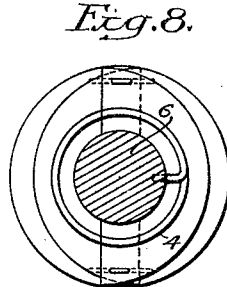
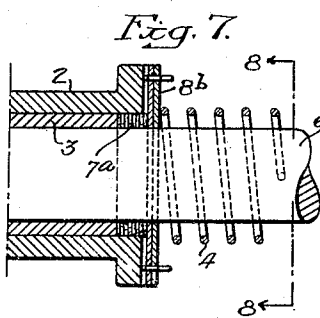
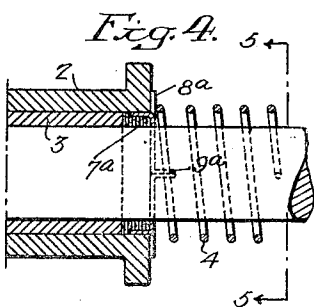
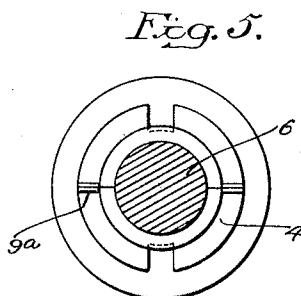
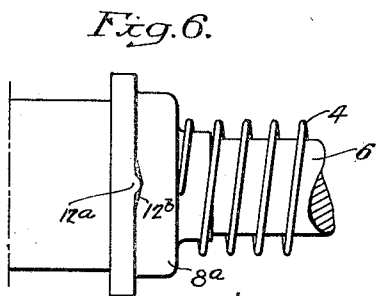
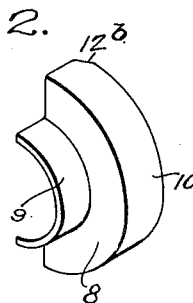
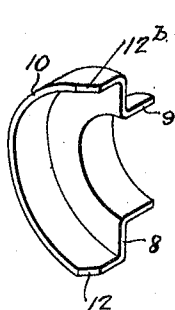
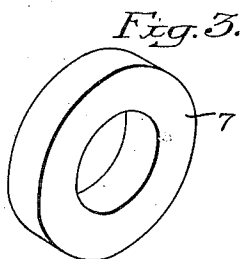
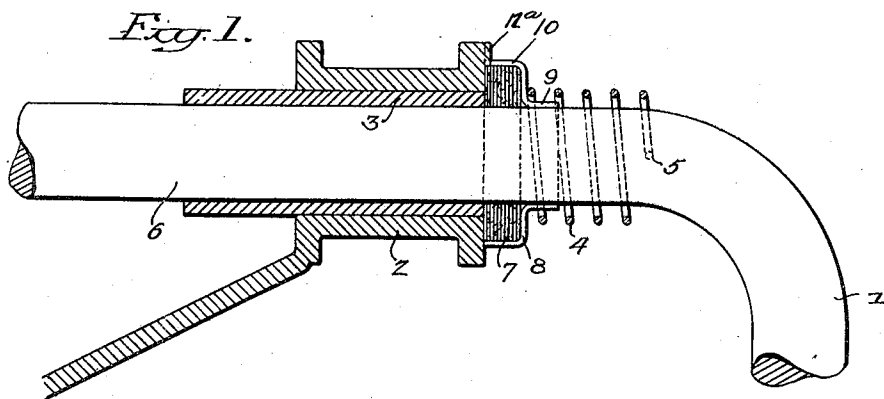


W. HENRY.
DUSTPROOF OIL RING.
APPLICATION FILED APR. 25, 1918.

1,422,972.

Patented July 18, 1922.

3 SHEETS—SHEET 1.



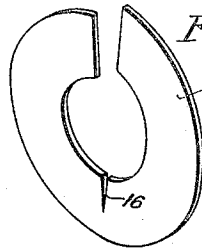
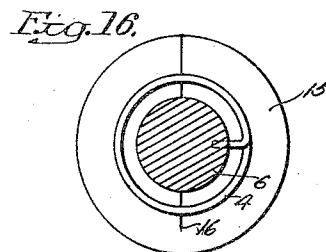
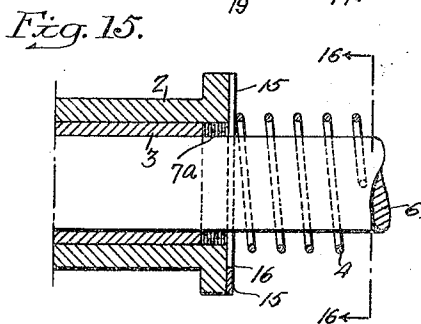
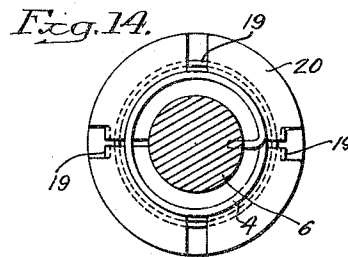
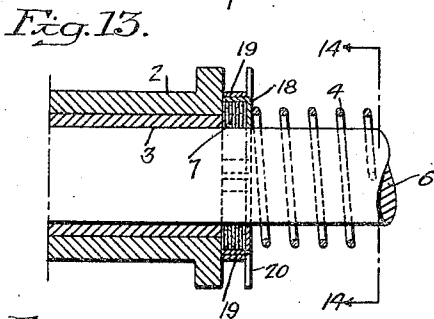
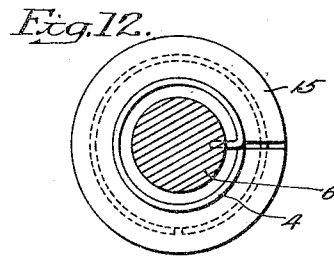
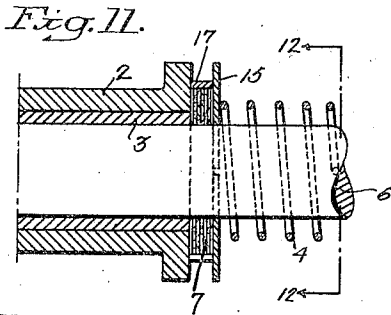
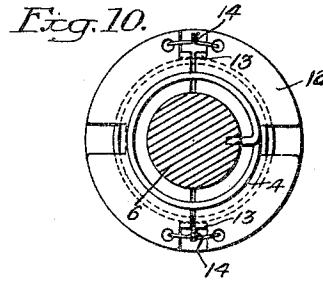
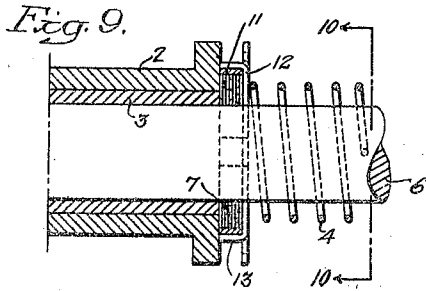
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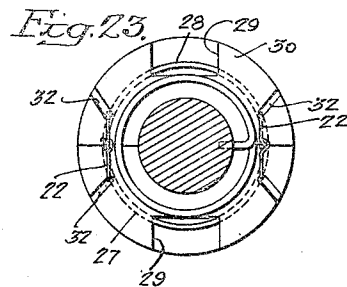
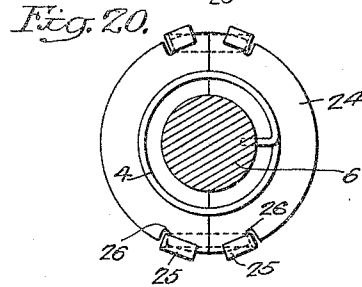
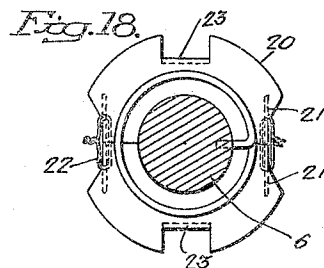
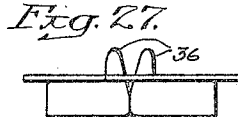
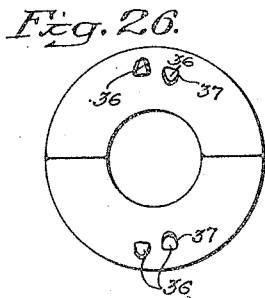
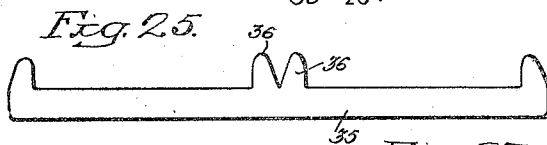
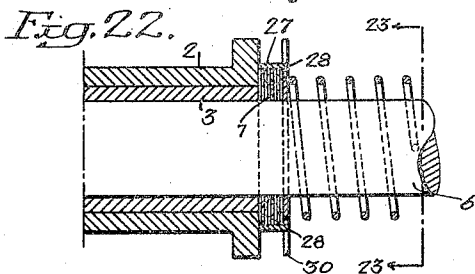
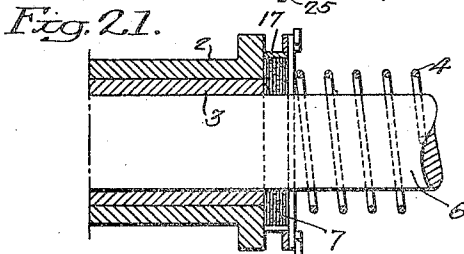
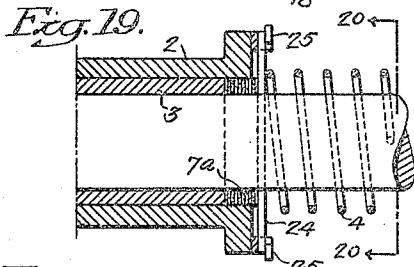
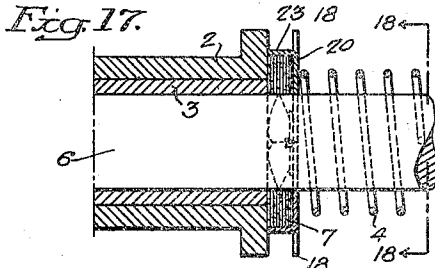
Inventor:
William Henry,
by his Attorneys,
Hawson & Hawson

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1,422,972.

Patented July 18, 1922.

3 SHEETS—SHEET 3.



Inventor:
William Henry.
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Hawson + Dawson

UNITED STATES PATENT OFFICE.

WILLIAM HENRY, OF PHILADELPHIA, PENNSYLVANIA.

DUSTPROOF OIL RING.

1,422,972.

Specification of Letters Patent.

Patented July 18, 1922.

Application filed April 25, 1918. Serial No. 230,719.

To all whom it may concern:

Be it known that I, WILLIAM HENRY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented 5 Dustproof Oil Rings, of which the following is a specification.

It has been noted that considerable friction and wear frequently occur between the starting crank and the bearing in which it is supported on certain motor vehicles owing largely to the fact that said parts are at the extreme forward end of the vehicle and have no special provision for the retention of a lubricant or for the exclusion of dust, etc. 10 One object of my invention therefore, is to provide a relatively simple, inexpensive and easily applied device whereby dust, etc. shall be excluded and lubricant shall be supplied to the starting crank of a motor vehicle in or immediately adjacent its supporting bearing;—the invention contemplating more particularly a novel form of retaining-cup or washer whereby a lubricant holding body shall be maintained in position to supply the 25 above mentioned parts.

Another object of the invention is to provide a lubricant-carrying ring with means for retaining it in a desired position upon the spindle of a motor vehicle starting crank, which means shall be so constructed as to permit of its application or removal without requiring the dismantling, or otherwise interfering with the mounting of the several parts, for which purpose the holding or retaining member is made in a number of sections prevented from separating or falling out by suitable means such as the ratchet releasing spring. 30

These objects and other advantageous ends I attain as hereinafter set forth, reference being had to the accompanying drawings in which, 40

Fig. 1 is a vertical section showing my invention as applied to the starting crank of a well known form of motor vehicle; 45

Fig. 2 is a detached perspective view of the two sections of the retaining member for the lubricant carrying ring;

Fig. 3 is a perspective view of the lubricant carrying ring; 50

Fig. 4 and Fig. 5 are respectively a longitudinal, vertical section and a transverse section on the line 5—5, Fig. 4, illustrating a modification of my invention;

Fig. 6 is a plan view of a third modification; 55

Figs. 7, 9, 11, 13, 15, 17, 19, 21 and 22 are longitudinal vertical sections illustrating modified forms of my invention;

Figs. 8, 10, 12, 14, 16, 18, 20 and 23 are 60 transverse vertical sections taken respectively on the lines 8—8, Fig. 7, 10—10 Fig. 9, 12—12 Fig. 11, 14—14 Fig. 13, 16—16 Fig. 15, 18—18 Fig. 17, 20—20 Fig. 19 and 23—23 Fig. 22; 65

Fig. 24 is a perspective view of that form of retaining washer preferably used in that form of the invention shown in Figs. 11 or 15;

Fig. 25 is a plan of the stamping from 70 which one form of enclosing ring may be formed; and

Figs. 26 and 27 are respectively a plan and a side elevation illustrating a form of the invention in which the ring shown in 75 Fig. 25 is utilized.

In the above drawings 1 represents a starting crank rotatably carried in a sleeve 2 rigidly connected to or forming part of an engine housing and having a bushing 3 80 rigidly fixed in it. The particular form of crank for which my invention is especially designed has mounted on it immediately adjacent the bearing structure, a coil spring 4 whose outer end is rigidly connected to 85 it at 5 in such manner as to normally maintain it in the outer position with the ratchet carried on its inner end normally disengaged from the cooperating structure on the adjacent end of the engine shaft. 90

As will be understood by those familiar with this type of apparatus, the spindle or body portion 6 of the crank is free not only to turn in the bushing 3 but also to move longitudinally therein under conditions of 95 use. In order to at all times provide a supply of lubricating material for such body portion, I mount upon it a ring 7 of felt or other suitable lubricant-carrying material either endless or split and protect and 100 enclose this ring by a cup shaped member 8, which in the form of my invention shown in Figs. 1, 2, and 6, consists of a flat sectional ring, preferably of sheet material having an internal flange 9 closely fitting 105 the spindle portion 6 of the crank and an oppositely extending external flange 10 designed to extend around and closely fit said

lubricant-carrying ring 7. One vital feature of this form of my invention resides in making the ring-retaining member 8 in two similar parts which may be formed by

5 radially cutting a complete member.

In order to apply the device to the crank, the felt or other washer 7, impregnated with oil or solid lubricant, is passed over the handle of the crank 1 and is stretched or enlarged sufficiently to permit of its being forced over the spring 4 which is thereupon caused to act upon its outer face in such manner as to hold it against the vertical face of the bearing structure 2. The two

15 sections of the retaining washer 8 are then applied by pressing the spring away from the ring 7 and forcing between its convolutions and the cylindrical surface of the spindle 6, the inner flange 9 of said washer. Thereafter when the spring is released, it acts upon the body of the washer 8 to force it toward the bearing structure 2 and so engages the inner flange 9 as to prevent the two sections from falling out of position.

25 In case there should be a radial rib 12^a on the outer face of the bearing structure 2, I preferably cut away the adjacent corners of each of the sections of the retaining washer 8 as indicated at 12^b to form adjacent the face of said structure an opening whose edges provide inclined surfaces which permit the retaining member 8 to turn with the crank 1 and spring 4 without being inter-
30 ferred with by the rib 12^a. The opening provided by thus bevelling or inclining said edges is also convenient for the introduction of lubricant to the ring 7 when this is desirable.

If desired I may employ the simpler form of my invention shown in Figs. 4 and 5, in which case the bushing 3 is displaced in the bearing 2 so that its outer or forward end is slightly to the rear of the plane of the face of said bearing. The lubricant impreg-
45 nated washer 7^a is then placed in the annular recess thus formed with a flat sectional retaining washer 8^a in engagement with its outer face. In this instance said washer is formed with struck up tongues 9 extending into the recess for the ring 7 and also has oppositely projecting tongues 9^a which prevent its sections from passing or overlapping and also position it relatively to the spring 4. The body of the washer is pressed by
50 said spring toward and into engagement with the vertical face of the bearing.

In that form of the invention shown in Figs. 7 and 8 the washer 8^b is formed of two flat overlapping sections held from separation by the cotter pins, the lubricant-carrying ring being mounted in the recess provided in the bearing structure by moving the forward end of the bushing to the rear of the plane of the front of said bearing. The
60 spring 4 as in the other cases, acts on the

body of the washer to press it toward the adjacent face of the bearing.

In that form of the invention shown in Figs. 9 and 10 I have shown the felt or other lubricant-retaining washer 7 as inserted within a ring of relatively thin strip material 11 which may be endless as shown in Fig. 10, or as in Fig. 12, may be split. In either case it is necessary to slip it over the crank and spring 4 in order to bring it to its desired final position. The front face of the lubricant ring 7 is covered or closed by a flat washer 12 made in two independent parts each having struck up from one of its faces a series of tongues 13 designed to lie against the outside cylindrical surface of the enclosing ring 11, and in this case the two sections of said washer would be connected by ties 14 preferably formed of thin wire in order to prevent loss of the parts
70 75 80 85

in case the spring 4 should break. The washer 12 closely fits the body of the crank and as before would be pressed toward the lubricant washer 7 by the spring 4.

In the case of Fig. 11 the flat washer 15 covering the face of the lubricant ring 7 is shown as made of a single piece having a radial cut providing ends which may be separated sufficiently to permit it to be sprung over the body 6 of the crank and thereafter
90 95

turned to a position in which they lie in the general plane of said washer. This washer if desired may be radially cut to a greater or less depth as indicated at 16 in Fig. 24 in order to facilitate the springing of it into position and its subsequent flat-
100

tening so that the spring 4 may hold it in the desired position against the enclosing ring 17.

If desired I may completely enclose the lubricant ring 7 in a cup formed by externally flanging a flat washer mounted on the body 6 of the crank as indicated at 18, Fig. 13, making said washer in a plurality of sections held in place by a suitable number of
105 110

tongues 19 struck up from a flat washer 20 so as to project at right angles. On the other hand, the bushing 3 may be displaced longitudinally of the body of the crank as in Figs. 4 and 7, in order to provide an annular recess within the bearing structure 2, in which case as before the lubricant ring 7^a will be mounted in said recess. The front opening or face of the latter is then closed by a flat washer 15 sprung over the body of
115 120

the shaft 6 as described in connection with Figs. 11 and 12.

It it should be considered necessary to completely enclose the washer, I may retain it in position by a flat washer 20 made in a number of sections (in the present case two) whose adjacent ends or edges are formed with undercut tongues 21 bent at right angles to its plane and designed to receive wire ties 22 whereby the washer sec-
125 130

tions are kept from separating after being applied to the crank. This washer is at all times pressed toward the lubricant-carrying ring 7 by the spring 4 and is provided with two other right angled tongues 23 extending across the outside edge of said ring 7 and engaging the adjacent face of the bearing 2.

In that form of the device shown in Figs. 19 and 20, the lubricant-carrying ring 7^a is mounted in the annular recess of the bearing provided by longitudinally displacing the bushing 3, and the opening into said recess is closed by a two-part washer 24 whose parts may overlap to a greater or less extent. Said parts in this case are separably connected by two sheet metal clips or strips 25 each of which extends into radial slots 26 formed in the outer edge of the washer sections and are made of sufficiently stiff material to remain in any position in which they are bent. This same form of flat sectional washer may be utilized to close the front of a split ring 17 within which the lubricant-carrying washer 7 is mounted as shown in Fig. 21.

As illustrated in Figs. 22 and 23, the lubricant ring may be enclosed by an annular strip 27 of flat metal either endless as in Fig. 23, or split as in Fig. 21. In any case one of its edges is formed with two preferably opposite portions 28 projecting parallel to the body 6 of the crank so that a flat sectional washer 30 having relatively deep circumferential recesses 29 at opposite points of its edge which may rest upon the main portions of the edge of said ring 27 and have said parts 28 in the recesses 29. While the sections of the flat washer 30 may be connected in any desired way, they are illustrated in Fig. 23 as held together by wire ties 22 extending through radial recesses 32, so as to prevent loss of said sections.

From the above description it will be noted that my invention may be applied with the greatest ease to a starting crank, since without removing this from its bearing or in any way dismantling its associated parts, the lubricant impregnated ring may be put in place over said crank and the ratchet releasing spring and thereafter be retained within or immediately adjacent the bearing by a sectional washer whose parts are kept in place and in some cases held from separating, by the spring itself or by the combined action of the spring and of the ring.

Whenever desired, oil may be delivered to the lubricating lubricant ring through the opening in the outer flange of the enclosing washer or the latter may be moved away from the bearing to permit of a more direct introduction of such oil. Obviously the lubricant-carrying ring may be replaced with the greatest ease whenever this is desirable, and it is to be particularly

noted that not only does said ring supply lubricant to the engaging surfaces of the spindle or body portion 6 of the crank and the bushing 3, but it effectually excludes dust and other solid material which might otherwise cause friction or wear in the bearing.

The ring for enclosing the outer edge of the lubricant ring 7 may be stamped from sheet metal in the form shown in Fig. 25 which illustrates it as consisting of a narrow elongated strip 35 having laterally projecting tongues 36 along one side. By suitable means this strip is then curved to a circular form and the tongues 36 at its extremities are passed through a suitable slot in one of two semi-annular plates 37 while the second pair of such tongues is likewise passed through the similar slots in the other of said plates so as to hold the latter in position to define a ring designed to fit closely around the crank and in front of the lubricant holding ring 7 enclosed by the circularly curved strip 35. The two sets of tongues are bent to one side or the other of their original positions so as to hold the ring and plate together while preventing separation of the ends of said ring and the whole device as before is held in position against the face of the bearing by the spring 4.

I claim:

1. The combination with the starting crank of a motor vehicle and the bearing for said crank, of a lubricant impregnated ring mounted on said crank adjacent the bearing; a washer formed to permit of its application to said crank; with a spring for moving the crank longitudinally in the bearing and operative on the washer to cause it to retain the lubricant ring in place.

2. The combination with the starting crank of a motor vehicle and the bearing for said crank, of a lubricant impregnated ring mounted on said crank adjacent the bearing; a washer made in a plurality of sections to permit of its application to said crank; with a spring for moving the crank longitudinally in the bearing and operative on the washer to cause it to retain the lubricant ring in place.

3. The combination with the starting crank of a motor vehicle, the bearing for said crank and a coil spring for moving the crank longitudinally of the bearing, of a lubricant impregnated ring mounted on the crank adjacent the bearing; and an internally flanged washer made in a plurality of sections and having its flange inserted in the spring so that it is retained in annular form thereby, said washer being mounted between the end of the spring and the lubricant ring so as to retain it in position.

4. The combination with the starting crank of a motor vehicle, a bearing for said crank and a coil spring for moving the

crank longitudinally of the bearing, of a lubricant impregnated ring mounted on the crank adjacent the bearing; a sectional washer having oppositely extending inner 5 and outer flanges of which the latter extend around and enclose said lubricant ring and the former project into the spring to hold the washer sections from separation.

10 5. The combination with the starting crank of a motor vehicle, the bearing for said crank and a coil spring for moving the

crank longitudinally of the bearing, of a lubricant impregnated ring mounted on the crank adjacent the bearing; a washer made in a plurality of sections and having an ex- 15 ternal flange enclosing the lubricant ring, said flange having its front edge recessed and engaged by the spring to prevent separation of its sections.

In witness whereof I affix my signature. 20

WILLIAM HENRY.