

J. Broughton,

Lubricator.

N^o 58,767.

Patented Oct. 16, 1866.

Fig. 1.

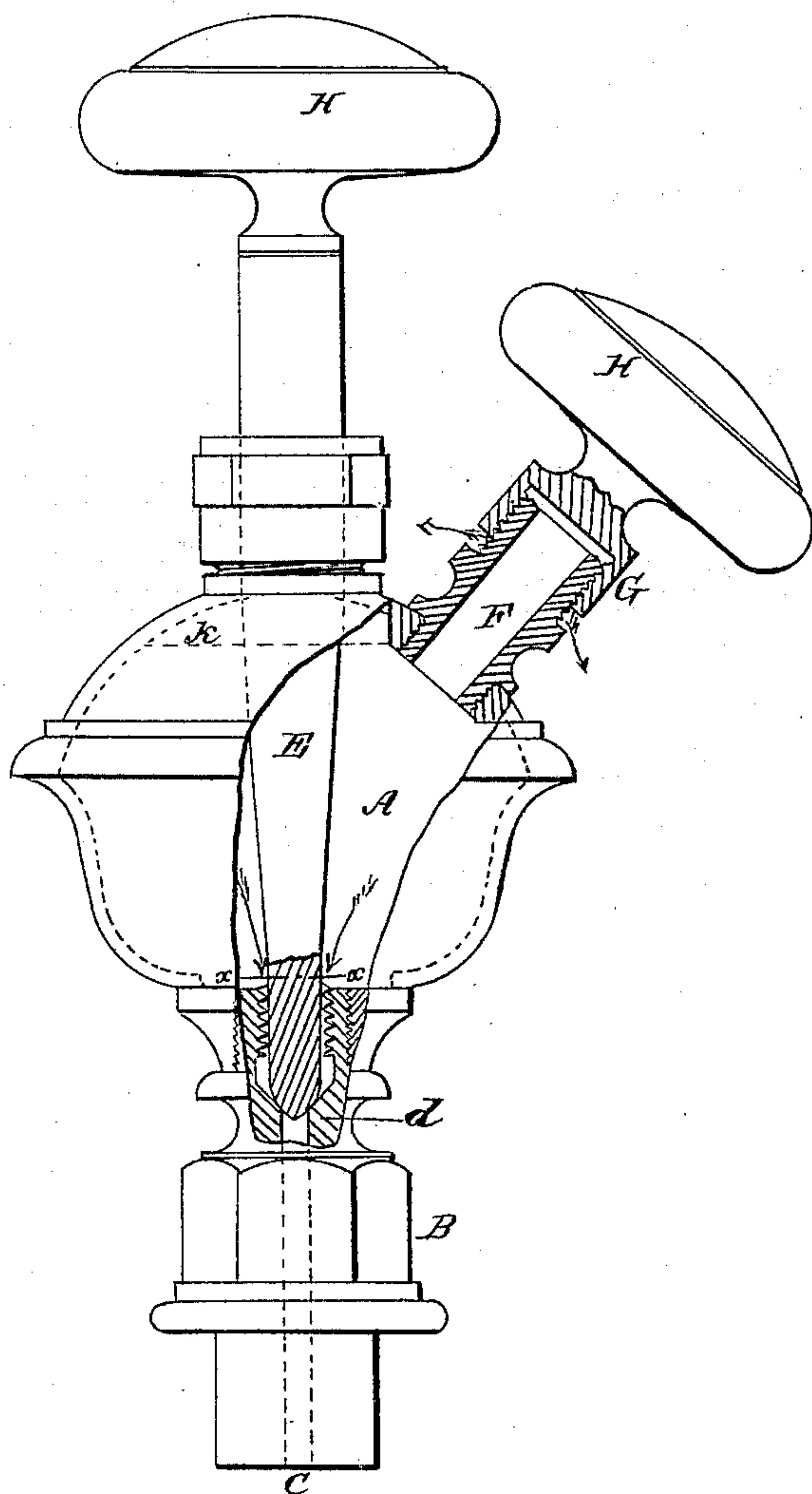


Fig. 2.



Witnesses. *Wm. L. King*
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IMPROVEMENT IN LUBRICATORS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 58,767, dated October 16, 1866.

To all whom it may concern:

Be it known that I, JOHN BROUGHTON, of the city, county, and State of New York, have invented a new and Improved Graduating-Lubricator for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation, partly in section, of a lubricator made according to my invention. Fig. 2 is a transverse section of the valve-stem, taken on the line *x* in Fig. 1.

Similar letters of reference indicate like parts.

The object of this invention is to produce a lubricator with few parts, constructed and arranged in a simple manner, and yet retaining the character of graduating the flow of oil, so that the operator shall be able to control it, and also containing a feed-opening independent of and separate from the valve-stem.

Among other advantages in operating the lubricator which is conferred by my invention is that the steam in the reservoir, when it is opened, is discharged in such a manner that the hand of the operator cannot be scalded; that the oil can be readily poured in; also that the air can freely escape; that the reservoir cannot be filled without always leaving an air-space at its top, into which the steam will rush when the valve is raised and quickly equalize the pressure and allow the oil to discharge at the bottom, and that there are no cocks or valves opening externally at the bottom of the reservoir to leak or waste the oil, nor any air-passages or snifting-cock at top. Furthermore, the apparatus can be made at a small cost.

A is the reservoir, having a central opening and stuffing-box at top, through which passes a valve-stem, E. B is the shank of the reservoir, provided with a central discharge-passage, *c*, and having its upper end screwed into the bottom of the reservoir. The discharge-passage *c* is enlarged at the upper end of the shank, forming a valve-seat, *d*, and it is provided above the valve-seat with an internal screw-thread. The lower end of the valve-

stem is provided with an external screw-thread, which engages the internal screw-thread of the shank. The bottom or end of the valve-stem forms a grinding-valve in connection with the seat *d*.

F is a nipple screwed into the dome-shaped top of the reservoir A, and having its outer end or nozzle closed by a tubular cap, G, said cap being provided with a washer of soft metal or other soft material to bear on the end and form a tight joint with the nipple F. H H are the knobs of the valve-stem E and cap G. They are made of wood or other non-conducting material.

Vertical passages *p p*, two or more in number, are made through the screw-thread on the lower end of the valve-stem, in a line with the axis of the stem, so as to permit the oil to have free access to the valve. (See the cross-section, Fig. 2, which shows two such passages.)

By screwing the lower end of the valve-stem in the shank B the valve is always brought directly in focus with its seat and with the discharge-passage *c*, and its upper end is reduced to a plain, smooth surface susceptible of being packed by a stuffing-box in the tightest possible manner, while at the same time it may at any time be unscrewed and withdrawn and again replaced without in the least disturbing the stuffing in the packing-box, whereas by screwing it through the upper part of the reservoir A, according to the mode hitherto followed, its lower end is apt to be diverted from the axial line of the discharge-passage and valve-seat, and thereby become strained and bent in the act of screwing it down to bring its lower end in focus and to close the discharge-passage, nor can it, when constructed, be unscrewed and withdrawn without taking off the stuffing-box gland and displacing the packing.

The shank B is intended to be screwed into the reservoir somewhat freely and loosely, so that it may at any time be withdrawn to grind or repair the valve-seat; and the operation of screwing the valve-stem directly into the shank has no tendency to unscrew the reservoir from the shank.

The arrangement of the radial nipple F, forming an opening into the reservoir independent of the central opening which receives

the valve-stem, serves a threefold purpose, to wit: The oil can be readily poured into the reservoir without disturbing the gland and packing of the valve-stem; the air can freely escape during the filling of the reservoir, and the reservoir cannot be filled without leaving an air-space at the top above the dotted line K, which is here supposed to be the level of the oil therein, into which air-space the steam will rush when the valve is raised, and thereby produce an equilibrium of pressure in the reservoir. Besides accomplishing these objects the said nipple, in conjunction with the tubular cap G, causes the steam which may be discharged from it when the cap is unscrewed to escape in such directions as to keep the hand of the operator from being scalded.

The operation of the apparatus is as follows: Assuming the lubricator to be placed on the steam-chest of an engine and the valve-stem E to be slightly unscrewed and the valve raised from its seat, and it is required to fill the reservoir with oil, the valve-stem is first screwed down to close the discharge-opening *c*, the reservoir remaining full of steam. The cap G is then unscrewed and taken off. The first rotation of said cap, the screw-threads being slightly loose, will allow the steam to escape from the reservoir and be discharged in directions away from the hand of the operator, as indicated by the arrows in Fig. 1, owing to the tubular shape of the cap. Oil is then

poured in at the nipple F, the air escaping freely at the same passage without any special provisions for that purpose. The oil will rise in the reservoir to about the height of the dotted line K, thus leaving a small air-chamber at the top thereof. The cap G is then replaced and screwed down tight, when, by slightly unscrewing the valve-stem and raising the valve from off its seat *d*, steam will pass up through the passage *p* and through the oil to the air-space above the dotted line K, thereby equalizing the pressure. The oil will then pass down past the valve-stem through the passages *p*, as indicated by the arrows, and be discharged through the opening *c*, the graduation of the discharge being regulated by unscrewing the valve-stem more or less as required.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination and arrangement of the reservoir A and valve-stem E, having vertical openings *p p*, and made to screw into the shank B, with the nipple F, tubular cap G, and air-chamber *k*, the whole being constructed and operated substantially in the manner and for the purpose set forth.

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Witnesses:

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