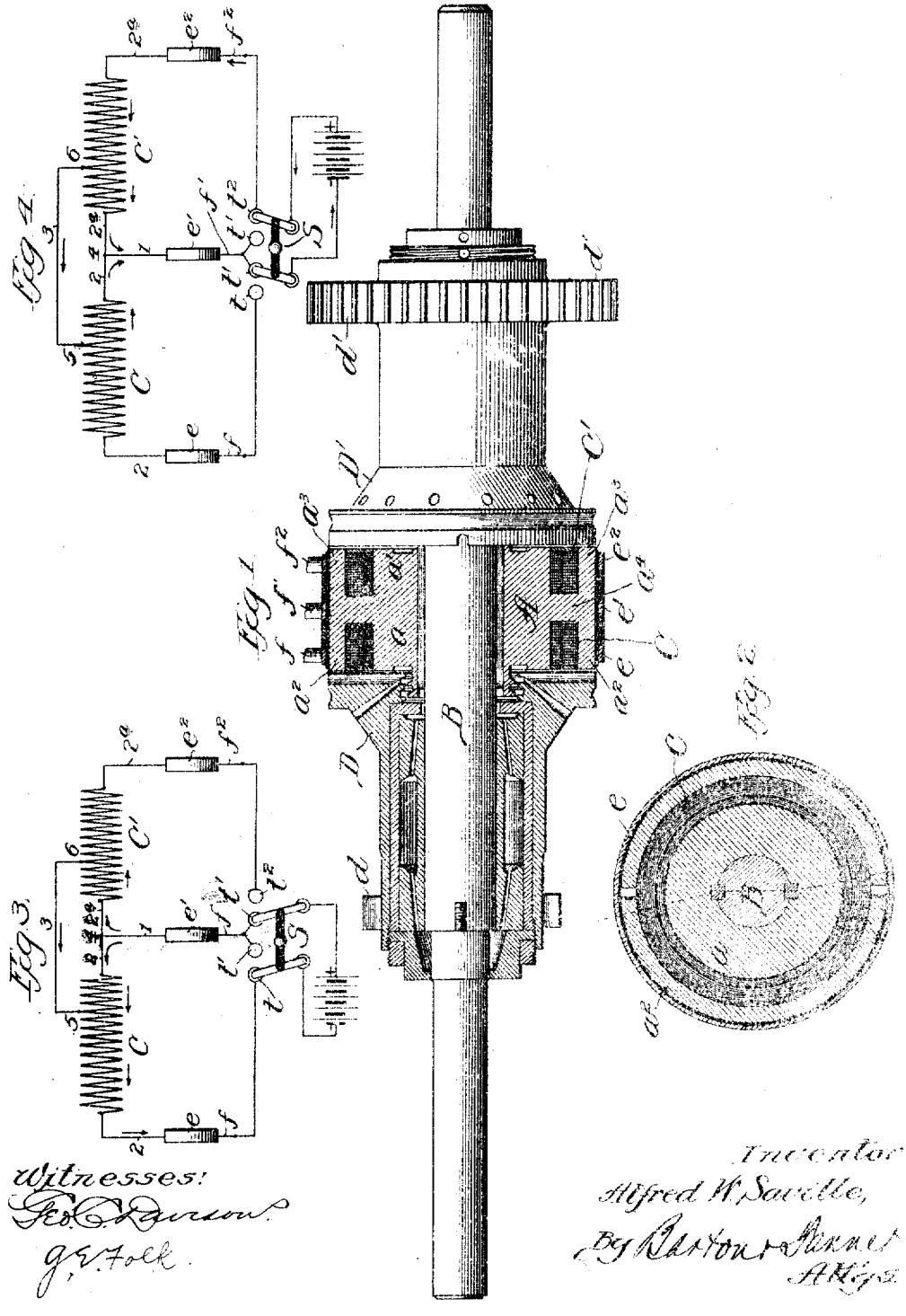
No. 845,126. PATENTED FEB. 26, 1907.

A. W. SAVILLE.

MAGNETIC CLUTCH.

APPLICATION FILED FEB. 24, 1906.



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MAGNETIC CLUTCH.

No. 845,126. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed February 24, 1906. Serial No. 302,677.

To all whom it may concern:

Be it known that I, ALFRED W. SAVILLE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Magnetic Clutches, of which the following is a full, clear, concise, and exact description.

My invention relates to a magnetic clutch; and its object is to provide a double clutch of simple and efficient construction in which an electric current is used to magnetize one end of the clutch member to throw it into action and at the same time to deënergize the opposite end to cause the release thereof.

My invention contemplates an arrangement of coils on the opposite ends of a double-end clutch member and means for supplying a current to one of the coils to magnetize the face to be engaged and at the same to supply current to a coil at the other end to rapidly demagnetize the face to be released or thrown out of action. By the circuit arrangement constituting my invention a comparatively small number of contact-rings are required for carrying current to said coils.

I will describe my invention in detail by reference to the accompanying drawings, in which—

Figure 1 is a view, partly in longitudinal section and partly in elevation, showing a driving-shaft having a magnetic clutch in connection with which my invention is employed and two opposing members adapted to be engaged and driven by said clutch. Fig. 2 is a cross-section of one end of the clutch. Fig. 3 is a diagrammatic view of the circuits of my invention, showing the coils so energized as to magnetize one end of the clutch; and Fig. 4 is a view showing the coils so energized as to magnetize the opposite end thereof.

Similar letters of reference refer to similar parts throughout the several views.

The driving or main clutch member A in the form of clutch with which I have chosen to illustrate my invention is keyed on a shaft B, so as to constantly rotate therewith, but is movable longitudinally on said shaft. Said main clutch member is symmetrical and has two cores a a', adapted to receive coils C C′ in a chamber between said cores and the annular flanges a^2 a^3, respectively. A wall a^4, separating said chambers, constitutes a yoke-piece for the magnets.

The driven members D D′, of iron, are loosely mounted on the shaft B and are provided with gears d d', respectively. The members D D′ are, in effect, armatures—one for each end of the main clutch member A. Means forming no part of my particular invention are provided for preventing the longitudinal movement of said driven members.

Three contact-rings e e' e^2, insulated from each other and from the member A, engage with brushes f f' f^2, respectively, and serve to carry current into the coils.

As is well known, if either of the iron members D D′ is in contact with the clutch member A the clutch will not readily disengage when the current is interrupted, as the residual magnetism is sufficient to hold the iron members together with considerable force. To cause immediate disengagement of one face and the engagement of the other when the switch is reversed, I have provided a novel arrangement of circuits for the two coils of the double-ended clutch.

Referring to Figs. 3 and 4, a conductor 1, leading from the middle ring e', has two branches 2 and 2^a, which extend through coils C and C′ to rings e and e^2, respectively. A parallel branch 3, connecting the branches 2 and 2^a, extends from a point 5 in the coil C to a corresponding point 6 in the coil C′. The rings e and e^2 are engaged by brushes f and f^2, which are conductively connected to the contact-terminals t t^2, respectively. The ring e' is engaged by brush f', conductively united to one or more contact-terminals t'. A double-pole switch S serves to connect said contacts with the terminals of a battery or other source of current.

If when the members A′ and D′ are in engagement it is desired to release the same and cause the engagement of the members A and D, switch S is moved from the position shown in Fig. 4 into the position shown in Fig. 3. Current then flows, as indicated by the arrows, from the plus terminal to contact t', ring e', conductor 1, conductor 2, including coil C, to ring e, and from thence to the contact t, connected to the minus terminal, thereby magnetizing the end of the clutch A adjacent to the member D. As is shown in Fig. 3, a branch circuit extends from point 4

to point 5, which branch includes a portion of the coil C'. The direction of the current through coil C' is such as to quickly render non-magnetic the end of the clutch member A adjacent to the member D'. In similar manner by moving the switch from the position shown in Fig. 3 into the position shown in Fig. 4 the end of the member A adjacent to member D' is magnetized and the opposite end demagnetized.

Having thus described my invention, I claim—

1. The combination with a double-ended magnetic clutch provided with a magnetizing-coil for each end thereof, of a contact-ring to which one end of each coil is connected, additional contact-rings, one for each of the other ends of the coils, a conductor uniting intermediate points in the two coils, and a source of current adapted to have its terminals connected to the common ring and to one of the remaining rings.

2. In a magnetic clutch, the combination with a double-end clutch member, of a coil for each end thereof, of a contact-ring e' to which one end of each coil is connected, contact-rings e e^2, connected respectively to the opposite ends of the coils, a branch circuit uniting a point in one coil to a corresponding point in another coil, and a switch for connecting the ring e' to one terminal of a source of current and one of the remaining rings to the opposite terminal.

3. In a magnetic clutch, the combination with a double-ended clutch-body provided with an energizing-coil for each end, of two contact-rings connected respectively with one end of each of the energizing-coils, and a third contact-ring to which the other ends of said coils are connected, and a conductor uniting intermediate points in the two coils and thereby dividing each coil into two parts.

4. In a magnetic clutch, the combination with a double-ended clutch-body provided with an energizing-coil for each end, of a conductor uniting the end of one coil with an end of the other coil, and a conductor uniting intermediate points in the two coils; whereby a current which magnetizes one end of the clutch demagnetizes the other end thereof.

In witness whereof I hereunto subscribe my name this 12th day of February, A. D. 1906.

ALFRED W. SAVILLE.

Witnesses:

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