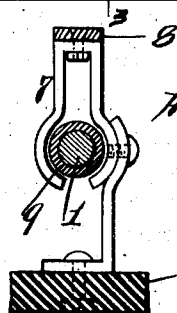
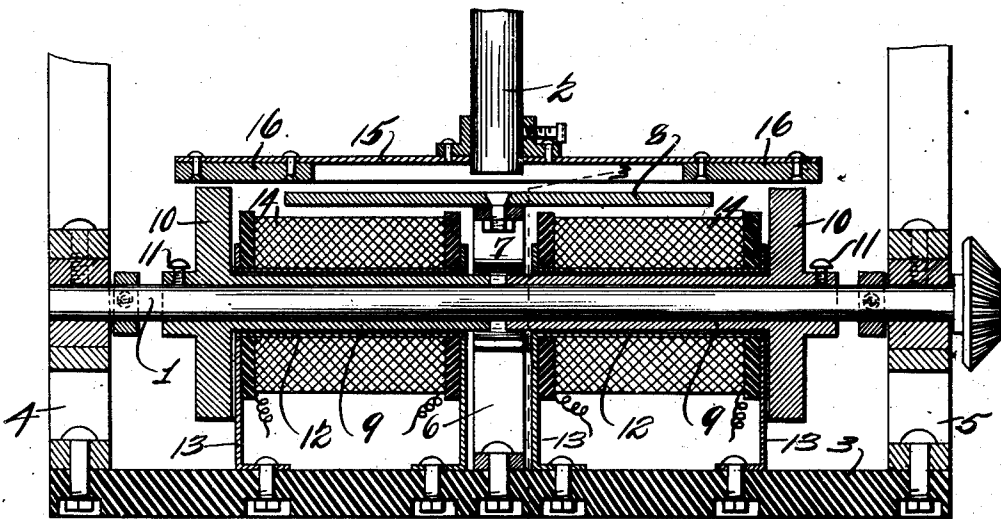
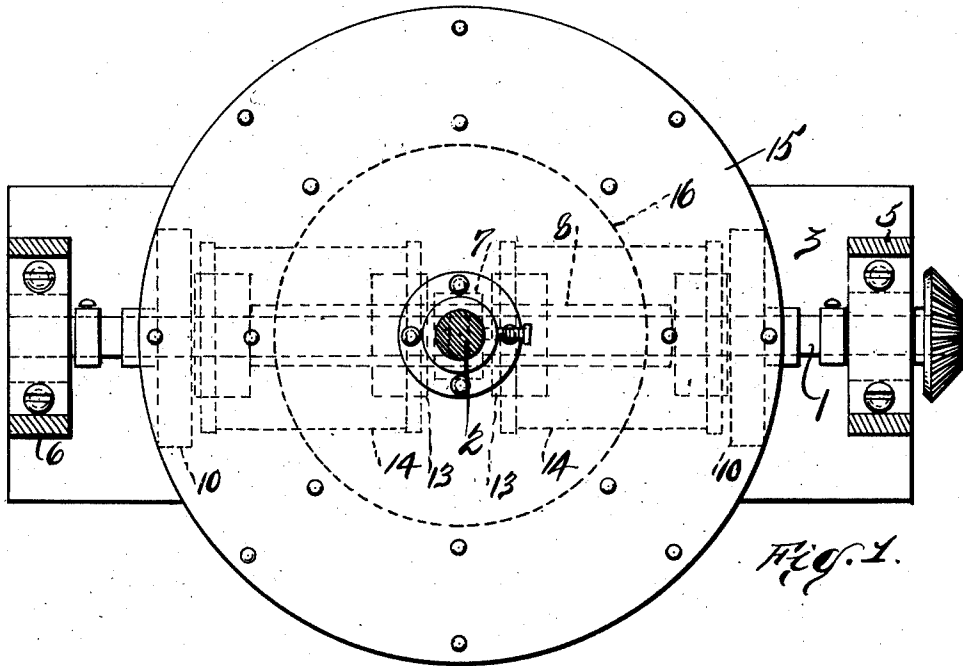


V. HEMMING.
MAGNETIC CLUTCH.
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1,038,131.

Patented Sept. 10, 1912.



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UNITED STATES PATENT OFFICE.

VICTOR HEMMING, OF NEW YORK, N. Y., ASSIGNOR TO H. KRANTZ MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

MAGNETIC CLUTCH.

1,038,131.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, VICTOR HEMMING, a citizen of the United States, residing in New York city, county and State of New York, have invented certain new and useful Improvements in Magnetic Clutches, of which the following is a clear, full, and exact description.

The object of this invention is to provide a magnetic clutch between a prime mover shaft and a driven shaft to enable one to quickly, quietly and expeditiously couple the same together, and to secure any direction of rotation to the driven shaft without changing the direction of rotation of the driving shaft, or its inertia.

In carrying out my invention, I provide a rotatable driving shaft, on which is mounted, so as to rotate therewith preferably two magnets with a space between their inner ends. At the outer ends of each magnet, secured to and rotating with the shaft, large circular disks, preferably of soft iron, are located. At one side or above the magnets I provide a bar, preferably iron, which extends from a point adjacent to the inner end of the magnets to within a short distance of the disks so as to provide a gap in the magnetic circuit adjacent to one part of each disk. Above the rotating disks I mount, secured to the driven shaft, a flexible plate having an annular ring preferably of soft iron, which extends over the gap in the magnetic circuit heretofore described. The disks have their circumference farther from the center of their shaft than has the bar which serves to complete the magnetic circuit. Consequently when the driving shaft is rotated and current is admitted to one of the magnets, the annular ring of the flexible disk secured to the driven shaft will be pulled down, and rest upon the magnetized portion of the circumference of said disk, so that it will be caused to rotate therewith, but upon demagnetizing such a magnet and magnetizing the other, the annular ring will be pulled upon the other disk, and the driven shaft rotated in the opposite direction. If no electrical connection is made at all the driven disk will remain free.

The scope of my invention will be pointed out in the claims.

In the accompanying drawings: Figure 1 is a plan view partly in section showing

sufficient of my invention to enable one skilled in the art to practice the invention. Fig. 2 is a longitudinal sectional view of the device. Fig. 3 is a section on line 3—3 Fig. 2.

As shown in the drawings, I provide a base 3 which may be preferably of slate or other non-magnetic material, although in some instances even magnetic material may be used, at the ends of which I secure standards 4 and 5, in which in suitable portions a prime mover shaft or driving shaft 1 is mounted. At the center of the base surrounding the shaft 1 and supported by a leg member 6 I secure a bifurcated soft iron frame 7 having at its upper end a bar 8 extending to both right and left in line with and over the driving shaft. On each side of the bifurcated frame and secured to the shaft I secure soft iron cores 9 carrying at their outer ends a disk 10 and secured by a screw 11 to the driving shaft. Around the cores 9 I mount magnets of any usual construction. They may be stationary as shown, and may be mounted on a magnet spool 12 having extending legs 13 secured to the base with a small air gap between the spools and the cores 9. The magnets are indicated by the reference 14. The driven shaft 2 is mounted in any suitable manner and carries a flexible disk or diaphragm 15 to the under side of which is secured an annular soft iron ring 16 so positioned as to bridge the gap between the ends of the bar 8 and the adjacent portions of the disk 10, the annular ring 16 being nearer to the disk than to the bar. As will be obvious to one skilled in the art, such construction enables one to send current through the right hand magnet, depress the ring 16 on to the disk 10, and cause it to be driven thereby so long as current is passing through the magnet, and power is applied to the driving shaft, and when no current is passing through either magnet no connection will exist between the two shafts. When power is taken through the left hand magnet without any change of direction of the driving shaft, the driven shaft will nevertheless be driven in the opposite direction.

In carrying out this invention, details of construction may be varied from those shown, and yet the essence of the invention be retained; some parts might be employed

without others, and new features thereof might be combined with elements old in the art in diverse ways, although the herein described type is regarded as embodying substantial improvements over such modifications.

As many changes could be made in the above construction, and many apparently widely different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted in an illustrative and not in a limiting sense. It is furthermore desired to be understood that the language used in the following claims is intended to cover all the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

I claim as my invention.

1. The herein described magnetic clutch consisting of a driving shaft, a pair of magnetizable disks spaced apart, and means for magnetizing said disks, a driven shaft having its axis at right angles to the driving shaft and midway between the disks, a plate having its plane in right angles to the disks with a magnetizable portion adjacent to said disks, and said plate being resiliently connected with its shaft, and a magnetizable bar adjacent to one portion of the disks to make an almost complete closed magnetic field at a point adjacent to said ring.

2. The herein described magnetic clutch consisting of a driving shaft, a plurality of magnetizable cores secured to said shaft and spaced apart, magnetizable disks carried by said cores, an electromagnet surrounding

each of said cores, a driven shaft having its axis at an angle to the axis of said driving shaft, a resilient disk secured to said driven shaft, a magnetizable ring carried by said disk and located adjacent the periphery of the disks on the cores carried by the driving shaft, and a magnetizable bar adapted to localize the magnetic field, mounted adjacent said disk and extending over the adjacent ends of said magnets.

3. The herein described magnetic clutch consisting of a driving shaft, magnetizable disks rotatably secured thereto, stationary electromagnets surrounding said shaft, and located adjacent said disks, a magnetizable bar mounted adjacent said magnets, adapted to localize the magnetic field, there being an air gap between the ends of said bar and said disk, and driven shaft adjacent said magnets, a disk carried by said driven shaft, a magnetizable ring carried by said disk adapted to be drawn into contact with the periphery of the disks on the driven shaft when the magnets are energized.

4. In a magnetic clutch a driving element, magnets surrounding said driving element, magnetizable disks actuated by said driving element and located adjacent said magnets, a driven element, an armature carried thereby adapted to contact with said disks when said magnets are magnetized, and means adjacent said magnets but out of contact with said disks and said armature adapted to localize the magnetic field of said magnets.

Signed at New York city, New York, this 6th day of November in the year one thousand nine hundred and eleven.

VICTOR HEMMING.

Witnesses:

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