E. G. BENDL.

AUTOMATIC FRICTION FAN FOR AUTOMOBILES.

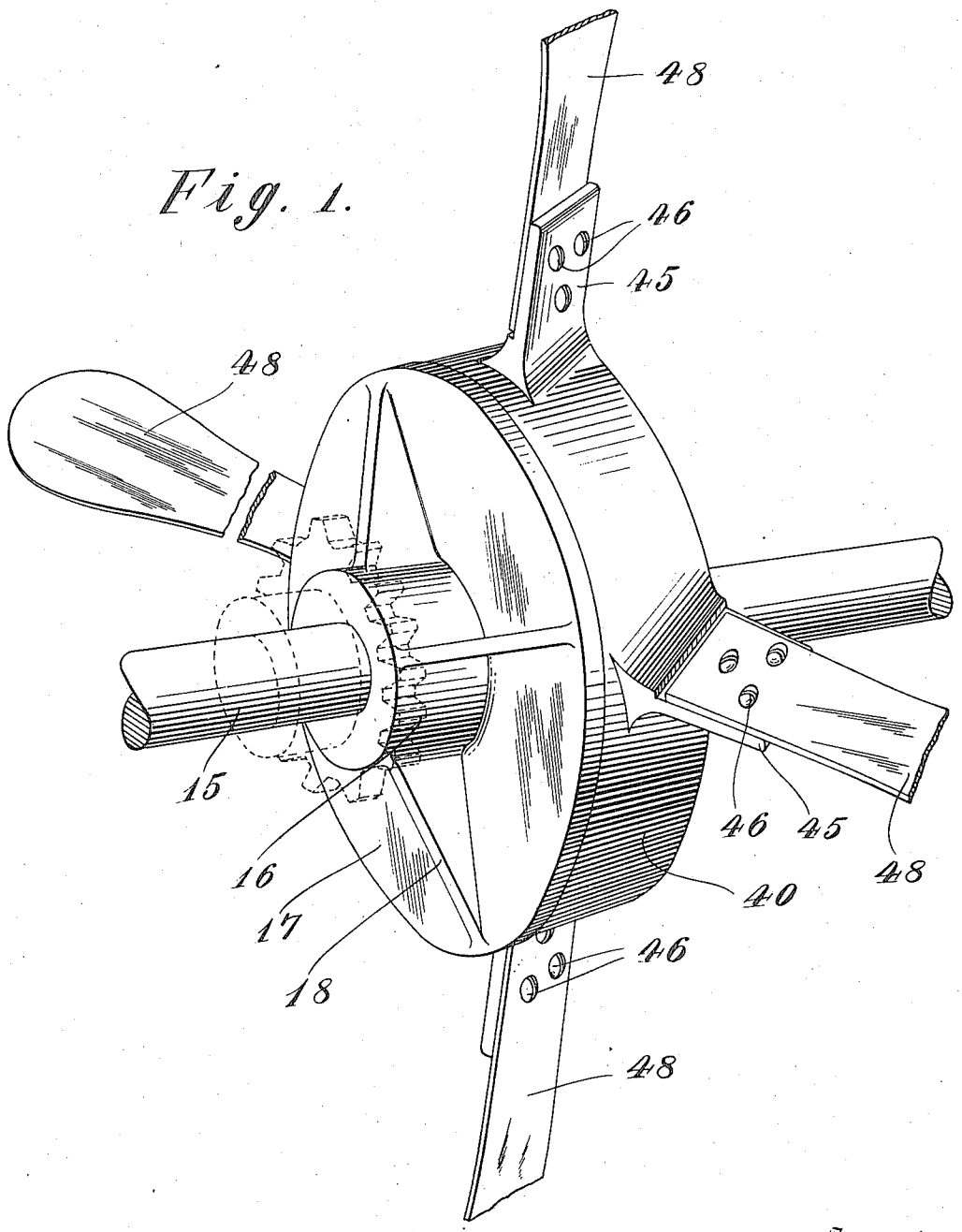
APPLICATION FILED JAN. 29, 1916.

1,197,895.

Patented Sept. 12, 1916.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Richard Wegener.
Lulu A. Hohlwein

Inventor
Edward George Bendl.
By his Attorney Oscar Geier

E. G. BENDL.

AUTOMATIC FRICTION FAN FOR AUTOMOBILES.

APPLICATION FILED JAN. 29, 1916.

1,197,895. Patented Sept. 12, 1916.

3 SHEETS—SHEET 2.

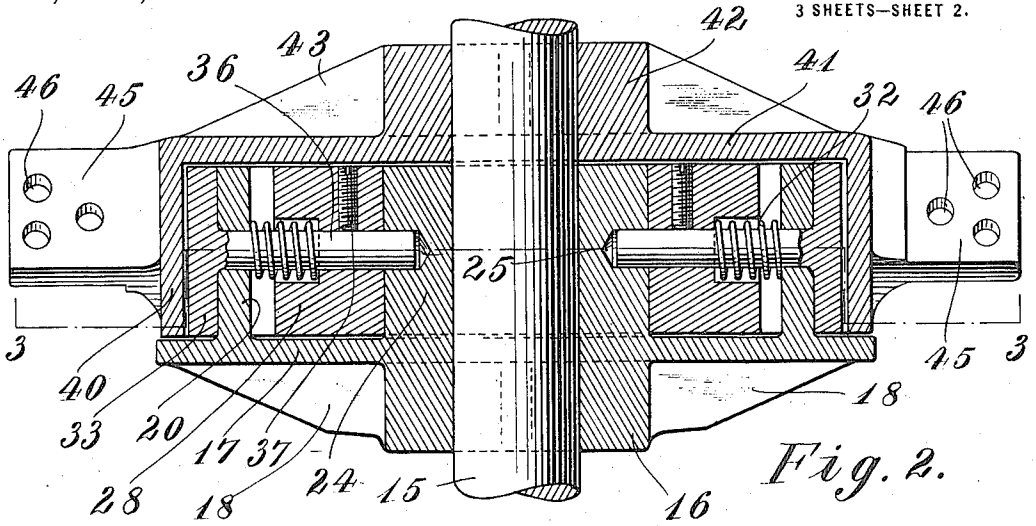
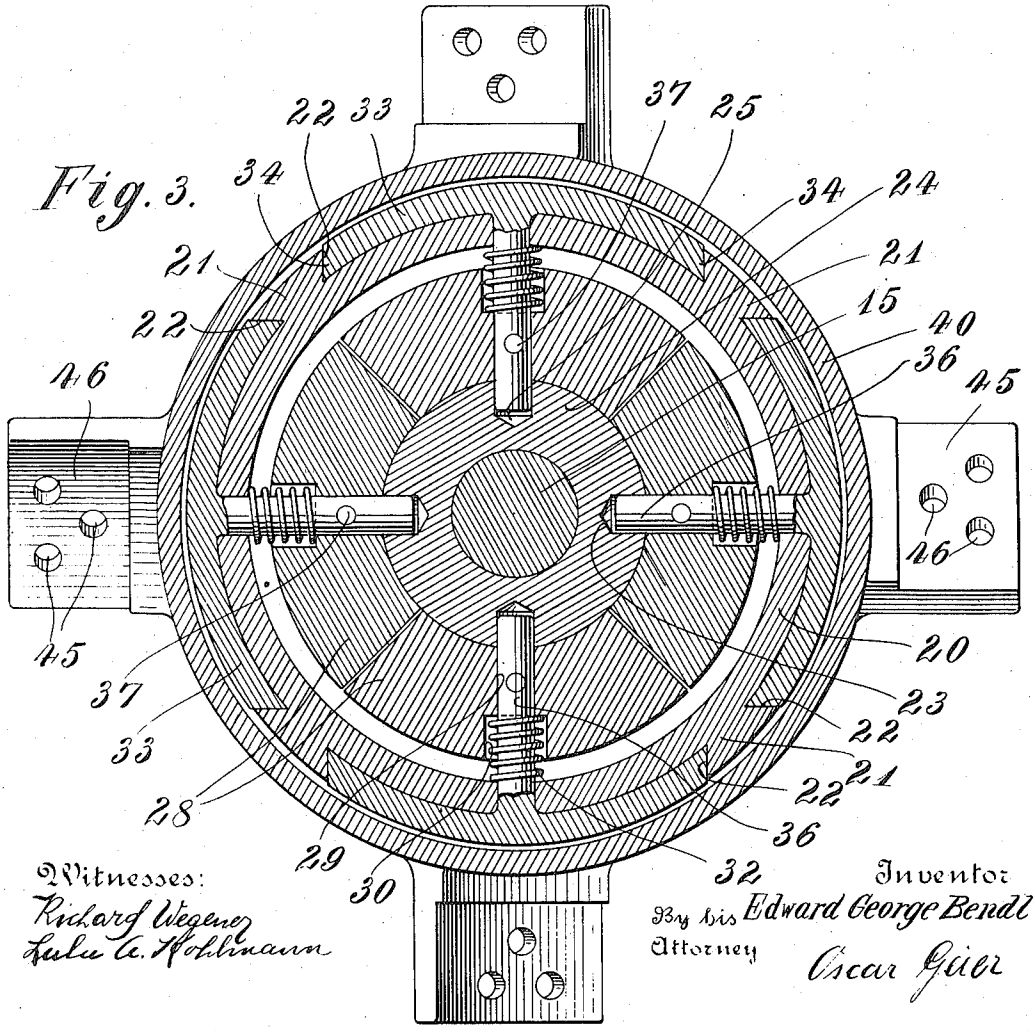


Fig. 2.

Fig. 3.



Witnesses:
Richard Wegener
Lulu A. Hohlmann

Inventor
By his Attorney
Edward George Bendl
Oscar Gier

E. G. BENDL.

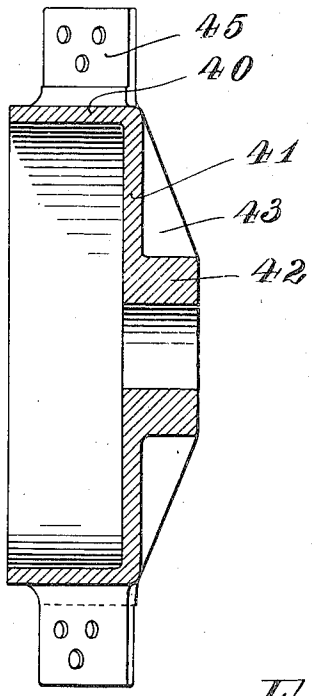
AUTOMATIC FRICTION FAN FOR AUTOMOBILES.

APPLICATION FILED JAN. 29, 1916.

1,197,895. Patented Sept. 12, 1916.

3 SHEETS—SHEET 3.

Fig. 5.



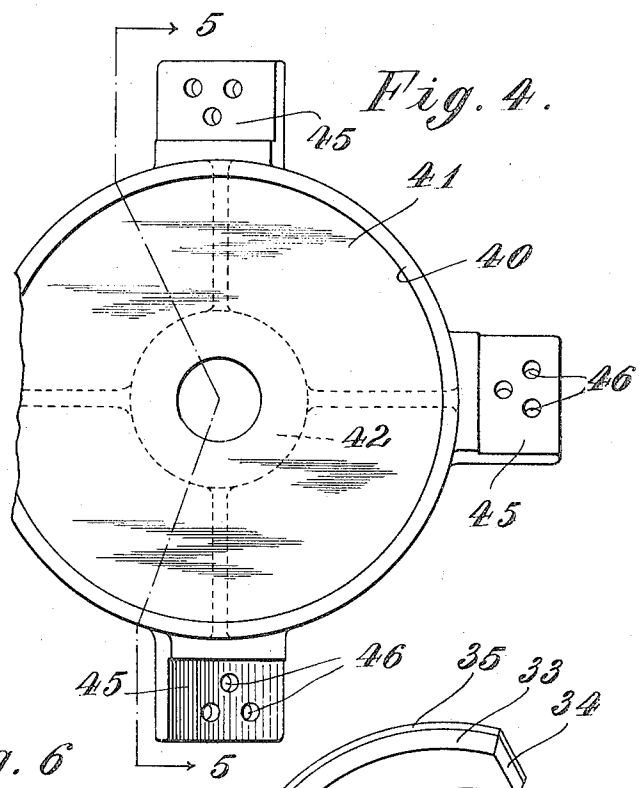


Fig. 4.

Fig. 7.

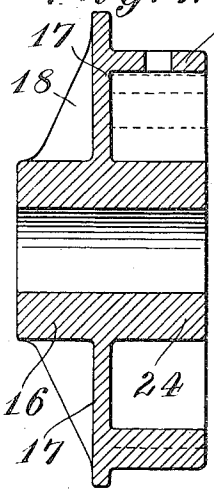
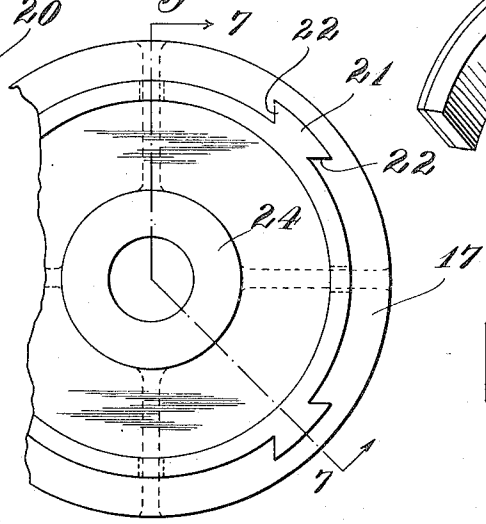


Fig. 6



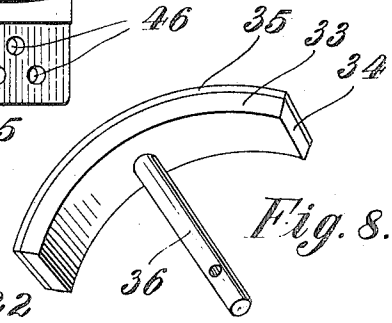


Fig. 8.

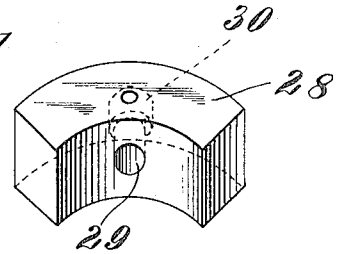


Fig. 9.

Witnesses:

Richard Wiegeny.

Julius Kohlmann

Inventor

Edward George Bendl.

By his Attorney Oscar Gill

UNITED STATES PATENT OFFICE.

EDWARD GEORGE BENDL, OF BOGOTA, NEW JERSEY.

AUTOMATIC FRICTION-FAN FOR AUTOMOBILES.

1,197,895. Specification of Letters Patent. Patented Sept. 12, 1916.

Application filed January 29, 1916. Serial No. 75,106.

To all whom it may concern:

Be it known that I, EDWARD GEORGE BENDL, a citizen of the United States, and resident of Bogota, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Automatic Friction-Fans for Automobiles, of which the following is a specification.

This invention relates to improvements in mechanisms in which one element is positively driven and another element so combined with it as to receive rotary motion through frictionally contacting surfaces, carried by the driven element, and operatively engaged through centrifugal force.

The principal object of the invention is to provide means whereby certain parts of rotative mechanism may be rotated at a high velocity, the attainment of which is accomplished gradually, without violent shock at the start, as is also the cessation of rotation.

Another object is the provision of means which operate entirely automatic, are of simple and durable construction and which require no attention during operation.

These and other objects are attained by the novel construction and combination of parts hereafter described and shown in the accompanying drawings, forming a material part of this specification, and in which:—

Figure 1 is a fragmental perspective view of a fan embodying the driving principle of the invention. Fig. 2 is a transverse sectional view, showing the interior construction of the same. Fig. 3 is a vertical sectional view, taken on line 3—3 of Fig. 2. Fig. 4 is a partial plan view showing the driven element. Fig. 5 is a sectional view of the same, the section being taken on line 5—5 of Fig. 4. Fig. 6 is an interior plan view showing a portion of the driving element. Fig. 7 is a sectional view, taken substantially on line 7—7 of Fig. 6. Fig. 8 is a perspective view showing in detail one of the driving or engaging elements, and Fig. 9 is a similar perspective view showing one of the centrifugal operating weight elements.

In all of the several views the structure represented is that of a fan and particularly of a type used in producing an air current for cooling a motor of internal combustion type, but it will be fully apparent that modifications of the structure may be made suitable for many other purposes. Fans of this type are commonly used in connection with automobile engines in which the fan shaft is started from a state of rest to a high speed of rotation, the start being so sudden as to cause a great initial stress in the parts, particularly to the fan arms, tending to bend or break the same and ultimately causing damage and trouble. In this invention such occurrences are largely eliminated as will be seen as the disclosure progresses.

Referring now to the drawings, the numeral 15 indicates the shaft upon which the fan is mounted, and the shaft may be used as a driver in which case the hub 16 is keyed or otherwise rigidly affixed to it; if the shaft be stationary the hub may have mounted on it a driving pulley, chain sprocket or gear, caused to rotate from any convenient source of power as may be preferred.

A flanged disk 17 is formed with the hub 16, strengthened by brace ribs 18, and provided with an annularly extending ring 20, opposite to the ribbed outer side, the ring having a number of projections 21 on its outer surface, the same having finished tangential edges 22 for purposes that will later become apparent.

An inner hub 24, the same being a continuation of the hub 16, extends flush with the inner edge of the ring 20, and has bored in it a number of radial holes 25, corresponding in number to the projections 21, but located centrally therebetween.

Between the exterior of the hub 24 and inner wall of the ring 20 are loosely contained segmental blocks 28 of considerable relative weight, through the center of which are drilled holes 29, counterbored at their outer ends as at 30 to receive coiled push springs 32, which encircle the upper end of the round stems 36, the inner ends of which slidably engage in the holes 25 of the inner hub 24. These stems are secured by appropriate pins or screws 37 to the blocks 28 so as to move radially with them, the springs tending to press the blocks inwardly as their outer ends are against the ring 20, through which the stems pass and beyond which they are joined to their curved T shaped heads 33, the ends 34 of which are guided as they move by the projections 21. These heads are adapted to frictionally engage, either direct or through a lining 35, with the inner finished surface of the ring 40 which consti-

tutes the mechanism casing and is formed with a flanged disk 41 disposed oppositely to the disk 17 and provided with a hub 42 suited to freely revolve on the shaft 15, a collar (not shown) or the like holding it in operative position.

Brace ribs 43 extend between the hub 42 and disk 41 and formed adjacent to their ends on the periphery of the ring 40, are lugs 45, disposed angularly and adapted to have secured to them by means of the rivets or screws 46 the fan blades 48 bent and formed as may be preferred.

In operation, the driving elements, 17 to 24 inclusive, are rotated by any means whatever, causing the segmental weights 28 and friction heads 33 to revolve within the casing 40, and, as these latter parts attain a high speed, to be forced outwardly by centrifugal force, pressing the heads 33 outwardly against the interior of the casing 40 and causing it to rotate through frictional engagement. When the speed is slackened beyond a definite extent, the springs 32 operate to release the heads 33 from contact with the casing 40 and they move toward the center, at all times being guided by the projections 21 and stems 36. Thus it will be seen that the casing 40 and whatever may be attached to it will be started or stopped smoothly and easily, by the automatic means wholly contained within the casing and which are operated by natural forces when caused to rotate.

It will be evident that any number of weights and operative elements may be used, and, as indicated by the broken line in Fig. 1, that the hub 16 may be prolonged and have mounted upon it a sprocket wheel or the like, adapted to be driven from the crank-shaft of the engine or other available power source.

Obviously the proportion between the driving means and the driver element will be suited to the desired speed at which the fan is to operate, and that in turn will be dependent upon the size of the fan and amount of air current to be desired.

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

1. In a friction clutch, the combination with a driver, an element to be driven and an axial support common to both, of an internal hub and a circumjacent annulus spaced from said hub, formed with said driver, stems slidably engaged in said hub and annulus, friction heads formed with said stems, a cylindrical casing on said driven element against which said heads are adapted to engage, means for normally keeping said heads out of engagement, and means operated by said driver for causing said heads to engage with said casing.

2. In a friction clutch, the combination with a driver, an element to be driven and an axial support common to both, of a plurality of friction heads slidably carried by said driver, radially disposed guide stems formed with said heads, a cylinder formed with the driven element suited to said heads, means for maintaining said heads in a normally retracted position, and centrifugally operated weights secured to said stems adapted to force said heads into contact with said cylinder when said driver is rotated.

3. In a friction clutch, the combination with a pair of disks having central hubs and a support upon which said hubs are mounted, of means for rotating one of said disks, an internal hub formed therewith, a ring spaced concentric to said hub, segmental weights movable in the space between said hub and ring, stems slidable through said ring, and in said hub upon which said weights are secured, friction heads engaged with said stems exterior of said ring, a cylinder formed with the other of said disks against which the heads may contact, means for guiding said heads and means for normally holding said heads out of contact.

Signed at New York, in the county of New York and State of New York this 22nd day of January, A. D. 1916.

EDWARD GEORGE BENDL.

Witness:

FRANCIS J. NEKARDA.