

J. T. THOMPSON.
 CARTRIDGE LUBRICATOR.
 APPLICATION FILED APR. 5, 1918.

1,322,271.

Patented Nov. 18, 1919.

3 SHEETS—SHEET 1.

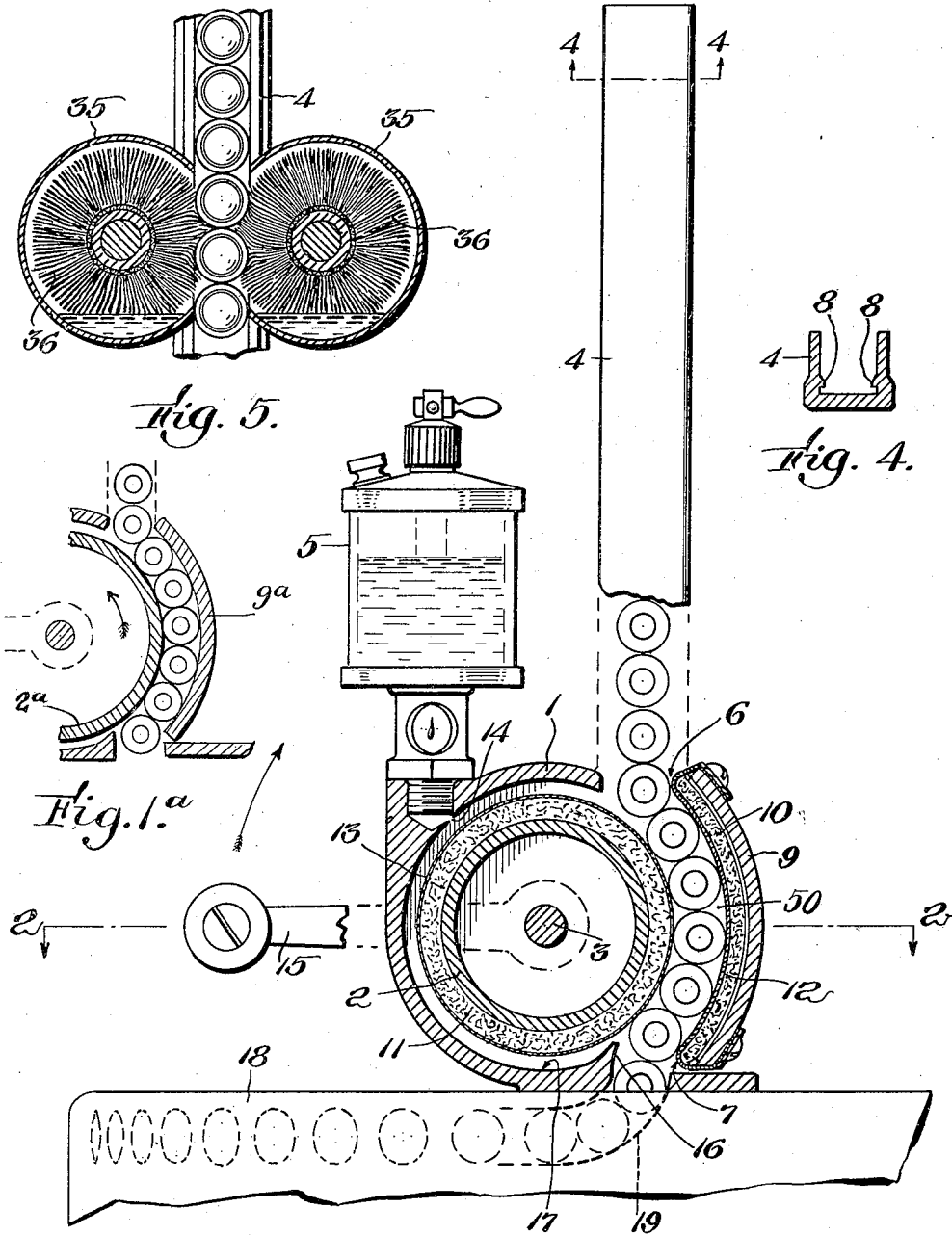


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

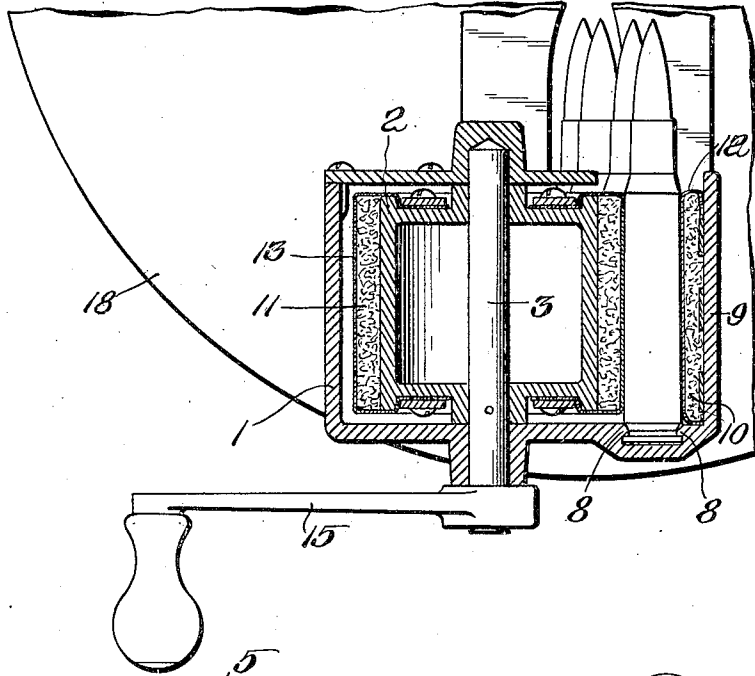
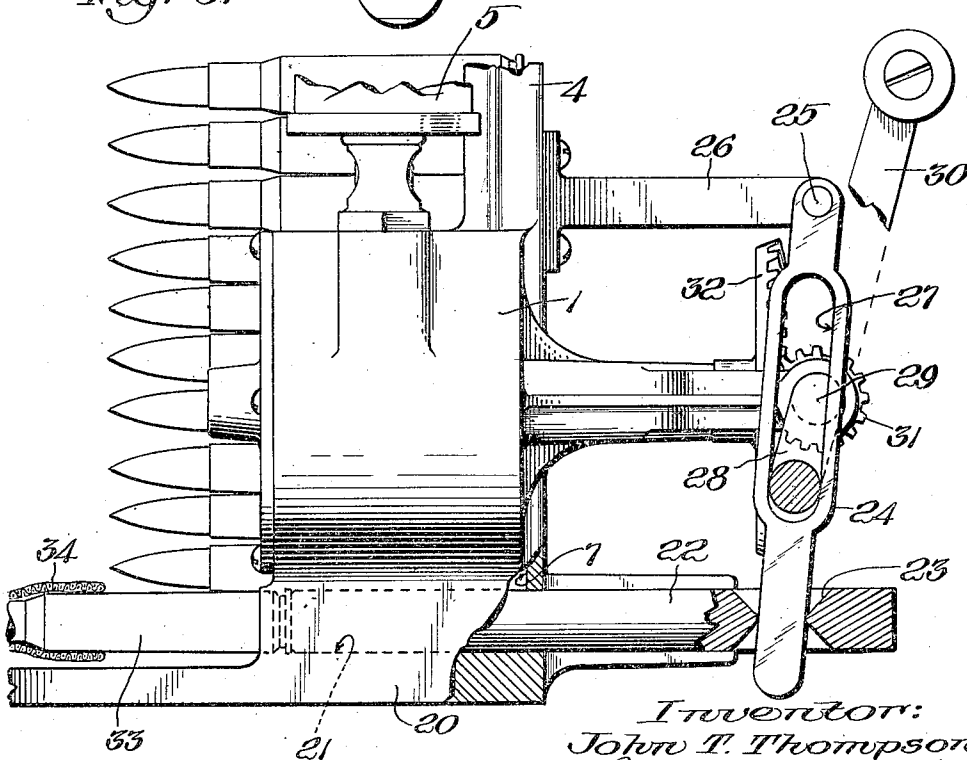


Fig. 3.

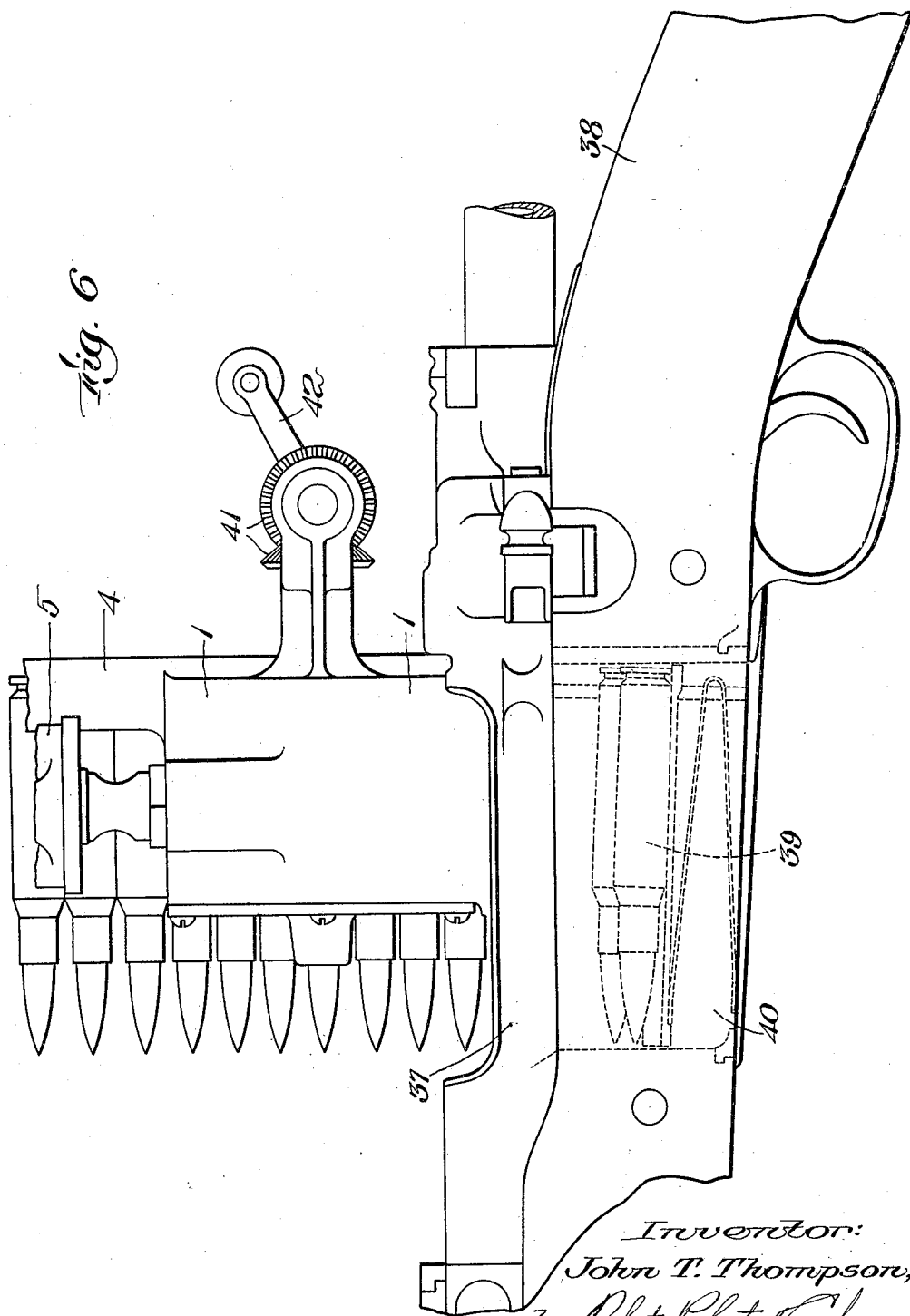


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UNITED STATES PATENT OFFICE.

JOHN T. THOMPSON, OF NEWPORT, KENTUCKY.

CARTRIDGE-LUBRICATOR.

1,322,271.

Specification of Letters Patent.

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Application filed April 5, 1918. Serial No. 226,923.

To all whom it may concern:

Be it known that I, JOHN T. THOMPSON, a citizen of the United States of America, and resident of Newport, in the county of Campbell and State of Kentucky, have invented new and useful Improvements in Cartridge-Lubricators, of which the following is a specification.

This invention relates to apparatus for lubricating cartridges and the like and more particularly to a combined cartridge loader and cartridge lubricator for both feeding cartridges into a cartridge holder and lubricating the cartridges in a single operation.

In many types of firearms employing cartridges it is desirable to lubricate the contacting surfaces between the cartridges and the firing chambers so as to reduce the friction between these surfaces. This is particularly desirable in certain types of automatic guns where the empty shells are automatically ejected before the gas pressure within the shells has been relieved since the gas pressure expands the shells against the circumferential walls of the firing chambers and increases the friction between said surfaces. This friction is frequently so great that the head of a shell is blown off by the gas pressure while the body of the shell is held against the wall of the firing chamber, thereby rendering the gun temporarily inoperative. And even if the results of the high friction are not more disastrous the wear on the firing chamber is so excessive when the cartridges are not lubricated that the life of the gun is unduly shortened.

It has been proposed to lubricate cartridges at the time of manufacture, as by coating the cartridges with a lubricant which is solid at normal temperatures, but this method entails many difficulties which have not as yet been overcome. For example, the coating is likely to become soft and sticky in hot weather, impurities in the coating are apt to cause deterioration of the cartridges, foreign matter is prone to adhere to the coating and carry into the firing chambers, and the guns employing such cartridges frequently become gummed. It has also been proposed to provide lubricating brushes on the boxes or cases in which the cartridges are transported in clips so that the cartridges are brushed with lubricant as the clips are removed from the cases, but this method is obviously impractical; the method is only applicable when the car-

tridges are carried in clips, each carrying case must be provided with brushes, the brushes are apt to become dirty or broken in transit, and the brushes soon become dry and useless.

The principal objects of the present invention are to overcome the aforesaid difficulties, to provide simple and effective means for lubricating the cartridges, to provide means particularly adapted to be employed at the locality where the cartridges are to be fired, and to provide means for lubricating the cartridges while they are being fed to a cartridge holder. In my co-pending application, Sr. No. 175,152, filed June 16, 1917, certain of these objects are attained by means comprising part of the firearm for lubricating the cartridges, but according to the present invention the lubricating means is preferably combined with a loader for filling cartridge holders.

In its broader aspect the present invention comprises a channel adapted to have cartridges fed therethrough and rotary means for lubricating cartridges in transit through the channel. The rotary means may comprise a brush or pad or merely a smooth surface for feeding lubricant to the cartridges or the rotary means may be employed merely to bring the cartridges into contact with a lubricant carrying body. When supplying lubricant to the rotary member the member may be caused to dip into a lubricant reservoir or the lubricant may be supplied to the member at one or more points along its path of rotation as by dropping or spraying lubricant thereupon. The rotary means may be rotated either in the same direction or in the opposite direction to the motion of the cartridges through the channel but it preferably rotates in the same direction so as also to function to feed the cartridges along the channel.

In conjunction with the aforesaid rotary means I preferably employ stationary means disposed in spaced relationship to the rotary means so as to form a passageway therebetween. The stationary means is preferably circular so that the passageway is of substantially uniform width and the width is substantially equal to the diameter of the cartridges to be lubricated so that the cartridges will be engaged on opposite sides. Thus rotation of the rotary means causes the cartridges to roll along the sta-

tionary means, and also along the rotary means in an opposite sense, whereby the cartridges may be thoroughly and uniformly lubricated throughout their entire peripheries. Either one or both of the opposing surfaces of the stationary and rotary means are preferably more or less rough and absorbent so as to roll the cartridges and to carry a substantial amount of lubricant. These characteristics may be afforded by providing pads of absorbent material upon one or both of said means and in the preferred embodiments of my invention I provide such pads upon both means.

In a more limited aspect my invention comprises a combined loader and lubricator adapted to lubricate cartridges as they are fed to a gun magazine or cartridge holder. In this way both the loading and lubricating functions may be effected in a single operation and with little if any more time and energy than is ordinarily needed to load a magazine or holder. My improved apparatus is adapted to any type of cartridge holder whether it be a Lewis drum, a Colt belt, the ordinary rifle magazine, or other type of holder, and this phase of the invention will be more apparent from the following description and the accompanying drawings, in which—

Figure 1 is a side elevation of one embodiment of my invention showing it in operative relationship to the cartridge drum of a machine gun of the Lewis type and showing parts in section;

Fig. 1^a is a view similar to Fig. 1 showing a modification;

Fig. 2 is a horizontal section on line 2—2 of Fig. 1;

Fig. 3 is a side elevational view from the left of Fig. 1, of a modified embodiment of my invention in operative relationship to a machine gun belt of the Colt type;

Fig. 4 is a horizontal section on the line 4—4 of Fig. 1;

Fig. 5 is a side elevation of a further embodiment of my invention, parts being shown in section;

Fig. 6 is a side elevation of an embodiment similar to that shown in Fig. 1, viewed from the left of Fig. 1, showing the apparatus in operative relationship to an ordinary magazine rifle.

The particular embodiment of my invention shown in Figs. 1, 2 and 4, comprises a casing 1, which is in general circular in shape, a rotary member 2 mounted in the casing to rotate with the shaft 3, a channel member 4 mounted above the casing 1 and an oil cup 5 mounted on the casing 1. The rotary member 2 is mounted in the casing 1 so as to rotate in spaced relationship to the inner wall of the casing and at the right-hand side (Fig. 1) of the rotary member the cartridge passageway 50 between the

member and the casing is of substantially the thickness of the cartridges to be lubricated. Openings 6 and 7 are provided at the upper and lower ends of the passageway 50 and the channel member 4 is arranged to extend upwardly from the upper opening 6. The channel 4 is open on one side as shown in Fig. 4 and is provided with two projecting ribs or ridges 8 near the base of the channel to fit into the grooves at the bases of the cartridges. Thus, when cartridges are fed into the channel at the top with the shoulders at the bases of the cartridges fitting into the grooves behind the ribs 8, the cartridges are guided along the channel way and are held therein notwithstanding the fact that they project a considerable distance out of the channel. The ribs or ridges 8 are preferably extended along the passageway 50 in the casing as shown in Fig. 2, so that the cartridges are guided thereby during their passage through the casing.

The opposing faces of the wall 9 of casing 1 and of the rotary member 2 are covered with lubricant carrying pads comprising layers 10 and 11 of felt or other suitable lubricant absorbing material and covers 12 and 13 of leather, fabric, or other suitable material for covering the felt pieces 10 and 11. The oil cup 5 may be of any ordinary or suitable type and is threaded into an opening in the top of the casing 1 so as to communicate with the interior of the casing through the opening 14. A handle 15 is fitted to the outer end of the shaft 3 for the purpose of rotating the member 2. A projecting ridge 16 is provided at the bottom of the casing adjacent the opening 7 so as to form a concavity 17 adapted to contain a pool of oil or other lubricant. The projection 16 extends upwardly somewhat above the level of the lower side of the rotary member 2 so that the rotary member may if desired dip into a pool of oil contained in the concavity 17. At 18 is represented a drum of the Lewis type with its filling opening 19 disposed below and in alinement with the opening 7 at the bottom of the casing 1.

The operation of the apparatus shown in Figs. 1, 2, and 4 is as follows: Cartridges are fed into the channel 4 from the top, as for example, from clips containing five cartridges each, these cartridges passing by gravity to the passageway 50 between the rotary and stationary lubricating pads in the casing 1. The width of this passageway is preferably such that the cartridges wedge in between the two lubricating pads and do not slide freely therethrough. When the rotary pad is rotated in the direction of the arrow (Fig. 1) by means of the handle 15 the cartridges are rolled downwardly along the stationary pad 12 and thence pass

through the opening 7 into the drum 18 where they are forced around the passage-way in the drum by the weight of the cartridges and by the impelling action of the rotary pad 2. As the cartridges are rolled downwardly along the stationary pad they also roll upwardly relatively to the rotary pad. Thus lubricant carried by the pads is effectively and uniformly distributed over the peripheral surfaces of the cartridges. The lubricant may be allowed to accumulate in concavity 17 so that the rotary pad dips thereinto, but I preferably supply oil to the pads merely by dropping it from the opening 14 directly to the rotary pad, the rate of supply being so regulated that no excess of oil will be permitted to accumulate in the concavity 17. The oil dropped to the rotary pad is carried around to the cartridges and they in turn transmit a part of the oil to the stationary pad. Obviously a second source of oil supply may if desired be associated with the stationary pad.

Instead of making both of the lubricating surfaces relatively rough and absorbent one or both of these surfaces may if desired be made smooth. For example, the wall 9^a (Fig. 1^a) may present merely a polished surface so that the lubricant would be applied wholly from the rotary member. Moreover a very light coat of lubricant or other substance may be applied to the cartridges or other articles by making both the wall 9^a and the rotary member 2^a smooth and hard as shown in Fig 1^a. When so constructed the rotary member may advantageously be rotated in a counter clockwise direction that is, in a direction opposite to the direction of motion of the cartridges. The cartridges may then be permitted to pass through the passageway 50 solely by gravity and the counter clockwise motion of the rotary member tends to rotate the cartridges in a clockwise direction.

The embodiment illustrated in Fig. 3 is similar to that shown in Figs. 1, 2 and 4 in that it comprises a casing 1 containing a rotary lubricating member such as 2 in Figs. 1, 2 and 4, a feed channel 4, an oil cup 5, etc. However, the apparatus in Fig. 3 is further provided with a base 20 having an opening 21 passing entirely therethrough immediately below the opening 7 (Fig. 1). In the opening 21 a bolt 22 is reciprocatably disposed. The bolt 22 is provided with an opening 23 through which extends a lever 24 pivotally mounted at 25 on a bracket 26 screwed to the side of the channel 4. The lever 24 is provided with a longitudinal slot 27 throughout the central portion thereof and a crank 28 coöperates with the slot 27 to oscillate the arm 24 back and forth about the pivot 25. The crank 28 is mounted at one end of a shaft 29 and

upon the other end of the shaft is mounted a handle 30 for rotating the shaft. Upon the shaft 29 intermediate its ends is fast a bevel spur gear 31 in mesh with a bevel spur gear 32 fast on the end of a shaft corresponding to shaft 3 in Figs. 1 and 2.

The operation of the apparatus in Fig. 3 is as follows: When the handle 30 is rotated the rotary pad in the casing 1 is rotated as in Figs. 1 and 2 and the rod 22 is reciprocated to and fro. When the rod is in extreme rearward position a cartridge is permitted to pass through the opening 7 (Fig. 1) to the opening 21 (Fig. 3) in advance of the rod and when the rod is then advanced the cartridge is advanced as shown at 33 (Fig. 3). A cartridge belt 34 of the Colt type is fed along in front of the opening 21 by suitable mechanism not shown or by hand and the cartridges are fed into the openings in the belt by means of the reciprocating rod 22.

The modification of my invention illustrated in Fig. 5 resembles the modification shown in the other figures in that it comprises a rotary lubricating member disposed at one side of a channel so as to spread lubricant over the peripheral surfaces of the cartridges as they are fed past the rotary member. It also resembles the other modifications in that it comprises an oil reservoir in which the rotary member is adapted to dip. The construction in Fig. 5 comprises a channel 4 as in the other figures, casings 35 containing rotary brushes 36, the brushes being disposed on opposite sides of the channel. The brushes 36 may be of any suitable construction adapted to spread a thin film of lubricant over the surfaces of the cartridges and any suitable means may be employed to rotate the brushes. The brushes may be driven in the same or opposite directions or they may be arranged to be rotated in opposite directions by the cartridges passing therebetween. When rotated in the same direction, for example in a clockwise direction, they have a tendency to rotate the cartridges in the same direction, one brush moving upwardly along one side of the cartridges and the other side moving downwardly along the other side. This serves uniformly and effectively to lubricate the cartridges throughout their entire surface. Owing to the fact that the cartridges extend outwardly from the channel, one side of which is open, they can be lubricated throughout substantially their entire length by means disposed wholly in front of the channel.

The modification shown in Fig. 6 is similar to that shown in Figs. 1 and 2, except in that it is adapted to fill the magazines of ordinary service rifles instead of filling a drum of the Lewis type. The casing 1 is so shaped at the bottom that it will fit

into the receiver 37 of a rifle 38 with the opening 7 (Fig. 1) disposed in alinement with the receiver openings so that cartridges 39 may be fed into the magazine 40 of the drum. The modification in Fig. 6 also differs from that shown in Figs. 1 and 2 in that the rotary lubricating member in the casing 1 is driven through spur gears 41 by handle 42 instead of directly by a handle as in Figs. 1 and 2.

The operation of the modification shown in Fig. 6 is as follows: The lubricating apparatus may be rigidly mounted from the side in any suitable manner so that a rifle may be placed thereunder as shown in the figure. Means may be provided for holding the rifle in this position but in view of the short time required to fill the magazine of a rifle it is preferably held in position during filling merely by hand.

In Figs. 1 to 4 and Fig. 1^a, the channel 4 and passageway 50 together form a guideway through which cartridges may be fed downwardly from the receiving opening at the top of channel 4 to the delivery opening at the bottom of the passageway 50, the cartridges being lubricated in transit through this guideway. Likewise in Fig. 5 the channel 4 comprises a guideway in which the cartridges are lubricated in transit from the receiving opening at the top to the delivery opening at the bottom. In Figs. 1 to 4 and in Fig. 6 the cartridges are fed through the guideway partly by gravity and partly by the rotating drum, the proportion between the two effects depending upon the snugness with which the cartridges fit between the two circular members, while in Fig. 5 the cartridges are fed solely by gravity.

While my improved apparatus may be employed at any locality for applying lubricant or other coating to cartridges or other articles, I have adapted it especially for use at the locality where the cartridges are to be employed, inasmuch as many disadvantages are eliminated by lubricating the cartridges at the point of use as they are being fed into the holder from which they are to be fired.

What I claim is:

1. A cartridge lubricator comprising a member having a stationary lubricant carrying face and means for rolling cartridges along said face to apply lubricant thereto.
2. A cartridge lubricator comprising a channel adapted to have cartridges fed therethrough, the channel having a lateral lubricant carrying face adapted to apply lubricant to the cartridges in transit therealong.
3. A cartridge lubricator comprising a channel adapted to have cartridges individually fed therethrough, the channel having a movable lubricant carrying device at one

side thereof adapted to apply lubricant to the cartridges in transit therealong.

4. A cartridge lubricator comprising means for applying lubricant to the cases of the cartridges, and means for rotating the cartridges about their own axes in association with said means to apply lubricant to substantially the entire periphery of the cases.

5. A cartridge lubricator comprising a channel arranged to have cartridges fed therethrough at least in part by gravity, and means arranged to contact with the cases of the cartridges in transit through said channel for applying lubricant thereto.

6. A cartridge lubricator comprising a vertically disposed guideway adapted to have cartridges fed downwardly therethrough, the guideway having a receiving opening therein and having a delivery opening below the level of the receiving opening, and means disposed along said guideway between said openings for lubricating the cartridges in transit along the guideway.

7. Apparatus for lubricating cartridges comprising an elongate member having a lubricant carrying face the width of which is at least approximately equal to the length of the cartridges, and means for moving cartridges along said face with the cartridges extending transversely of said face to apply lubricant to the cartridges.

8. Apparatus for lubricating cartridges comprising an elongate member having a lubricant carrying face the width of which is at least approximately equal to the length of the cartridges, and means for rolling cartridges along said face longitudinally of said member to apply lubricant to the cartridges.

9. Apparatus for lubricating cartridges and the like comprising a channel adapted to have cartridges fed therethrough, and a lubricator for lubricating cartridges in transit through said channel, the lubricator extending substantially the full width of the channel so as to lubricate the cartridges throughout substantially their full length.

10. Apparatus for lubricating cartridges and the like comprising a channel adapted to have cartridges fed therethrough, means associated with said channel for lubricating the cartridges including a rotary member arranged both to advance the cartridges along the passageway and to apply lubricant thereto.

11. Apparatus for lubricating cartridges and the like comprising a channel adapted to have cartridges fed therethrough, rotary means for feeding cartridges through said channel, and means on said rotary means for lubricating cartridges in transit through said channel.

12. Apparatus for lubricating cartridges and the like comprising a circular member

arranged to rotate about its axis, another member disposed in spaced relationship to the circular member so as to form a passageway therebetween, and means for supplying lubricant to the face of one of said members to lubricate cartridges in transit through said passageway.

13. Apparatus for lubricating cartridges and the like comprising a circular member arranged to rotate about its axis, another circular member disposed in spaced relationship to the first circular member so as to form therebetween a passageway of substantially uniform width, and means for supplying lubricant to the face of one of said members to lubricate cartridges in transit through said passageway.

14. Apparatus for lubricating cartridges and the like comprising a circular member arranged to rotate about its axis, another circular member disposed in spaced relationship to the first circular member so as to form therebetween a passageway of substantially uniform width, and means for supplying lubricant to the portions of the cartridges which pass through said passageway between said members, the width of the passageway being substantially equal to the diameter of the cartridges so that rotation of the rotary member rotates the cartridges and distributes lubricant therearound.

15. Apparatus for lubricating cartridges and the like comprising a circular member arranged to rotate about its axis, another member disposed in spaced relationship to the circular member so as to form a passageway therebetween, and a lubricating pad mounted on the face of one of said members.

16. Apparatus for lubricating cartridges and the like comprising a circular member arranged to rotate about its axis, another circular member disposed in spaced relationship to the first circular member so as to form therebetween a passageway of substantially uniform width, and a lubricating pad mounted on the face of one of said circular members.

17. Apparatus for lubricating cartridges and the like comprising a circular member arranged to rotate about its axis, another

member disposed in spaced relationship to the circular member so as to form a passageway therebetween, and lubricating pads mounted on the opposed faces of said members.

18. Apparatus for lubricating cartridges and the like comprising a casing, a circular member rotatably mounted in said casing, the casing having a wall disposed in spaced relationship to the circular member to form a passageway therebetween, the casing having openings to feed cartridges to and from said passageway, and means for supplying lubricant to said circular member to lubricate cartridges in transit through said passageway.

19. Apparatus for lubricating cartridges and the like comprising a casing, a circular member rotatably mounted in said casing, the casing having a wall disposed in spaced relationship to the circular member on one side thereof to form a passageway therebetween, and having openings at each end of the wall for feeding cartridges to and from the passageway, and a lubricant reservoir in said casing into which the circular member is arranged to dip to carry lubricant to the cartridges in transit through said passageway.

20. Apparatus for lubricating cartridges and the like comprising a channel adapted to have cartridges fed therethrough, a member rotatably mounted at one side of the channel so as to contact with cartridges passing therethrough, and a lubricant reservoir into which the rotary member is adapted to dip to carry lubricant to the cartridges in transit through the channel.

21. In apparatus of the character described the combination of a channel adapted to have cartridges fed therethrough, means for lubricating the cartridges as they are fed therethrough, and means for attaching the delivery end of the channel to a firearm magazine so as to deliver the lubricated cartridges directly into the magazine.

Signed by me at Washington, D. C., this 1st day of April, 1918.

JOHN T. THOMPSON.