W. W. HAMILL.

LIQUID FUEL SPRAYING DEVICE.

APPLICATION FILED JAN. 21, 1914.

1,143,700. Patented June 22, 1915.

Fig. 1.

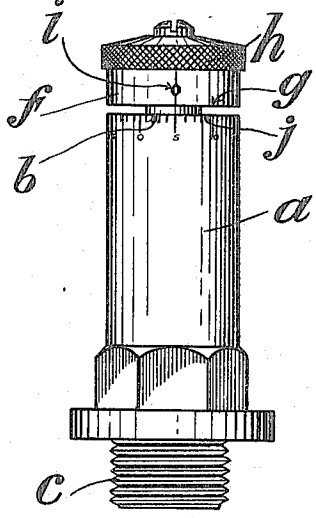


Fig. 2.

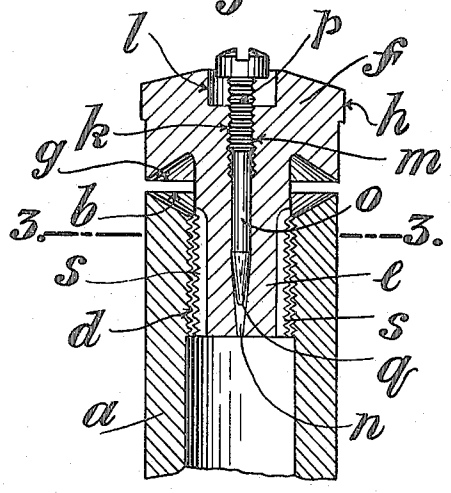
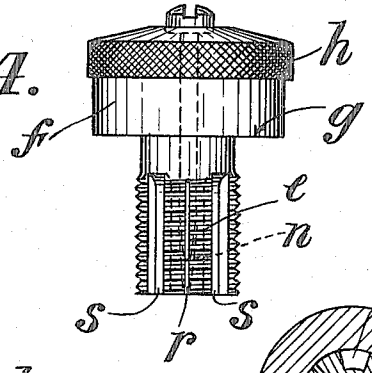


Fig. 4.



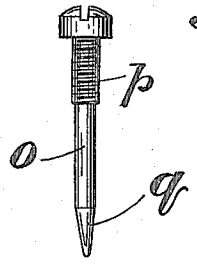


Fig. 5.

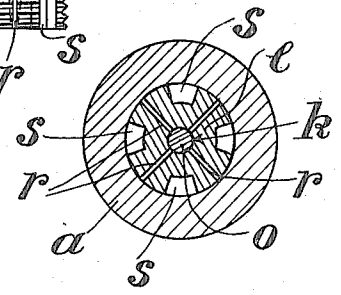


Fig. 3.

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LIQUID-FUEL-SPRAYING DEVICE.

1,143,700. Specification of Letters Patent. Patented June 22, 1915.

Application filed January 21, 1914. Serial No. 813,371.

To all whom it may concern:

Be it known that I, WILLIAM WILSON HAMILL, a subject of the King of Great Britain, residing at Broomhill, Glasgow, Scotland, have invented a certain new and useful Improved Liquid-Fuel-Spraying Device, of which the following is a specification.

This invention relates to liquid fuel spraying devices of the type in which the jet is circumferential and flows out radially in a plane at or substantially at right angles to the axis of the sprayer nozzle. In such devices it is usual to have a nozzle open at its upper end and provided with a movable cap or head, which can be adjusted with respect to the nozzle so as to regulate the size of the circumferential orifice therebetween.

Under the present invention the cap or head of the spraying device is made with an extension or spigot portion which is capable of being adjusted within the body of the nozzle and, when adjusted, can be positively and securely locked in position by the expansion of the said spigot portion. The spigot portion is preferably divided into four parts and is threaded into the body of the nozzle, the means for expanding the spigot portion being preferably a tapered pin or the like.

It is very essential to be able to accurately adjust and then positively lock the cap in position. The least variation from the adjusted position very considerably alters the amount of fuel passing and unless the cap is positively locked it will gradually work from the adjusted position, owing to vibration and otherwise. The expansion of the spigot constitutes the simplest and most effective form of positive lock.

A preferred form of the invention is illustrated, by way of example, on the sheet of drawings appended hereto and forming part of this specification, and whereon:—

Figure 1 is an elevation. Fig. 2 is a vertical section of the device to an enlarged scale. Fig. 3 is a cross section on the line 3, 3, Fig. 2. Fig. 4 is an elevation of the cap. Fig. 5 is a detail.

Carried into effect or practice, in the manner illustrated by the accompanying drawings, the device comprises a tubular spray nozzle or body part *a*, of circular cross section, terminating, at one end, in a circumferential and upwardly projecting knife edge *b* and, at the other end, is threaded at *c*. The tubular nozzle or body part *a* is internally screw-threaded, at *d* for the reception of an externally screw-threaded spigot *e* longitudinally fluted (or made with passageways) at *s*, and projecting centrally from the bottom of the head or cap *f*. The head or cap *f*, which is adapted to be rotated by hand, a knurled part or finger grip *h* being provided for the purpose, terminates in a circumferential and downwardly projecting knife edge *g* of the same diameter as the spray nozzle *a* and has a zero-mark *i* thereon adapted to register with the graduations of a scale *j* on the spray nozzle *a*. A hole *k* having the wall thereof enlarged at *l*, screw-threaded at *m*, and tapered at its lower end *n*, extends through both the head or cap *f* and spigot *e* and is adapted to receive a locking pin *o* (see Fig. 5) having threaded and tapered parts *p* and *q* respectively, adapted to engage the aforementioned threaded and tapered parts *m* and *n*. The spigot *e* is made expansible by being split diametrically and at right angles for a suitable distance from the base upward by a pair of saw cuts *r* and which flexible portion terminates short of the threaded portion *m*, so that the latter will be located in the body or solid portion of the plug, to prevent the threads from being distorted when the flexible portion of the plug is expanded. When the spraying device is assembled and it is desired to secure the head *f* in a position to give a desired width of orifice between the knife edges *b* and *g*, the head is turned until the desired width of opening is registered on the scale *j*, when the locking pin *o* is screwed down tightly into the hole *k*, thereby causing the tapered part *q* thereof to thrust against the tapered wall *n* of said hole and expand the spigot *e* thereby securely locking same in the spray nozzle *a*. The enlargement *l* is provided for the reception of the head of the pin *o*.

In operation, liquid fuel flows through the axial passage of the spray nozzle *a* from which it passes through the flutings *s* of the spigot *e*, to the annular space between the knife edges *b* and *g* and the spigot *e* where, impinging upon the inner surface of the head or cap *f*, its momentum is absorbed and its direction changed before it passes out at right angles through the orifice between the knife edges *b* and *g*. The circumferential orifice between said knife edges can be minutely adjusted by turning the cap *f*, the

exact setting being noted on the scale *j* and, when adjusted, the cap can be instantly locked by means of the threaded pin *o*.

Of course, instead of having the scale *j* on the nozzle and the zero mark *i* on the cap the scale may be on the cap and the zero mark on the nozzle.

The improved spraying device can be cheaply made and it can be accurately adjusted and, when adjusted, can be securely locked as the expansion of the spigot insures positive locking so that there is no likelihood of the cap gradually working from its adjusted position through vibration or otherwise. The construction, therefore, is simple, cheap, and effective.

Having now fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. A liquid fuel spraying device of the character described embodying a body portion, a spray cap adjustable within the body portion, said cap adapted to be expanded, and means disposed axially of the device and independent of the said body portion for expanding the cap to lock the same in position.

2. A liquid fuel spraying device of the character described embodying a body portion, a spray cap adjustable within the body portion, said cap having a rigid and an expansible portion, means disposed axially of the cap and independent of the said body portion for expanding the cap to lock the same in position, the said means having a smooth and a threaded portion, said smooth portion projecting into the expansible portion of the cap for expanding the same, and threads disposed entirely within the rigid portion of the cap with which threads the threaded portion of the said means has adjustable engagement.

3. A liquid fuel spraying device of the character described embodying a body portion, a spray cap adjustable within the body portion, said cap having a rigid and an expansible portion, there being an opening disposed axially of the cap and extending longitudinally therethrough, threads in the wall of the opening in the rigid portion of the cap, and a screw having a smooth and tapered extremity, the threads on the screw engaging the threads on the cap, and the tapered extremity of the screw extending into the expansible portion of the cap to expand the same.

4. A liquid fuel spraying device of the character described embodying a body portion, a spray cap adjustable within the body portion, said cap having a rigid and an expansible portion, there being an opening disposed axially of the cap and extending longitudinally therethrough, threads in the wall of the opening in the rigid portion of the cap, and a screw having a smooth and tapered extremity, the threads on the screw engaging the threads in the cap, and the tapered extremity of the screw extending into the expansible portion of the cap to expand the same, the threads in the rigid portion of the cap terminating short of the said expansible portion of the cap.

5. A liquid fuel spraying device of the character described embodying a body portion, a spray cap adjustable within the body portion, said cap adapted to be expanded, and a screw disposed axially of the cap and independent of the said body portion and having threaded engagement therewith, said screw having a smooth portion provided with a tapered extremity, the expansible portion of the cap being engaged only by the smooth portion of the screw.

6. A liquid fuel spraying device of the character specified, comprising a body portion, a cap having a threaded and expansible portion adjustably fitted within the body portion, and an axially disposed and partly threaded and partly tapered pin carried by the cap for locking the cap in any adjusted position in the body portion by expanding said threaded and expansible extension, said pin having an adjustable connection with the cap only at points remote from the expansible portion thereof.

7. A liquid fuel spraying device of the character specified, comprising a body portion of tubular formation, a cap having its upper part of the same diameter as the body portion and its lower part made expansible and of a reduced diameter and fitted adjustably within the body portion, a circumferential knife edge on the body portion, and an oppositely disposed circumferential knife edge on the cap portion, and an axially disposed pin inserted in and extending lengthwise of the said cap and capable of expanding the lower portion thereof, a portion of said pin having threaded engagement with the cap and said threaded portion of the pin being maintained out of contact with the expansible portion of the cap.

8. A liquid fuel spraying device of the character specified, comprising a body portion of tubular formation, a cap having its upper part of the same diameter as its body portion and its lower part made expansible and of reduced diameter and fitted adjustably within the body portion, a circumferential knife edge on the body portion and a circumferential knife edge on the cap portion, there being an axially disposed opening in the cap portion and extending longitudinally thereof, a series of passages opening through the periphery of the lower portion of the cap and extending longitudinally thereof, and a threaded pin tapered at its lower end and capable of insertion in the cap and of expanding the lower portion thereof, said pin being supported independ-

ently of the said body portion and having adjustable engagement with the cap only at points remote from the expansible portion thereof.

9. A liquid fuel spraying device of the character described, embodying a body portion, a plug portion adjustable with respect to the body portion, the end of the plug portion within the said body portion being shaped to form separable spring portions, said plug having an opening extending longitudinally therethrough, a portion of said opening beyond said spring portions being threaded, and an expanding element for the said spring portions of the plug, said element having a portion threaded to engage the threaded portion of said opening, and a portion adapted to be forced between the said spring portions, the threaded portion of the pin being maintained out of contact with the expansible portion of the plug.

10. A liquid fuel spraying device of the character described, embodying a body portion, a plug portion adjustable with respect to the body portion, the end of the plug portion within the said body portion being shaped to form separable spring portions, said plug having an axially disposed opening extending longitudinally therethrough, a portion of said opening beyond said spring portions being threaded, and an expanding element for the said spring portions of the plug, said element having a portion threaded to engage the threaded portion of said opening, and a smooth portion adapted to be forced between the said spring portions, said plug having grooves on its exterior extending longitudinally thereof for a certain distance and said spring portions being engaged only by the smooth portion of the said element.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM WILSON HAMILL.

Witnesses:
WILLIAM FLEMING,
WILLIAM CARRUTHERS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."