shaft and wheel together and as readily unclutching the same, when if the connection between the clutching device and

the shaft of the wheel were concentric the efficiency of the clutch could not be as readily relied upon, as the clutching member would be very apt to slide upon the ring or wheel member, as very frequently happens, and such sliding or slipping may continue for a number of revolutions, which is very detrimental to the efficiency of any machine with which a clutch is connected.

For thoroughly efficient use of the clutching mechanism the block 8 when in its disengaged or unclutched position, as shown in Fig. 3, should be built to travel freely past the point of the rim 10 that is nearest to the shaft or journal.

I do not limit myself to the precise construction shown and described, as many changes may be made in the same without departing from the spirit of my invention or sacrificing its principal advantages.

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

A friction-clutch comprising a ring or flanged member, the inner periphery of the flange of said member being circular except at one part which is nearer the axis of said member than the remainder of said periphery, an eccentric within said ring member, and a cooperating arm or block member journaled to said eccentric, whereby at a period of the revolution of one member, said cooperating member will be caused to bind the flange of the other member and be clutched to the same, and means for permitting play between the cooperating member and its journal, whereby on the reverse revolution of either the ring member or said journal the two members will become disengaged from binding contact.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

OLOF OHLSSON.

Witnesses:

ERNST SVANGVIST,
ROBERT APELGREN.