

No. 699,030.

Patented Apr. 29, 1902.

J. SIMPSON.

MEANS FOR REGULATING THE SUPPLY OF WATER AND LIQUID FUEL TO
STEAM GENERATORS.

(Application filed Nov. 29, 1901.)

(No Model.)

FIG. 2.

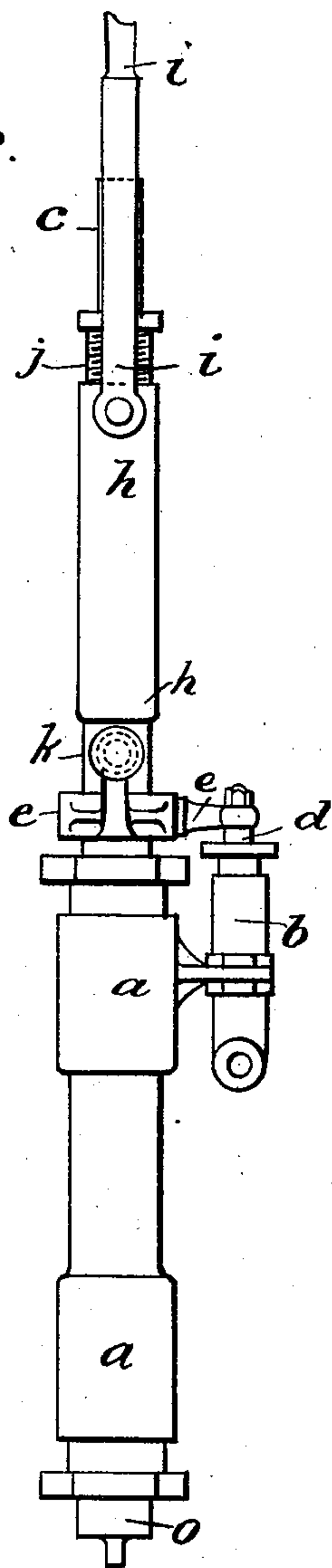
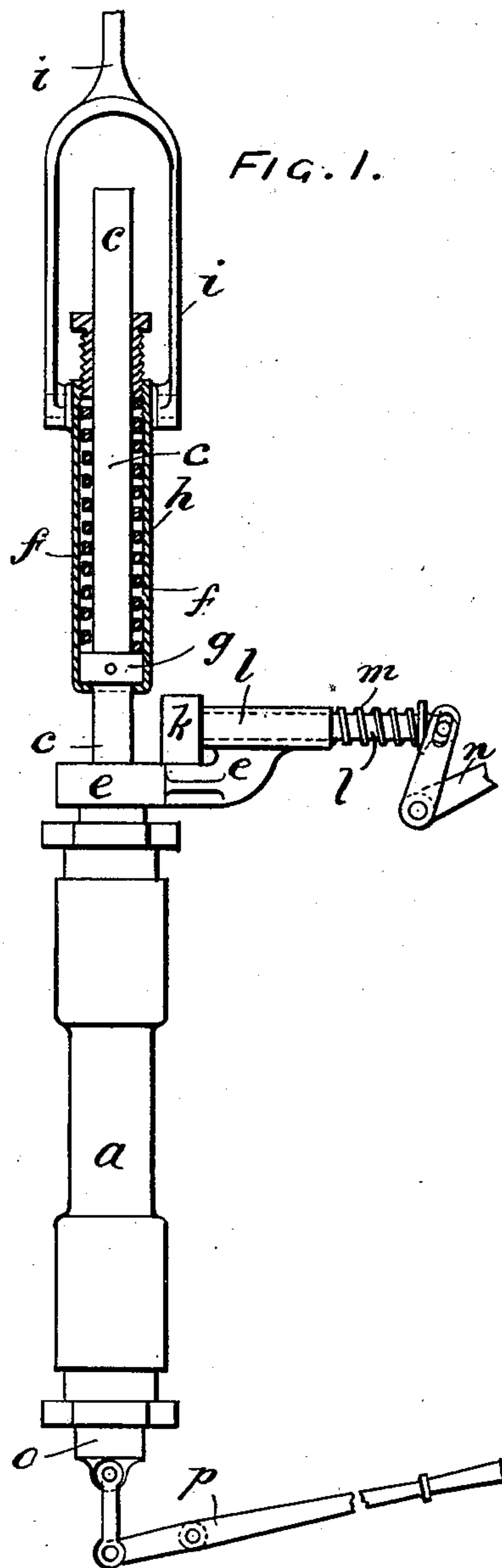


FIG. 1.



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MEANS FOR REGULATING THE SUPPLY OF WATER AND LIQUID FUEL TO STEAM-GENERATORS.

SPECIFICATION forming part of Letters Patent No. 699,030, dated April 29, 1902.

Application filed November 29, 1901. Serial No. 83,993. (No model.)

To all whom it may concern:

Be it known that I, JOHN SIMPSON, a citizen of the United Kingdom of Great Britain and Ireland, residing at Braehead, Whins of Milton, Stirling, in the county of Stirling, Scotland, have invented certain new and Improved Means for Regulating the Supply of Water and Liquid Fuel to Steam-Generators, (for which application for patent has been made in Great Britain, No. 14,294, dated July 13, 1901,) of which the following is a specification.

This invention relates to pumps for supplying water and liquid fuel to instantaneous steam-generators for automobile cars; and the invention consists in interposing a resilient connection in the mechanism for actuating the plunger of the pumps for supplying water and liquid fuel or to either of them so as to automatically vary the stroke of the pumps to supply more or less water and liquid fuel to the steam-generator and also in providing means whereby this resilient connection may be converted into a rigid connection when desired.

One embodiment of the invention is illustrated by the accompanying drawings, in which—

Figure 1 is a longitudinal elevation of the general arrangement of the means for supplying water and liquid fuel to the steam-generator, but showing in section the resilient connection between the plunger of the water-pump and the eccentric-rod. Fig. 2 is a longitudinal view at right angles to Fig. 1.

The water-pump *a* and liquid-fuel-supply pump *b* are preferably made as is usual of such diameter that the supply of fuel to the burner or furnace is in suitable ratio to the supply of water to the steam-generator, and the pump may be of any ordinary form. The plungers *c d* of the pumps *a b* are connected together, as shown, by a bracket-piece *e*, and in order to automatically vary the stroke of these according to requirements I interpose a helical or like spring *f*, as shown at Fig. 1, between a collar *g* of the plunger *c* of the water-supply pump *a* and a sleeve *h* on the eccentric-rod *i* or other connecting-rod which drives the pump. A screw-nut *j* or like device is provided for adjusting the tension or compression of the spring. By the arrange-

ment described the pump-plungers traverse the full length of their stroke so long as the pressure to be overcome in feeding the water to the boiler is not greater than that which can be resisted by the spring; but when the boiler-pressure is greater than the normal the spring yields more or less at each stroke of the pump and the stroke of the pump and supply of water and oil are correspondingly lessened. Thus when the maximum steam generated in the boiler is required for driving the motor the pumps will supply a maximum of feed-water and of liquid fuel to convert the water into steam; but when less steam is required the stroke of the pump and supply of water and fuel will be lessened, and should no steam be wanted and the steam-pressure in the generator reach its maximum the pump-plunger may cease to reciprocate, the power of the pump-actuating mechanism being absorbed by the spring or other resilient connection.

In order to render rigid the connection between the pump-plunger and its operating-rod, so that a complete feed-stroke may be given when full power is desired under increased load, a shoe piece or block *k* is provided, which is adapted to be inserted between the end of the sleeve *h* and the bracket-piece *e* for this purpose, said shoe-piece *k* being carried at the end of a rod *l*, operated against the action of a spring *m* by means of a lever *n* or the like.

The usual hand-pump plunger *o* for feeding the boiler to start the motor may be fitted in the barrel of the boiler feed-pump and be actuated by the usual hand-lever *p*.

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

1. The combination with the two pump-cylinders, plungers working in the cylinders and rigidly connected together for simultaneous action, of a rod for actuating the connected plungers, means for operating the rod, a spring yieldingly interposed between the rod and its operating means for automatically varying the stroke of both pumps, and a locking device for forming a rigid connection between the rod and its operating means to thereby render the spring inoperative; substantially as described.

2. The combination with a pump and its operating-rod having a shoulder or collar, of a sliding sleeve on the said rod and projecting at its inner end under the collar or shoulder, a helical spring surrounding the rod within the sleeve, bearing at its outer end against a part carried by the sleeve and at its inner end bearing against the collar, and an operating-rod connected to the said sleeve for reciprocating the pump-rod; substantially as described.

3. The combination with the pump and its operating-rod having a collar or shoulder, of a sliding sleeve on the rod and projecting at its inner end under the said collar or shoulder, a helical spring surrounding the rod within the sleeve and bearing on said collar or shoulder, a tubular nut screwed into the outer end of the sleeve to adjust the tension of the spring, and an operating-rod connected to the sleeve for reciprocating the pump-rod; substantially as described.

4. The combination with the pump and its operating-rod having a shoulder or collar, a sliding sleeve on the pump-rod with its inner

end projecting under the said collar, a connecting-rod for operating the sleeve and a helical spring within the said sleeve and forming a yielding connection between it and the pump-rod, of a shoe piece or block movable under the inner end of said sleeve to render the connection between it and the pump-rod rigid; substantially as described.

5. The combination with the two rigidly-connected pump-cylinders, their rigidly-connected plungers, a rod for actuating both plungers, a spring-cushioned sleeve for actuating said pump-rod and means for operating the sleeve, of a bracket on one pump, a sliding rod mounted in said bracket and provided with a shoe at its inner end, and means for operating the shoe-carrying rod to move the shoe into and out of engagement with the sliding sleeve; substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JOHN SIMPSON.

Witnesses:

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JNO. ARMSTRONG, Jr.