

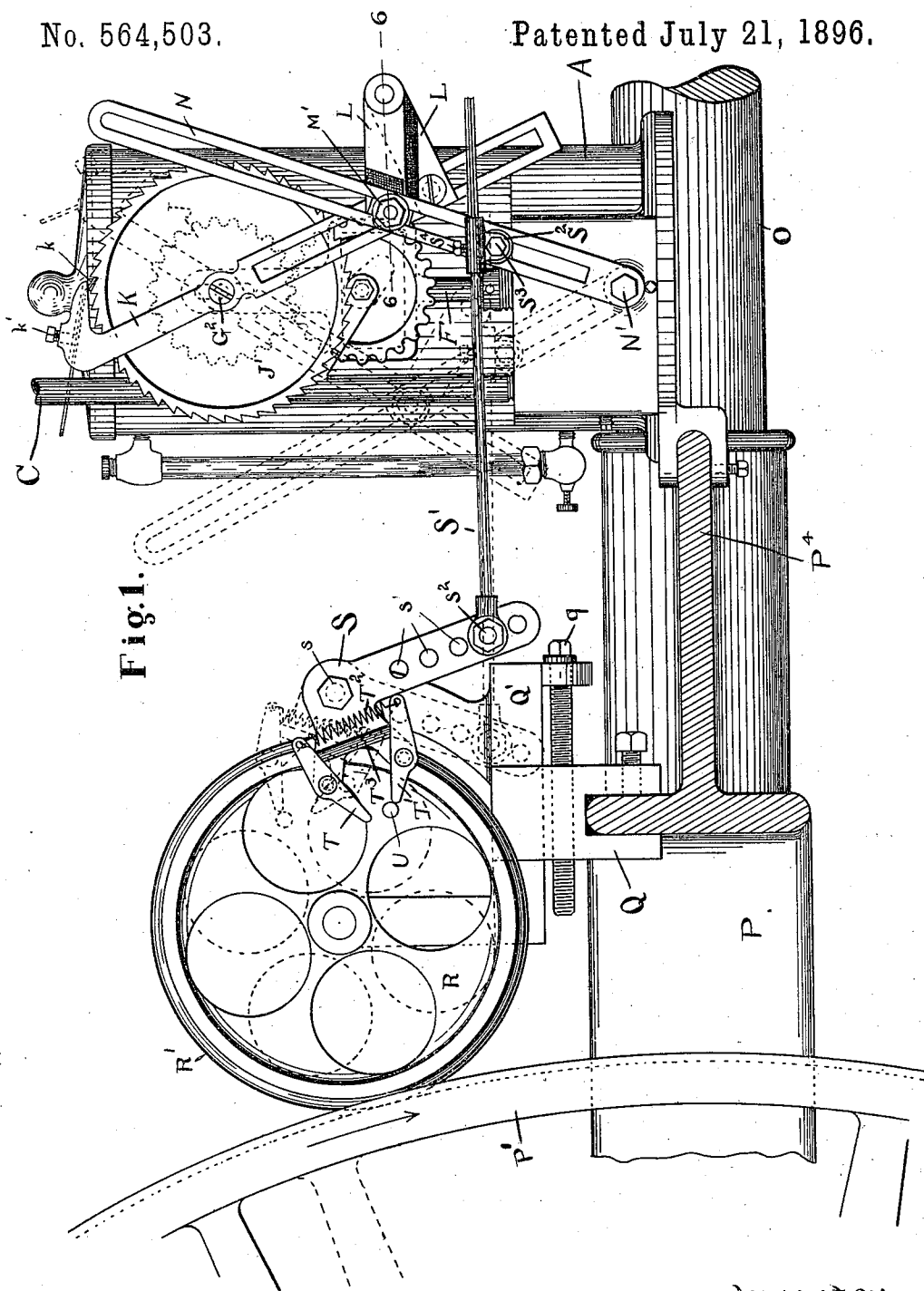
(No Model.)

3 Sheets—Sheet 1.

M. BUTLER.
LUBRICATOR.

No. 564,503.

Patented July 21, 1896.



Witnesses;
 G. A. Roda
 G. Hillard Rich.

Inventor,
Maguel Butler
by Churcholmunch
his Atty's.

(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

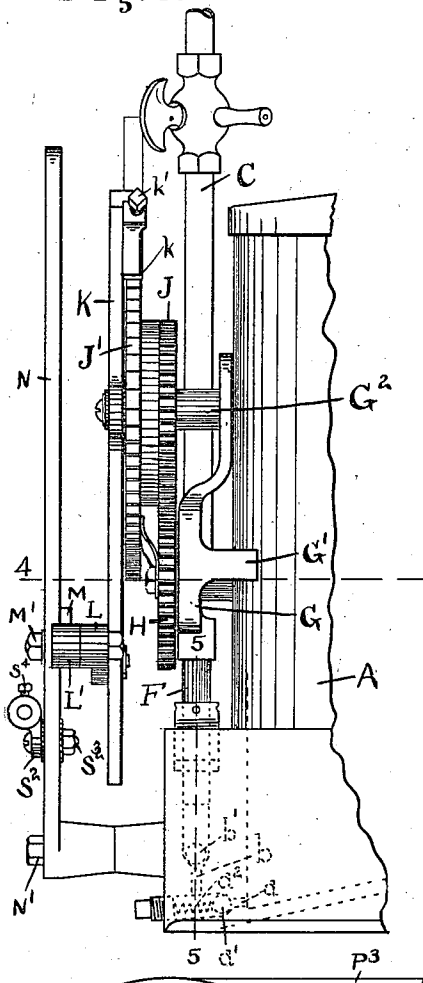


Fig. 4.

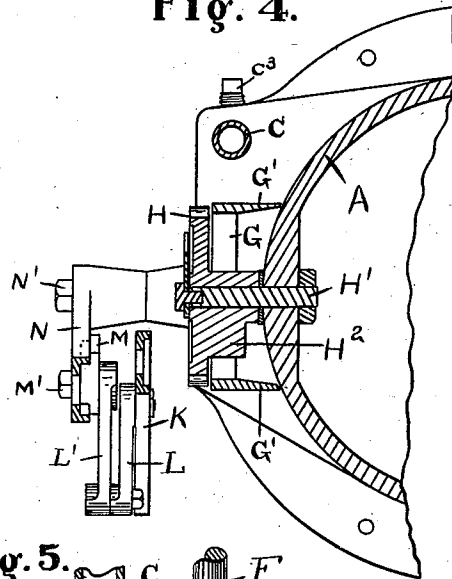


Fig. 5.

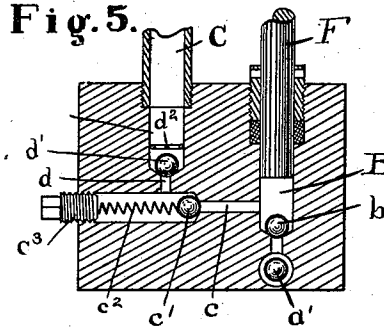
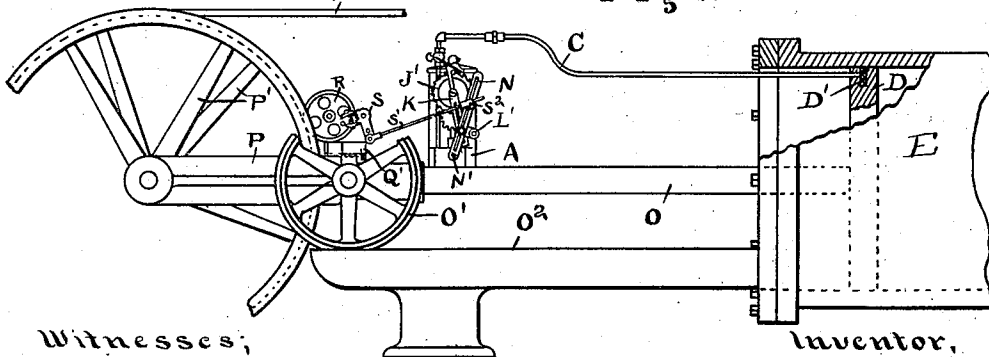


Fig. 2.



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Fig. 7.

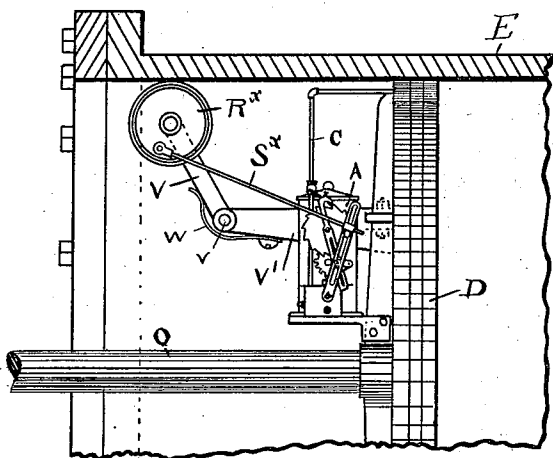


Fig. 6.

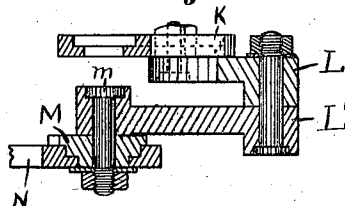


Fig. 8.

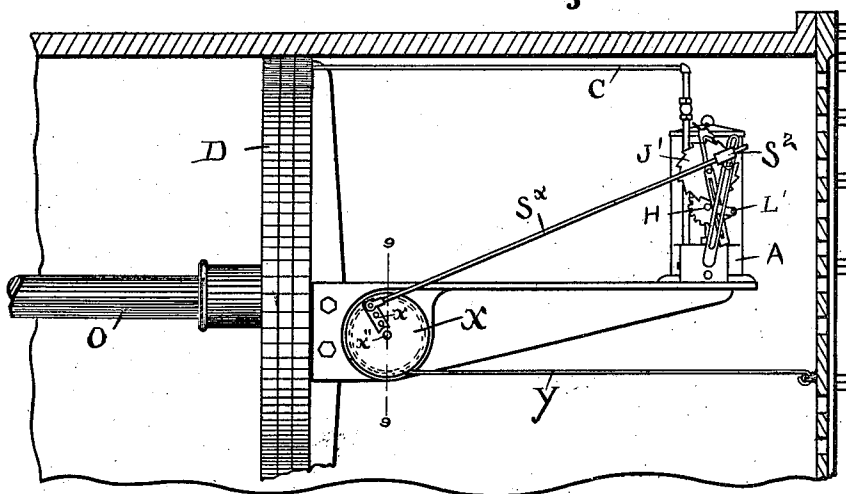


Fig. 10.

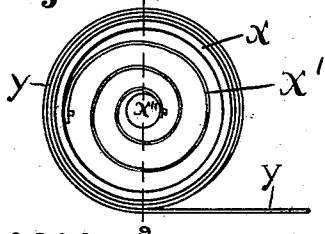
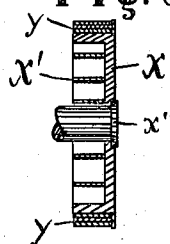


Fig. 9.



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UNITED STATES PATENT OFFICE.

MAGULER BUTLER, OF ROCHESTER, NEW YORK, ASSIGNOR TO GEORGE W. PALMER, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 564,503, dated July 21, 1896.

Application filed April 13, 1896. Serial No. 587,294. (No model.)

To all whom it may concern:

Be it known that I, MAGULER BUTLER, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Lubricators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-letters marked thereon.

My present invention has for its object to provide an improved lubricator, and also certain parts and connections adapting it for lubricating relatively-reciprocating parts of machines, as the pistons of hydraulic engines used for operating elevators; and it consists in certain improvements and combinations of parts, all as will be hereinafter fully described, and the novel features pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is an enlarged side elevation of a lubricator constructed in accordance with my invention, showing its application to a hydraulic elevator-engine, a portion of the frame of the latter being indicated in section; Fig. 2, a similar view showing the parts of the engine more in detail; Fig. 3, a rear view of a portion of the lubricator; Fig. 4, a sectional view on the line 4 4 of Fig. 3; Fig. 5, a vertical sectional view on the line 5 5 of Fig. 3; Fig. 6, a sectional view on the line 6 6 of Fig. 1; Figs. 7 and 8, views showing the application of my invention to different forms of elevator-engines; Fig. 9, a section on the line 9 9 of Fig. 8, and Fig. 10 a detail view.

Similar reference-letters in the several figures indicate similar parts.

I will first describe the construction of the lubricator itself, and then the manner of its application to the elevator-engines.

The letter A indicates a reservoir or receptacle for containing the lubricant, preferably a heavy oil, and formed in or attached to one side thereof is a cylinder B, the lower end of which communicates with the bottom of the receptacle by the passages *a* and *b*, (shown particularly in dotted lines in Fig. 3,) the end of the passage *a* having a ball check-valve *a'*, operated upon by a spring *a²*, and the passage *b* being provided at its upper end, and pref-

erably within the cylinder, with a small check-valve *b'*.

c indicates a passage leading from the cylinder B, and *c'* a ball or check valve seated against the end of said passage, and held in position by a spring *c²*, preferably adjustable by a plug *c³*.

d is a passage leading from the chamber in which the check-valve *c'* operates, and having at its upper end a ball check-valve *d'*, the upward movement of which is limited by a spider or similar retaining device *d²*.

C indicates the exit-pipe for conducting the lubricant to the place desired; in the present instance, leading to the chamber D' in the piston D, operating the hydraulic cylinder E.

F indicates a plunger or lubricant piston operating in the cylinder B and formed upon or connected to a yoke-frame G, the rear sides of which are extended, as at G', to project in proximity to the surface of the receptacle A and preventing the piston and yoke-frame from turning. The upper portion of this frame is preferably slotted for the passage of a bolt or stud G² and also serves as a guide for insuring the proper operation of the piston.

H indicates a pinion mounted upon a bolt or stud H', secured to the receptacle A, said pinion having on its rear side a cam H², operating in the yoke-frame G on the piston and causing the reciprocation of the frame and piston at each revolution, from which it will be seen that when the piston is raised, oil will be drawn from the receptacle A through the passages *a* and *b* into the cylinder B, the valves *a'* and *b'* opening, while the valves *c'* and *d'* will be closed. Then as the piston descends the oil in the cylinder will be forced through the passages *c* and *d* and the pipe C to the piston or other portion of the machine requiring lubrication. By changing the valves this pump could be used as a lift instead of a force-pump, but I prefer the latter, though I do not wish to be confined to this arrangement.

The means for rotating the gear H, in the present construction, embodies a gear J mounted upon the bolt or stud G² and having formed upon or secured to it a ratchet-wheel J'. Also mounted loosely upon the end of the bolt or stud G² is a rock arm or lever K,

having at its upper end a pawl *k*, preferably formed of a piece of spring metal adjustably secured in a suitable recess by a screw *k'*, (shown particularly in Fig. 1,) while the lower end of said rock-arm is slotted and has adjustably attached to it a short arm or link *L*, to which is pivoted one end of a link *L'*, the other end of said link *L'* being pivoted upon a stud *m*, formed upon or secured to a block *M*, adjustably secured in the slot of a rock-arm *N* by means of a nut *M'*. This rock-arm *N* is pivoted at *N'* to the side of the receptacle *A* or other suitable support, and the connection between it and the rock-arm *K* is such that, as the arm *N* is oscillated on its center of motion, the arm *K* is oscillated, and when moving in one direction will operate to turn the wheel *J* in the direction of the arrow, Fig. 1, and when moved back the pawl will slip over the teeth of the ratchet. It will be seen that by adjusting the connection between the link *L'* and the arm *N*, and between the arm *L* and the lever *K*, the amount of motion communicated to the pawl and consequently the movement of the ratchet-wheel *J* can be varied, and the wheel *K* moved any desired number of teeth at each reciprocation, notwithstanding the fact that the arm *N* is moved a constant distance at each oscillation.

In Figs. 1 and 2 I have shown the device arranged to lubricate the piston of a hydraulic engine, in which the water-pressure is applied to the face of the piston *D*, *O* indicating the usual piston-rod, supported upon wheels *O'* traveling on a way *O''*, and *P* indicating the yoke attached to the end of the piston-rod and carrying the several wheels or sheaves *P'* *P'* over which the lifting-cable *P''* passes, and in this construction I have shown the lubricant-receptacle *A* clamped to a web or rib *P''* of the yoke *P*, and also mount upon said yoke a bracket *Q*, having upon it an adjustable frame *Q'*, (adjusted by means of a screw *q*,) said frame *Q'* carrying a wheel *R* having a covering *R'* of rubber or similar material adapted to be brought in contact with one of the sheaves *P'*, so that by the movement of said sheaves *P'* the wheel *R* will be rotated in opposite directions as the piston is moved in and out alternately. *S* indicates a lever, preferably a bell-crank, pivoted at *s* on the frame *Q'*, the longer arm being provided with a series of apertures *s'*, through one of which passes a bolt *s''* carrying one end of a connecting rod or link *S'*, the other end of said rod passing through a sleeve *S''* pivoted upon a bolt *S'''* adjustably secured in the slot of the arm *N*. *S''* indicates a set-screw adapted to connect the rod *S'* with the sleeve *S''*. The other end of the lever *S* is provided with two pawls *T* *T'*, their rear ends being connected by a spring *T''*, serving to hold them against the ends of a rib *T'''*, constituting a stop, while their free ends project beside the wheel *R*, and are adapted to be engaged at times by a pin *U* secured thereon.

From the above construction it will be seen

that when the piston-rod is moving in a direction to cause the rotation of the sheave *P'* in the direction of the arrow in Fig. 1, the pin *U* on the arm *R* will engage the end of the pawl *T*, turning the bell-crank *S* to the position shown in dotted lines, and through the operating parts described move the ratchet-wheel *J* a distance determined by the adjustment of the parts, as will be understood, the motion being transmitted through the gears and cam to the piston of the lubricator. When the sheave *P'* moves in the opposite direction, as the lever *S* is then in the position shown in dotted lines, the pin *U* will engage the pawl *T'*, returning the parts to the position shown in full lines, so that on the next stroke of the piston of the hydraulic engine a further movement of the lubricator-piston will be caused, and from the relative pin on the wheel *R* and the sheave *P'* it will be seen that each time the elevator is operated a short distance a small quantity of lubricant will be fed to the engine-piston or the oil-pump will be drawing oil from the receptacle *A* into the cylinder *B*.

The means shown for actuating the rod *S'* is adapted for use on various machines, in which there are parts that move alternately in opposite directions, the pawls on the lever *S* causing the oscillation of the latter in one direction and causing only one operation while the parts are moving this way, and when the direction of movement is changed only one movement of the rod is caused, thus feeding a very small quantity of the lubricant.

In Fig. 7 I have shown another way of operating the lubricator, the rod *S''*, attached to the rock-arm *N*, being pivoted to a crank-pin on a wheel *R''*, which latter is mounted upon the end of an arm *V*, pivoted at *v* to a bracket *V'*, the periphery of the wheel *R''* being held pressed against the under side of the cylinder *E* by a spring *W*. From this it will be seen that the rotation of the arm *R''* will cause the reciprocation of the arm *N*.

In Fig. 8 I have shown the device applied to the cylinder of what is known as a "pull" elevator-engine, the water-pressure being applied to the left-hand side, as shown in the drawings, and the rod *S''* in this instance is pivoted to a crank *x* on a drum or wheel *X*, mounted upon a stationary pin or arbor *x''*, to which it is connected by a spring *X'*, operating to turn said drum in one direction, as shown in Fig. 10. *Y* indicates a tape, cord, or cable connected at one end to the cylinder or a stationary support and wound one or more turns around the drum and connected to it. The construction of this device is such that as the piston *D* moves to the left the tape or cord will cause the movement of the drum *X* in one direction, operating the oil-pump, and when the piston *D* moves to the right the spring will serve to rotate the drum in the opposite direction, causing a similar operation of the oil-pump and also the winding of the tape on the drum.

It is obvious that other means for causing the operation of the lubricator may be employed than those herein shown; but I find that these will operate well upon the styles of elevators in common use.

I do not wish to be understood as confining myself to the use of my improved lubricator upon elevator-engines or any particular type of machine, as it is admirably adapted for all purposes for which lubricators embodying pumps are capable of use, and the adjustments between the arms K and N are such that the quantity of lubricant fed may be regulated to a nicety.

I claim as my invention—

1. In a lubricator, the combination with the lubricant-receptacle, the cylinder, and valves and passages substantially as described, of the lubricant-piston, the yoke, and the projections on the yoke engaging the receptacle, the wheel having the cam operating in the yoke, and means for rotating said wheel, as set forth.

2. In a lubricator, the combination with the lubricant-receptacle, the cylinder, the passages and the valves therein, and the reciprocating piston having the yoke, of the intermittently-operating wheel having the cam, and the ratchet for operating it, the rock-arm carrying the pawl, the actuating rock-arm and connections between said arms adjustable relative to the pivots of both arms, whereby the amount of movement of the ratchet-wheel can be adjusted, substantially as described.

3. In a lubricator, the combination with the lubricant-receptacle, the cylinder, the piston operating therein, and valves and passages, of the ratchet-wheel connected mediately with the piston for actuating it, the rock-arm, the pawl thereon, the second rock-arm, the links pivoted together and adjustably connected to the two rock-arms, substantially as described.

4. In a lubricator embodying a pump, and as a means for operating the piston, a ratchet-wheel connected mediately to the piston, the stud on which it is mounted, the rock-arm on the stud having the pawl, a second rock-arm, the links pivoted together at one end, one of said links being pivotally and adjustably connected to one rock-arm, and the other link rigidly and adjustably connected to the other rock-arm, substantially as described.

5. In a lubricator, the combination with the lubricant-receptacle, the cylinder, the piston

operating therein, the ratchet-wheel and connections between it and the piston, of the stud on which the ratchet-wheel is supported, the rock-arm pivoted on the stud, and the pawl carried thereby, the rock-arm pivoted on the receptacle, the links pivoted together and adjustably connected to the two rock-arms, and an actuating-rod adjustably connected to the last-mentioned rock-arm, substantially as described.

6. The combination with the lubricant-receptacle, the cylinder, the piston operating therein, and valves and passages substantially as described, of the ratchet-wheel connected mediately with and operating the piston, the slotted rock-arm having the pawl, the links L, L', the slotted rock-arm N, the sleeve S² having the screw S⁴, and the actuating-rod S', as set forth.

7. The combination with a lubricator embodying a pump and having a reciprocating actuating-rod as S' for operating it, of the lever S connected to said rod, the two spring-pawls thereon, and a wheel R having the pin U coöperating with said pawls, substantially as described.

8. The combination with a machine having parts relatively movable in opposite directions alternately, of a lubricator for supplying a lubricant to moving parts embodying a pump, a driving mechanism for the lubricator embodying a ratchet-wheel, a rock-arm carrying a pawl and a reciprocating rod connected to said rock-arm, and a wheel for actuating the rod, mounted upon one of the machine parts and adapted to be alternately rotated in opposite directions by the movement of the parts relatively, substantially as described.

9. The combination with the cylinder of a hydraulic engine, a piston operating therein, the sheave connected to and carried by the piston, and the cable, of a lubricator for supplying lubricant to the piston carried by the piston and embodying a pump, a ratchet-wheel, and a rock-arm carrying a pawl, a rod connected to the pawl, a wheel in frictional engagement with the sheave, and connections between the wheel and rod for moving the latter in opposite directions alternately as the engine-piston reciprocates, substantially as described.

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Witnesses:

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C. S. ALDEN.