June 16, 1925. 1,541,866

M. SORENSEN

AUTOMATIC OIL FEEDING APPARATUS

Filed Oct. 15, 1920

Fig. 1.

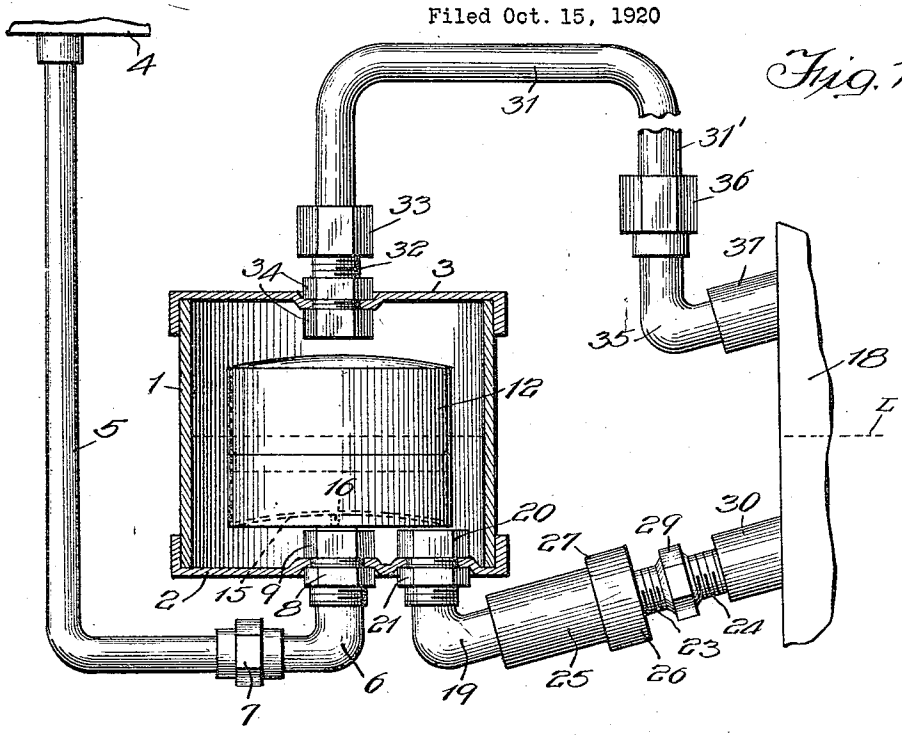


Fig. 2.

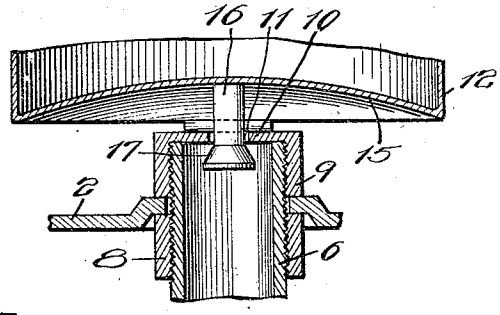
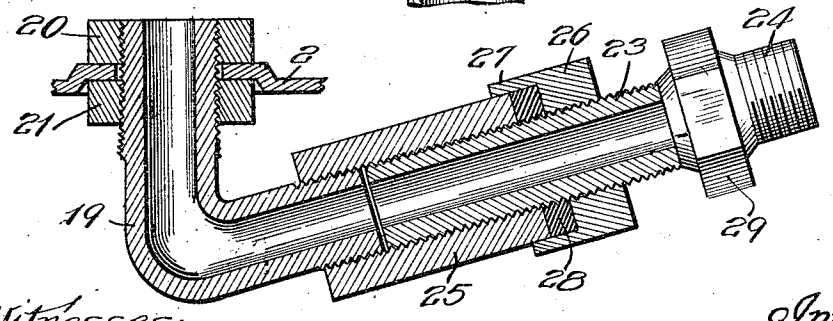


Fig. 3.



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UNITED STATES PATENT OFFICE.

MARTIN SORENSEN, OF CHICAGO, ILLINOIS.

AUTOMATIC OIL-FEEDING APPARATUS.

Application filed October 15, 1920. Serial No. 417,124.

To all whom it may concern:

Be it known that I, MARTIN SORENSEN, a citizen of the Dominion of Canada, and resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in an Automatic Oil-Feeding Apparatus, of which the following is a description.

My invention belongs to that general class of devices known as automatic feeding apparatus, which may be employed for feeding lubricating oil or any other like fluid to a desired point for desired purposes. The device illustrated is particularly intended to automatically feed lubricating oil to the crank case or the like, of an internal combustion engine so as to maintain substantially a constant quantity of lubricating oil in the crank case at all times. The invention has among its objects the production of a device of the kind described that is simple, convenient, compact, durable, efficient and satisfactory for use wherever found applicable. The same has particularly as an object the production of a device of the kind described that will automatically perform its functions so as to maintain the desired amount of oil available for use, and at the same time prevent an excess amount entering the crank case from the source of supply. Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosures herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts,

Figure 1 is a view partly in section and partly in elevation illustrating my device installed;

Fig. 2 is an enlarged sectional view through a portion of the float inlet pipe and casing; and

Fig. 3 is an enlarged sectional view of the discharge pipe from the device.

Referring to the drawings, 1 represents a shell or casing member provided with end or bottom and top parts 2 and 3, the parts being of suitable material, size and shape, and secured together to form the casing in any desired or preferred manner. The casing is suitably connected with a source of fluid supply, in the case illustrated with an oil tank 4, only a portion of the tank 4 being shown. As shown, 5 is a pipe or conductor which is connected to the elbow or part 6 by a union 7 or equivalent coupling means. As shown, the elbow or part 6 is secured to the bottom of plate 2 of the casing by nuts 8 and 9, it being understood that any suitable equivalent means may be employed for the purpose. As most clearly shown in Fig. 2, the part 6 is of a length to extend within the casing and the member 9 formed with the flange 10 having a port or opening 11 therethrough. Arranged within the casing is a float 12 of suitable size, shape and material, a chambered metal float being shown for the purpose of illustration. The particular float shown is preferably provided with a concave bottom 15 which carries a valve stem 16 of a size to project through the opening 11 in partition 10, and provided with a valve 17 on the under side of the partition arranged to close the opening when the float is in raised position.

I have illustrated in Fig. 1 a portion of the engine crank case 18. The casing 1 is provided with an outlet or discharge port connected with the elbow or pipe 19, which may be secured to the bottom 2 of the casing by nuts 20 and 21, or equivalent means for the purpose. In the particular type of crank case shown, there are provided ports or openings through the projections or lugs 30 and 37, to which pet cocks are ordinarily applied, and which normally prevent the escape of the lubricating oil from the crank case through the openings. With my apparatus I remove the pet cocks, and at the part 30 connect the conduit or pipe 19. In the construction shown, 23 is a part constructed at 24 to be threaded in the opening in the lug 30 to take the place of the pet cock. Arranged on the parts 19 and 23, and operatively connecting the two, is a sleeve 25. Also arranged on part 23 is a nut 26 which is preferably provided with a flange 27 of a size to overlie a portion of the sleeve 25. Arranged in the recess formed by the flange is a gasket or washer 28 of rubber or equivalent which may be compressed and afford a tight joint when the nut is turned down. This construction permits the device to be installed as desired. I have illustrated part 23 formed with a

part 29 for engagement with a wrench so that part 23 may be conveniently applied to the crank case.

The casing 1 is also preferably connected with the pet cock opening at the lug 37. As shown, there is provided a pipe 31 which is connected to a nipple 32 by a coupling 33, the nipple being secured to the top 3 of the casing by the nuts 34 or equivalent means for the purpose and extends through a port in said top 3. The pipe 31 extends upwardly and laterally, and the end is preferably turned downward as indicated at 31′ and connected by a coupling 36 or the equivalent to the pipe or elbow 35 which is inserted in the lug 37 in lieu of the pet cock referred to.

The operation of my device may be briefly described as follows: Assuming that the device is connected substantially as shown in Fig. 1 with a source of oil supply and with the crank case of the engine. It may be mentioned that the parts are preferably so constructed and arranged that the level of the oil in the crank case will be maintained substantially at the point indicated by the dotted lines L. When the engine is at rest the level of the oil in the casing will be substantially at the same level as in the crank case. At this time the oil in the casing will maintain the float raised so that valve 17 will be shut, consequently no oil may flow into the casing from the source of supply or tank 4. When the engine is started the oil level in the crank casing will be lowered or changed owing to a portion of the oil being splashed or circulated to lubricate the engine parts. At the same time there will be a tendency for the level of the oil in the casing 1 to drop, as a portion of the oil can flow through the pipe 19 to part 23 into the crank case. At the same time a portion of the oil on the inner wall of the crank case eventually flows into the part 35 and perhaps partly in pipe end 31′, thereby forming a seal and tending to prevent the air in the crank case from entering through pipe 31 and into the casing. The level to which the oil will rise in the part 35 and pipe 31′ may vary under different conditions. When the oil enters pipe 35 and 31′, withdrawal of oil through pipe 19 tends to cause a partial vacuum in the casing 1, thereby retarding any flow of the oil through the part 19 into the crank case. By retarding the flow of the oil from the casing, float 12 does not immediately lower and consequently valve 17 is maintained closed and the entrance of oil from supply tank 4 prevented until such time as there may not be sufficient oil in the system, at which time the level of the oil in the casing will have reached a point where the float will automatically open the valve 17 and admit more oil. It should be noted, however, that in the preferred construction the device is preferably so constructed, adjusted and installed that the new oil is not admitted at intervals, but rather admitted in minute quantites almost continually, the amount admitted, however, not being in excess of the amount used up, wasted or dissipated in the crank case. The result is, therefore, that there is substantially always a constant or measured amount of oil in the crank case. When the engine has been running and is stopped, the level of the oil in the crank case returns to normal, the same also being normal in the casing. It will be noted that the casing 1 is always vented through the pipe 31 except at such times as the engine may be running, in which the oil automatically closes the vent, so that the device will not at any time air-lock and thereby become inoperative.

The device is not affected by vibration, jolting or weather conditions, and after the same is once installed there are no adjustments or regulations necessary to keep the same in operative running condition. With the present device installed on an engine, it will be noted that the engine may be run for considerable periods, depending upon the size of the reserve tank 4, without any attention being given to the supplying of lubricating oil to the crank case. On a long trip, or at all times, so long as there is oil supplied to the tank 4 a substantially constant quantity of oil is maintained in the crank case, thereby affording efficient and perfect lubrication. With this apparatus the engine is not run at times with an excessive amount of oil and then at other times with an insufficient quantity of oil, but on the contrary, the same is continually operated with a quantity of oil in the crank case just sufficient to give the most efficient operation and maintenance of the engine.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the kind described and in combination, a casing provided with an inlet and outlet, and with a third port, means for connecting said inlet with a source of supply, means for connecting said outlet with an oil container, conduit means between said third port and said container in free communication with both and forming an air seal therebetween, and means in said casing for automatically controlling the ad-

mission of fluid from said source of supply through said inlet.

2. In an automatic fluid feeding apparatus of the kind described and in combination, a receptacle provided with ports above and below the normal level of the fluid therein, a casing provided with an outlet adjacent the lower portion thereof, means for connecting said outlet with the lower port in said receptacle, a vent pipe communicating with the interior of said casing adjacent the top thereof and extending above the upper port in said receptacle and thence downwardly therebelow and thence upwardly to and communicating therewith, said casing having an inlet, means for supplying a fluid to said casing through said inlet, a valve at said inlet, and a float operable at a predetermined level of fluid in the casing for actuating said valve.

3. In a device of the kind described and in combination, an oil container adapted to contain fluid and having ports above and below the normal level of the fluid therein, a closed casing provided with an inlet, an outlet, and a third port, piping means for connecting said inlet to a source of fluid supply, piping connected to said outlet with the lower port of the oil container, said piping extending downwardly below said outlet and said lower port, a second piping means connected to the third port and extending upwardly above the casing and the container, and then downwardly below the upper port and then upwardly to a connection with said upper port, and fluid controlled means in said casing for automatically controlling the admission of fluid through said inlet.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

MARTIN SORENSEN.

Witnesses:
JENS N. CHRISTENSEN,
ROY W. HILL.