L. C. FULLER.

DISK CLUTCH.

APPLICATION FILED JUNE 14, 1918.

1,340,885. Patented May 25, 1920.

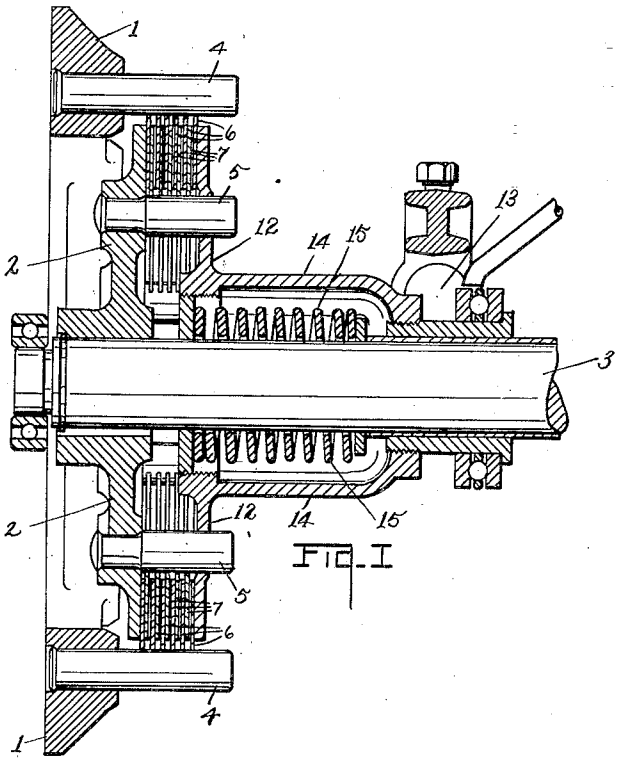



FIG. I

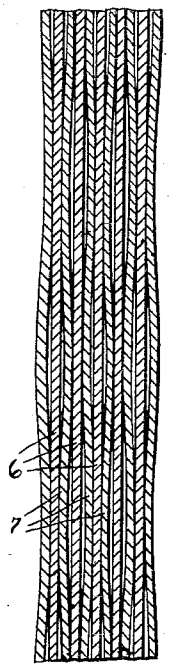



FIG. IV

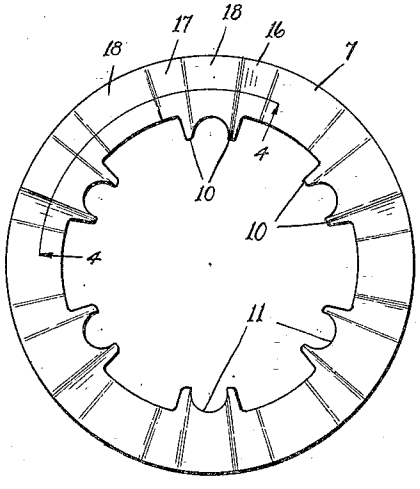



FIG. III

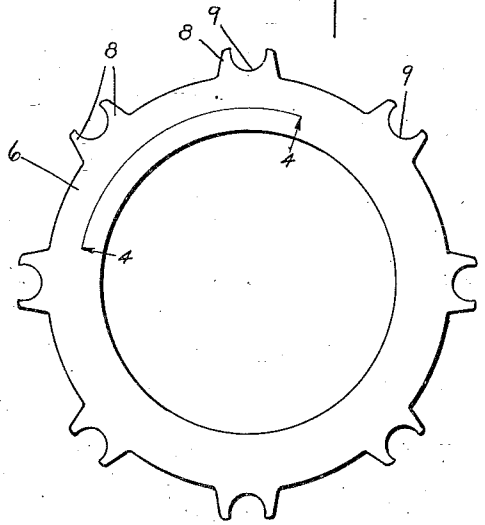



FIG. II

Witnesses

Lenn Gilman

Fred Ullrich

Inventor

Lawrence C. Fuller

By Chappell & Earl

Attorneys

# UNITED STATES PATENT OFFICE.

LAWRENCE C. FULLER, OF KALAMAZOO, MICHIGAN.

## DISK CLUTCH.

1,340,885. Specification of Letters Patent. Patented May 25, 1920.

Application filed June 14, 1918. Serial No. 239,940.

*To all whom it may concern:*

Be it known that I, LAWRENCE C. FULLER, a citizen of the United States, residing at the city and county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Disk Clutches, of which the following is a specification.

This invention relates to improvements in disk clutches.

The main objects of this invention are:

First, to provide an improved disk clutch which may be used effectively with or without lubricant.

Second, to provide an improved disk clutch which is quickly and positively released on the releasing of the compression member.

Third, to provide an improved disk clutch in which no friction facings are employed for the disks and which is at the same time very powerful.

Fourth, to provide an improved disk clutch having these advantages which is very simple and economical in structure and at the same time efficient and durable.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure I is a detail view of a structure embodying the features of my invention partially in central longitudinal section.

Fig. II is a side view of one of the driving disks.

Fig. III is a side view of one of the driven disks.

Fig. IV is a detail section through a plurality of disks on a line corresponding to line 4—4 of Figs. II and III.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents the driving member, the driving member illustrated being designed to be attached to the fly-wheel of an engine.

2 represents the driven member which is fixed to the driven shaft 3.

My improved clutch is especially designed by me for use on motor vehicles, tractors and the like. I have not attempted to illustrate a complete casing or housing, as such forms no part of my present invention.

The driving member 1 is provided with driving pins 4, while the driven member 2 has driven pins 5. A plurality of driving disks 6 and driven disks 7 are provided, the driving and driven disks being alternately disposed as shown in Figs. I and IV.

The driving disks 6 have lugs 8 on their peripheries notched at 9 to engage pins 4. The driven disks 7 have internal lugs 10 notched at 11 to engage the pins 5.

The compression or actuating disk 12 is provided with a control means, designated generally by the numeral 13. The actuating disk 12 has a hub 14 inclosing the clutch actuating spring 15.

The disks 7 have oppositely disposed offsets 16 and 17 adjacent their lugs providing alternately disposed spring portions 18 in the friction surfaces of the disks.

When the pressure is applied to actuate the clutch these spring portions are collapsed more or less according to the amount of pressure exerted, and this secures an effective driving friction between the disks. When the compression or actuating disk is released these spring portions of the clutch disks immediately separate and release the clutch as the disks are forced apart by the spring portions, and this is found to be true whether the disks are lubricated or not, there being no "dragging" in either case.

Another advantage is that the applicant's clutch "takes hold" in a steady or uniform manner, and is not injured by "slipping" as is the case with clutches having faced disks.

In practice I prefer to place the offsets of adjacent disks having spring portions therein back to back, that is, they are arranged so that the offsets are oppositely disposed thereby overcoming the tendency to distort the plane disks which might otherwise be present.

I have illustrated and described my improvements with certain parts shown more or less conventionally in a simple form. I have not attempted to illustrate or describe various modifications and adaptations which

might be of advantage in certain cases, as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a disk clutch, the combination of driving and driven members provided with disk engaging pins, and alternately disposed driving and driven disks slidably engaged with said pins of said driving and driven members respectively, the alternate disks having oppositely disposed offsets adjacent the pin engaging portions thereof providing alternately disposed spring portions in their friction surfaces.

2. In a disk clutch, the combination of driving and driven members provided with disk engaging pins, and alternately disposed driving and driven disks slidably engaged with said pins of said driving and driven members respectively, a part at least of the disks having offsets adjacent the pin engaging portions thereof providing spring portions in the friction surfaces of the disks.

3. In a disk clutch, the combination of driving and driven members, and alternately disposed driving and driven disks having driving connections with said driving and driven members respectively, the alternate disks having oppositely disposed offsets providing alternately disposed spring portions in the friction surfaces thereof.

4. In a disk clutch, the combination of driving and driven members and alternately disposed driving and driven disks having driving connection with said driving and driven members respectively, at least one of said disks having lateral offsets therein providing a plurality of spaced radially directed corrugation like spring friction portions in the friction face of such disks sustaining the friction of the facing disk, and a clutch actuating spring the strength of which is insufficient to completely collapse the spring portions of said disks.

5. In a disk clutch, the combination of driving and driven members and alternately disposed driving and driven disks having driving connection with said driving and driven members respectively, at least one of said disks having lateral corrugation like offsets therein providing spring friction portions in the friction surface of such disks sustaining the friction of the facing disks, and a clutch actuating spring the strength of which is insufficent to completely collapse the spring portions of said disks.

6. In a clutch, the combination of driving and driven members and alternately disposed driving and driven disks having driving connection with said driving and driven members respectively, at least one of said disks having a plurality of integral unsevered spring portions in the friction surfaces thereof, said spring portions constituting spring friction members sustaining the friction of the coacting facing disk.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

LAWRENCE C. FULLER. [L. S.]

Witnesses:

LUELLA G. GREENFIELD,

GRACE B. THOMPSON.