(No Model.)

# E. SALOMON.

## FRICTION CLUTCH.

No. 354,242. Patented Dec. 14, 1886.

Fig. 1

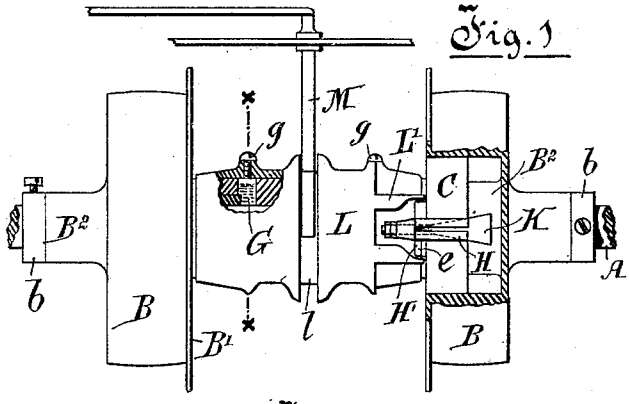



Fig. 4

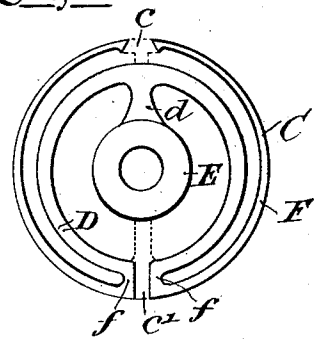



Fig. 2

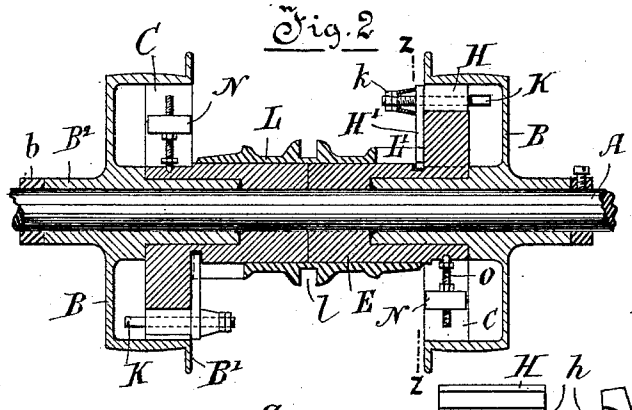



Fig. 5

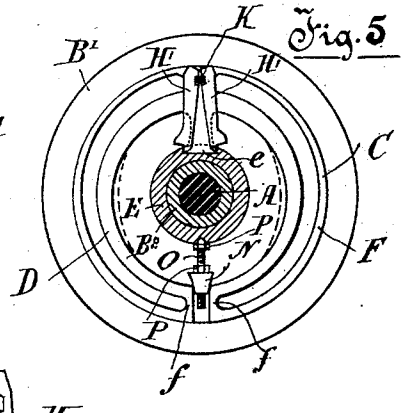



Fig. 3

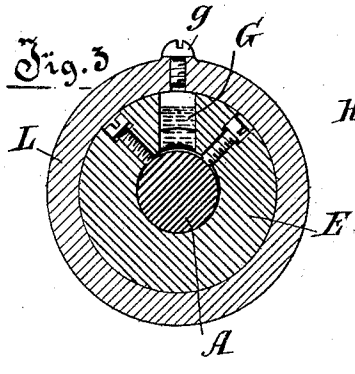



Fig. 8

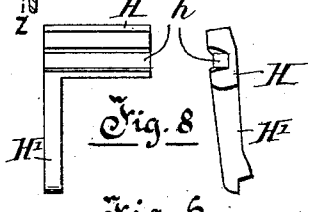



Fig. 6

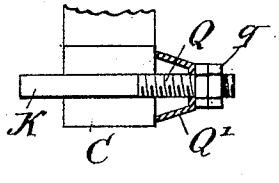
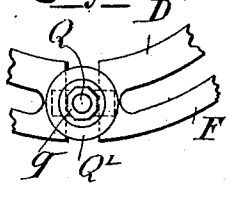



Fig. 7




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# UNITED STATES PATENT OFFICE.

ETIENNE SALOMON, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF TO WILLIAM CAMERON HIBBARD, OF SAME PLACE.

## FRICTION-CLUTCH.

SPECIFICATION forming part of Letters Patent No. 354,242, dated December 14, 1886.

Application filed March 26, 1886. Serial No. 196,856. (No model.)

*To all whom it may concern:*

Be it known that I, ETIENNE SALOMON, of the city of Montreal, in the district of Montreal and Province of Quebec, Canada, have invented certain new and useful Improvements in Friction-Clutches; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its object to produce a friction-clutch which shall be at once simple and cheap in construction, certain in operation, and durable. It may be described as consisting, broadly, of a cast double ring and hub secured on the shaft by set-screws, this cast ring having openings cut in the outer ring at opposite points on its circumference, so as to allow of its expansion by means of levers set loosely in one opening and operated by forks formed on the sliding sleeve, and when these levers are worn, wedges placed in the opposite opening are operated for the same purpose. I also arrange in the hub of the clutch-ring oil-reservoirs, to enable the bearings to be lubricated without removing the belt, and so construct the parts that the pulley-rim shall be central with its hub.

For full comprehension of my invention reference must be had to the annexed drawings, in which Figure 1 is a top view, partly broken away, of a double-clutch pulley embodying my invention; Fig. 2, a longitudinal sectional elevation of same; Fig. 3, an enlarged transverse section through sleeve, hub, and shaft, on line *x x*, Fig. 1; Fig. 4, a view of double expansion-ring forming clutch; Fig. 5, a sectional elevation on line *z z*, Fig. 2; Figs. 6 and 7, enlarged details of modification in case of smaller pulleys, and Fig. 8 shows side and back views of levers.

Similar letters of reference indicate like parts.

A is the spindle, and B B the pulleys, with rims B′ and hubs $B^2$, mounted on the shaft, and secured from endwise movement thereon by collars *b b*, the pulleys being, as shown in Fig. 2, so constructed that the peripheries of the rims B′ are midway of the length of the hubs $B^2$. Thus, as the weight of metal on the hub $B^2$ is equal on both sides of the bearing-surface of the rim or flange B′, the running of the pulley will be even, and jamming and unequal wear be obviated.

The clutch device proper consists of a double expansion-ring, (shown clearly in Fig. 4, and marked C,) there being one of these expansion-rings for each of the pulleys B. This is cast turned up, and the parts *c c′* (shown by dotted lines) cut out, leaving an inner ring, D, connected with the hub E by a neck, *d*, and an outer ring, F, connected at *f f* with the inner ring, D. The hub E is, as shown in Fig. 3, secured to the shaft by set-screws or keys, preferably arranged as in Fig. 3, or by any other suitable means, and in it are formed one or more oil-reservoirs, G G, closed by a screw or other suitable stopping device, *g*. This does away with the necessity of removing the belt to oil the bearings. The hubs E are in each case preferably recessed for the reception of the inner ends of the pulley-hubs $B^2$, as shown.

As shown in Figs. 1, 2, and 5, I lay loosely in the position therein indicated two levers, each composed, as shown in Fig. 8, of two arms, H H′, at right angles to each other, with a recess, *h*, formed in the part H, for the admission of the wedge K, to be presently described. The arms H pass through the space where the part *c* has been cut away, and the arms H′ H′ down in front of the neck *d*, their ends resting in a recess, *e*, formed in the hub. K is the wedge above referred to, to be inserted in the groove *h* in each of these levers, and forming a pivot-point for them, *k k* showing the jam-nuts by which the position of such wedge K is adjusted.

L is the sleeve, having the recess *l*, in which works the fork M, moved by any suitable handle, and L′ projections formed on or made in one with such sleeve. These projections L′ act, when the sleeve is thrown outward, to bring together the longer arms of H′ H′, and therefore to throw outward the shorter arms, pressing these against the edges of the opening left in the outer ring, F, and thus imparting the required motion of the pulley B to the shaft A. By tightening up these levers the inner ring becomes a spring and brings the outside rim of the clutch in contact with the pulley at all points. The drawing back of the sleeve L will of course reverse the operation of

the levers and release the pulley from the clutch, allowing it to run loose. When the surfaces of these levers H H′ H H′ become so worn as to be no longer operative, the clutch can be worked by the device now to be described.

N is a wedge mounted on the screwed spindle O, and forced into the opening left by the removal of *c′* by jam-nuts P P, thus tightening up the outer rim and bringing it in contact with the rim B′.

In Figs. 6 and 7 is shown the device to be adopted when the distance between the hub E and the inner ring, D, is too small to allow of the use of the mechanism just described. D and F are, as before, the outer and inner rings, and K the wedge. This is forced into the opening by a screw, Q, working in a cap, Q′, and fixed in place by jam-nuts *q q*.

It will be seen from the above that the clutch-pulley therein described can be very cheaply constructed, little or no fitting being required for the acting mechanism. The levers are simply cast and laid in place, and the outer rim of F is the only part requiring to be turned.

Having thus described my invention, I beg to state that what I claim is as follows:

1. In a friction-clutch, the combination, with a shaft and pulley, of a hub mounted on said shaft, a double expansion-ring connected with said hub, and means for expanding said ring against the interior of the pulley, substantially as and for the purposes set forth.

2. In a friction-clutch, the combination, with a shaft and pulley and with hub E, of double split expansion-ring C and levers H H′, laid loosely in opening in ring F, pivoted on wedge K, inserted between them, and acted upon by arms projecting from sliding sleeve L, all as and for the purposes herein set forth.

3. The combination, with a shaft, a hub mounted thereon, and a sliding sleeve surrounding such hub, of the oil-chamber G, with stopper *g*, constructed and arranged substantially in the manner and for the purpose specified.

Montreal, 12th day of February, A. D. 1886.

ETIENNE SALOMON.

Witnesses:
OWEN M. EVANS,
ALEX. N. DOW.