

Fig. 1.

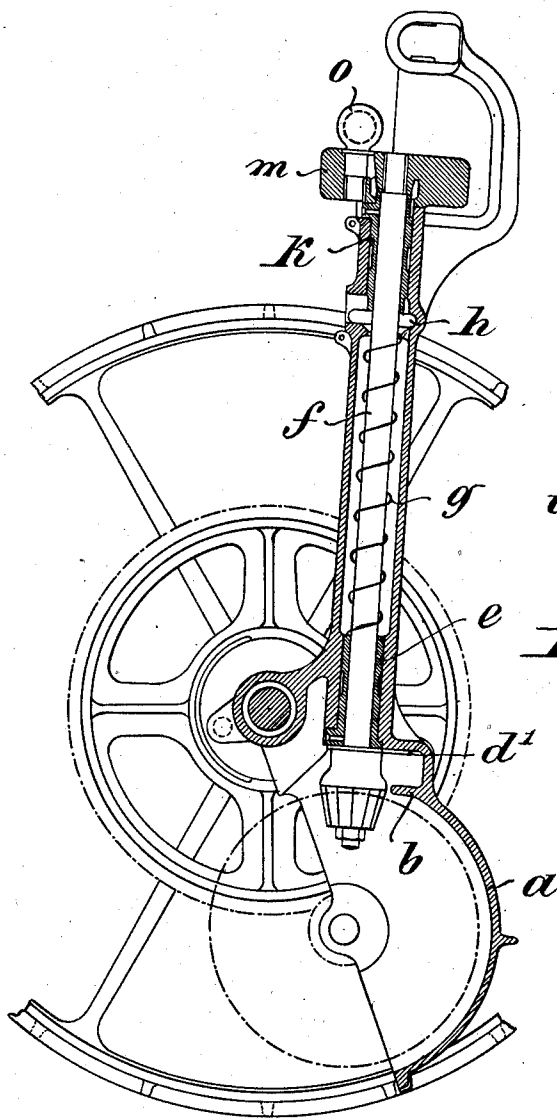


Fig. 3.

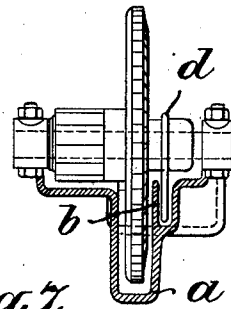


Fig. 7.

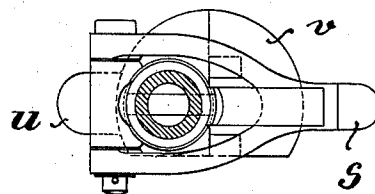
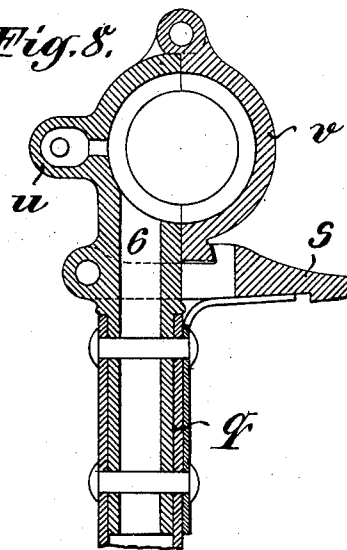


Fig. 8.



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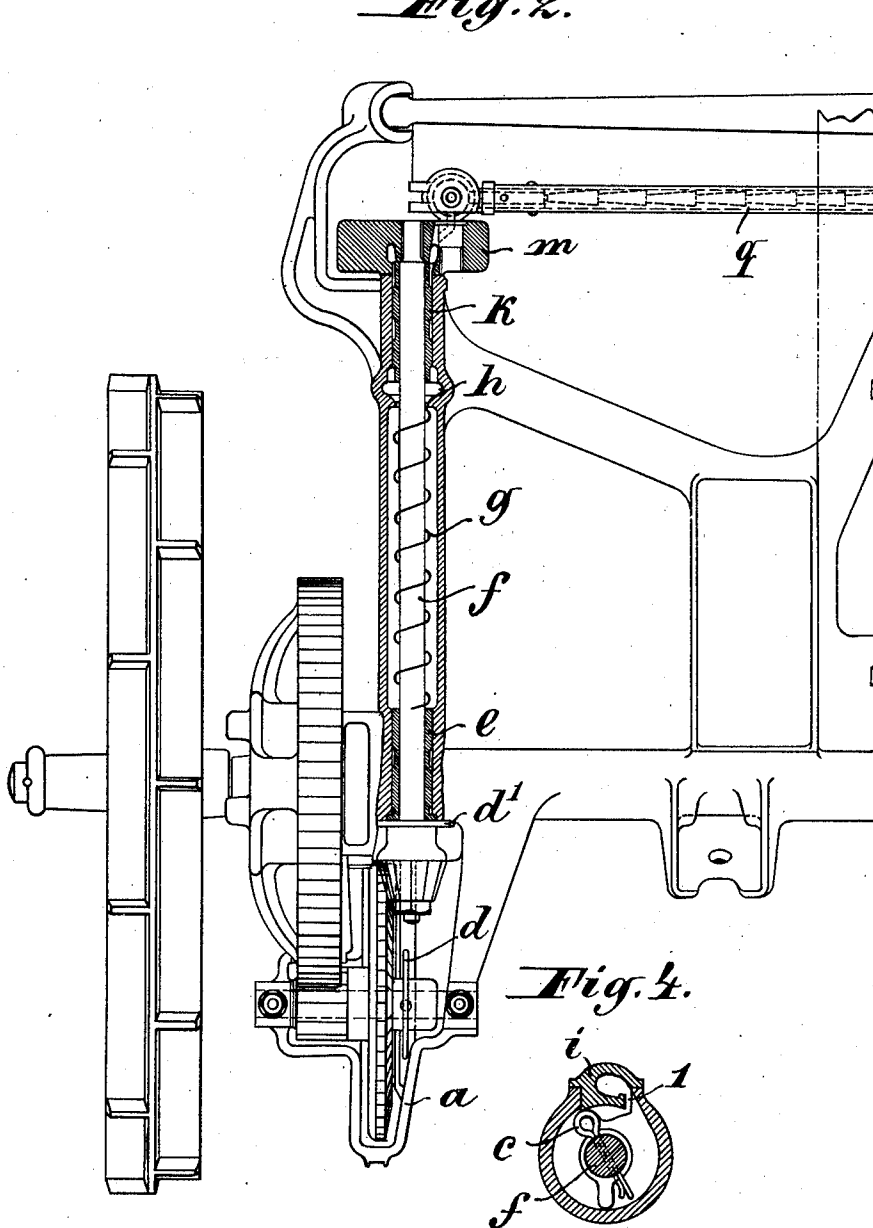
M. SCHILLER.
LUBRICATING DEVICE IN MOWING MACHINES.
APPLICATION FILED JUNE 13, 1910.

1,003,518.

Patented Sept. 19, 1911.

4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 2^a.

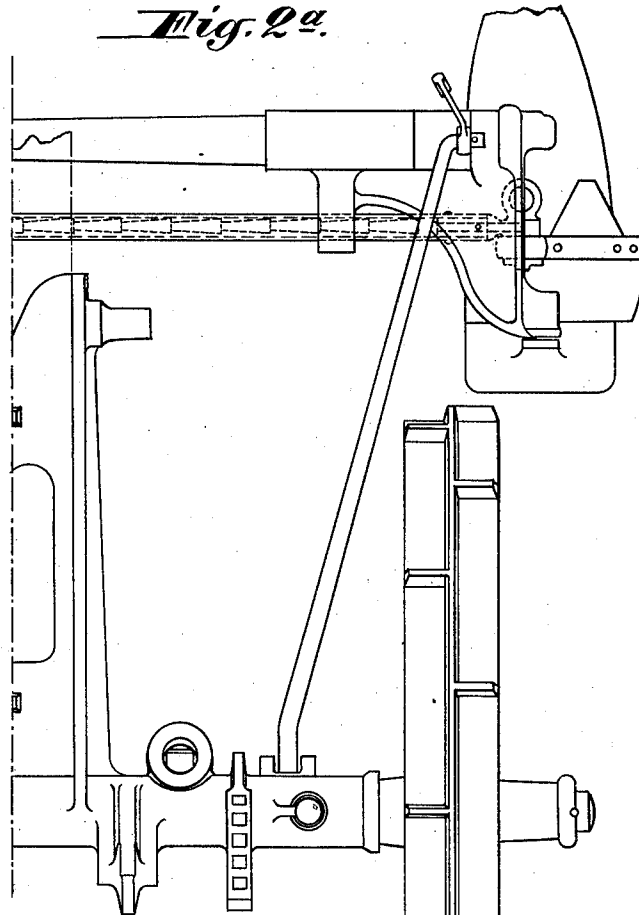
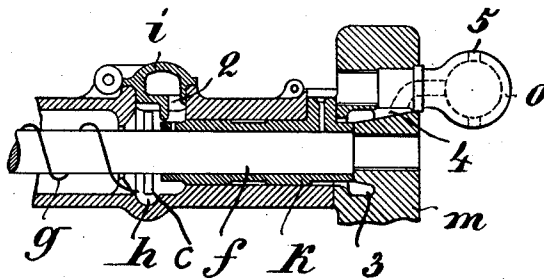


Fig. 5.



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4 SHEETS—SHEET 4.

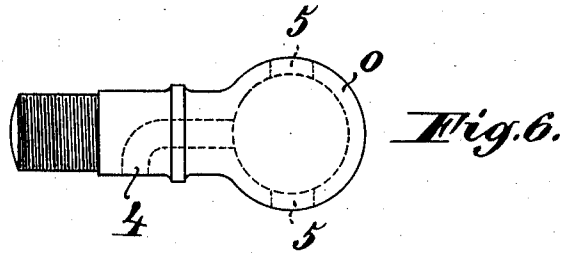


Fig. 10.

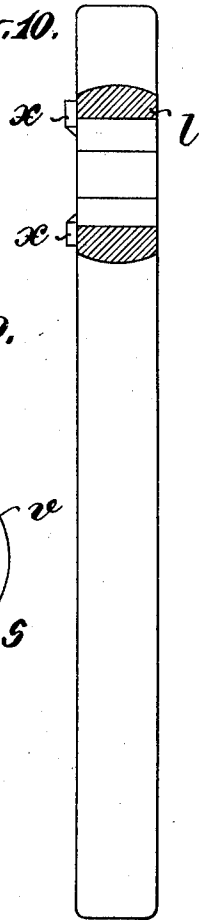


Fig. 11.

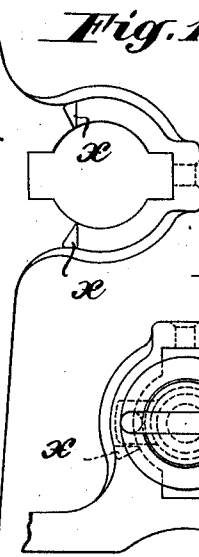


Fig. 9.

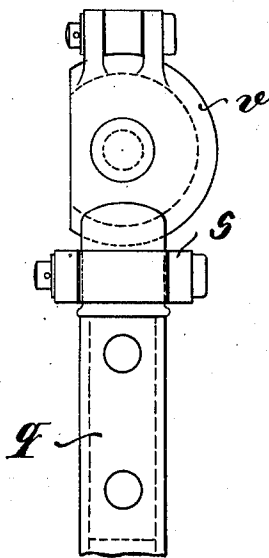


Fig. 12.

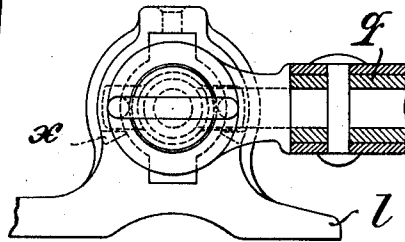
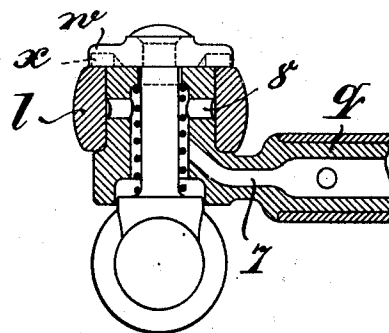


Fig. 13.



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UNITED STATES PATENT OFFICE.

MORITZ SCHILLER, OF BERLIN, GERMANY.

LUBRICATING DEVICE IN MOWING-MACHINES.

1,003,518.

Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed June 13, 1910. Serial No. 566,646.

To all whom it may concern:

Be it known that I, MORITZ SCHILLER, of Berlin, Germany, a subject of the King of Prussia, and whose post-office address is No. 5 Landshterstrasse, Berlin, Prussia, German Empire, have invented a new and useful Lubricating Device in Mowing-Machines, of which the following is a specification.

Lubricating devices in mowing machines wherein some of the rapidly moving parts of the machine are provided with individual lubricating means, are well-known.

The present invention, however, has for its object to supply lubricant in an automatic manner from a central point, continually and uninterruptedly to all the parts moving at high speed and subjected to strong wear. These parts, for instance, are in a mower, firstly the journal or bearings of the transmission gear; secondly the rear bearing of the cutter driving-shaft; thirdly, the forward bearing thereof; fourthly, the wrist pin; fifthly, the joint between the connecting rod and cutter head, and sixthly the cutter head guide.

In the accompanying drawings, several views and sections of a mower provided with a lubricating device according to the present invention are represented, Figure 1 being a section taken through the mower parallel with the cutter driving shaft. Figs. 2 and 2^a show a top plan view of a mower with the bearings of the cutter driving shaft in horizontal section. Fig. 3 is a vertical section taken through the gear casing parallel with the stub shaft. Fig. 4 is a cross section of the cutter driving shaft casing. Fig. 5 is a vertical longitudinal section of the forward cutter driving shaft bearing and of the crank disk. Figs. 6 to 9 illustrate a hollow ball shaped crank pin and the head of the connecting rod formed in two halves, and Figs. 10 to 13 represent the connection between the connecting rod and cutter head (cross head).

One portion of the gear housing *a* is provided with a rib or web *b* (Figs. 1 and 3) so as to form an oil well, which, in plan, presents a T-shaped cross section. From this well the oil is fed by lubricating ring *d* to the intermediate gear loosely mounted on a shaft which does not partake in the rotation. A second lubricating ring *d'* conveys the oil from the same well to the rear bearing *e* of the cutter driving shaft. As the cutter

driving shaft *f* is inclined, the oil flows through the bearing *e* and is rapidly conveyed by a coiled steel wire *g* to an oil collecting chamber *h*. The wire *g* is when seen from *a* to *h* in Fig. 2 wound in the direction of the rotation of the shaft *f* and surrounds this shaft snugly. One end of the wire coil is inserted in a recess in the shaft casing so as to be prevented from partaking in the rotation of the shaft. This arrangement offers the advantage that the oil is conveyed more or less rapidly along the conveying coil, according to the number of revolutions of the shaft or according to the pitch of the coil windings, without any material losses due to centrifugal action, and without being influenced by the position of the shaft, that is to say the oil is conveyed uniformly in downward, horizontal, or in upward direction.

The oil which has collected in the chamber *h* is set in revolving motion by a pin or paddle *c* (Figs. 4 and 5) in or on the shaft *f*, and flows into the opening 1 of the cover *i*, which it traverses and upon leaving at 2 drops into the forward bearing *k* of the cutter driving shaft. After traversing this bearing which is provided with a groove, the oil passes into an annular passage 3 in the crank disk *m*, whence it traverses in consequence of centrifugal action, the passage 4 therein and enters the hollow ball shaped wrist pin *o*. Leaving this pin through an aperture 5 the oil lubricates the pin bearing (Figs. 6 to 9) which is formed by two hemispherical shells *u* and *v* hinged together, and held together by a closing lever or catch *s*, after which it passes through the passage 6 into the hollow connecting rod *q*.

The reciprocating movement and oblique position of the rod *q* and the movement of a feed bar freely arranged in the connecting rod and composed of a series of cones, causes the oil to pass to the connection between the connecting rod and the cutter head *l*. As shown in Figs. 10 to 13 the connection between the connecting rod and cutter head is such that any friction occurring therein is as small as possible, and that all of its constituents receive oil through the passages 7 and 8. The pin of the connecting rod and the cutter head are held together by means of a lug or pin *w* which at one side carries a hammer head and on the other an eye. The hammer head is introduced through correspondingly shaped recesses in the cutter head *l* and on

being turned through a right angle is moved over the small wedge-shaped lugs α by which it is held in position. The oil dropping from this connection passes to the cutter head guide. The oil may drop from this connection from the under recess in the cutter head l (Fig. 12) down into the guiding surface for the cutter head.

What I do claim as my invention, and desire to secure by Letters Patent of the United States, is:—

1. In automatic lubricating devices for mowing machines, the combination with the cutter driving shaft, connecting rod, cutter head, and connection between said rod and head, of a casing having an oil well, means for carrying free oil from said oil well to the cutter driving shaft, and means for conveying the oil sequentially along said shaft from end to end thereof to and through the connecting rod to said connection between the connecting rod and cutter head, substantially as set forth.

2. In automatic lubricating devices for mowing machines, the combination with a gear, cutter driving shaft and its bearings, of a casing provided with an oil well within the same, a lubricating ring for carrying the oil from said oil well to the gear, a lubricating ring for feeding the oil to the bearing at one end of the cutter driving shaft, a stationary wire coil on the cutter driving shaft, the casing being provided with an intermediate oil well to which the oil is conveyed by the wire coil, and means for supplying the oil to the bearing at the other end of the cutter driving shaft, substantially as described.

3. In automatic lubricating devices for mowing machines, the combination with the gear, and the cutter driving shaft and its bearings, of a casing provided with an oil well therein, a lubricating ring for carrying the oil from the oil well to the gear, a lubricating ring for feeding the oil to the bearing at one end of the cutter driving shaft, a stationary wire coil on said shaft, the casing being provided with an intermediate oil well to which the oil is conveyed by the wire coil, a hollow cover for said intermediate oil well provided with a passage, a pin on the cutter driving shaft within said intermediate oil well adapted to throw the oil contained therein into said passage in the cover of said oil well, and means for supplying said oil to the forward bearing of the cutter driving shaft, substantially as set forth.

4. In automatic lubricating devices for mowing machines, the combination with the gear, cutter driving shaft, and its bearings, of a casing provided with an oil well therein, a lubricating ring for carrying the oil from said oil well to the gear, a lubricating ring for feeding the oil to the bearing at one end of the cutter driving shaft, a stationary wire coil on said shaft, the casing being

provided with an intermediate oil well to which the oil is conveyed by said wire coil, a cover for said intermediate oil well provided with a passage, a pin on the cutter driving shaft within said intermediate oil well adapted to throw the oil contained therein into said passage, a crank at the end of the cutter driving shaft having oil passages adjacent the forward bearing and connected therewith, a hollow crank pin communicating with said oil passages, and a hollow connecting rod, said crank pin having apertures for the passage of the oil to said hollow connecting rod, substantially as described.

5. In automatic lubricating devices for mowing machines, the combination with the gear, cutter driving shaft, and its bearings, of a casing having an oil pocket within the same, a lubricating ring for carrying the oil from said oil well to said gear, a lubricating ring for feeding the oil to the bearing at one end of the cutter driving shaft, a stationary wire coil on said shaft, the casing being provided with an intermediate oil well to which the oil is conveyed by said wire coil, a cover for said intermediate oil well provided with a passage, a pin on the cutter driving shaft within said intermediate oil well adapted to throw the oil contained therein into said passage in said cover, a crank at the end of the cutter driving shaft having oil passages adjacent to the forward bearing and connected therewith, a hollow crank pin communicating with said oil passages, a hollow inclined connecting rod, a cutter head, a joint between said connecting rod and cutter head, and means for feeding the oil through the connecting rod from the crank pin to said joint, substantially as set forth.

6. In automatic lubricating devices for mowing machines, the combination with the gear, cutter driving shaft, and its bearings, of a casing having an oil pocket within the same, a lubricating ring for carrying the oil from said oil well to said gear, a lubricating ring for feeding the oil to the bearing at one end of the cutter driving shaft, a stationary wire coil on said shaft, the casing being provided with an intermediate oil well to which the oil is conveyed by said wire coil, a cover for said intermediate oil well provided with a passage, a pin on the cutter driving shaft within said intermediate oil well adapted to throw the oil contained therein into said passage in said cover, a crank at the end of the cutter driving shaft having oil passages adjacent the forward bearing and connected herewith, a hollow crank pin communicating with said oil passages, a hollow inclined connecting rod, and means freely movable in said connecting rod for feeding the oil therethrough, substantially as described.

7. In automatic lubricating devices for mowing machines, the combination with the gear, cutter driving shaft, and its bearings, of a casing having an oil pocket within the same, a lubricating ring for carrying the oil from said oil well to said gear, a lubricating ring for feeding the oil to the bearing at one end of the cutter driving shaft, a stationary wire coil on said shaft, the casing being provided with an intermediate oil well to which the oil is conveyed by said wire coil, a cover for said intermediate oil well provided with a passage, a pin on the cutter driving shaft within said intermediate oil well adapted to throw the oil contained therein into said passage in said cover, a crank at the end of the cutter driving shaft having oil passages adjacent to the forward bearing and connected therewith, a hollow crank pin communicating with said oil passages, a hollow inclined connecting rod, and an oil feeder in said connecting rod composed of a plurality of cones adapted to freely reciprocate therein, substantially as described.

8. In automatic lubricating apparatus for mowers, the combination with driving gearing, a cutter driving shaft, a cutter, and a tubular connecting rod, of a casing containing the driving gearing and provided with an inside oil well, and means for conveying oil from said oil well to the cutter driving shaft, and thence to the tubular connecting rod and through the same to the cutter.

9. In automatic lubricating apparatus for mowers, the combination of a cutter-driving

shaft, a cutter head, a hollow connecting rod between the cutter head and the cutter-driving shaft, an oil well adjacent the end of the shaft, and a device in said oil well to convey oil therefrom to the shaft, said shaft, connecting rod, and cutter head being provided with bearings and joints having communicating passages therethrough whereby the oil will flow freely along the shaft, and then sequentially through the joint between the same and the connecting rod, through the connecting rod, and through the joint between the same and the cutter head.

10. In automatic lubricating mechanism for mowers the combination of a cutter-driving shaft, rear and forward bearings therefor, a casing having oil wells adjacent the rear ends of the bearings, a hollow cover for the forward oil well having openings in its bottom communicating respectively with said oil well and said bearing, means in the rear oil well to convey oil to the shaft, means to cause the oil to travel along the shaft to and into the forward oil well, and means on the shaft playing in the said forward oil well to cause the oil therein to enter the hollow cover whence it will flow into the forward bearing.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MORITZ SCHILLER.

Witnesses:

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WOLDEMAR HAUPT.