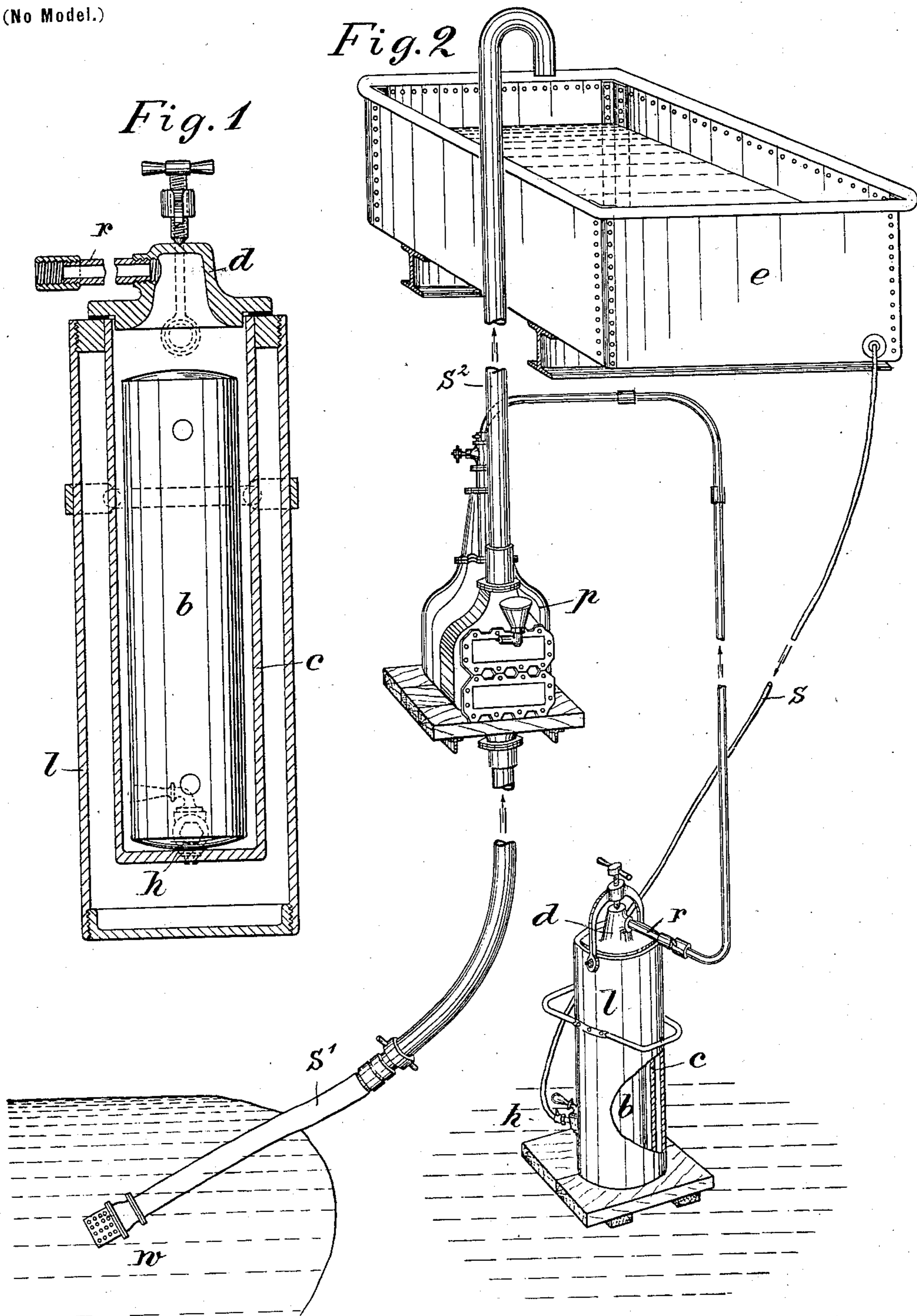


No. 658,005.

Patented Sept. 18, 1900.

R. FIEDLER.  
STEAM GENERATOR.  
(Application filed July 23, 1898.)

(No Model.)



Witnesses:  
Henry Hasper,  
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# UNITED STATES PATENT OFFICE.

RICHARD FIEDLER, OF BERLIN, GERMANY.

## STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 658,005, dated September 18, 1900.

Application filed July 23, 1898. Serial No. 686,704. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD FIEDLER, a citizen of the Empire of Germany, residing at Berlin, Germany, have invented a certain new and useful Steam-Generator, of which the following is a specification.

This invention relates to steam-generators, the object being to provide a superior generator especially adapted for pumping water.

In the annexed drawings, Figure 1 is a central vertical section of my improved steam-generator. Fig. 2 shows the general arrangement of steam-generator and water-lifting plant.

In my improved steam-generator I employ a body of any form, preferably a cylindrical metal block, in which there has been accumulated a certain quantity of heat, this block having been heated in an appropriate fireplace, kitchen-stove, forge-hearth, blast-furnace, or the like up to a high temperature. When such a block *b*, Fig. 1, is placed in a glowing-state in a cylinder *c*, which by means of appropriate heat insulation is protected as far as possible against radiation and is closed tightly by means of a cover *d*, it gives a certain number of calories, which can be used for producing steam and be easily transported for use to any place. Steam is generated by admitting water to the generator through the pipe *S*, connected with the receiver *e* by opening the cock *h*, the water coming in contact with the glowing block *b* and being at once transformed into steam. The steam produced in the cylinder *c* escapes through the pipe *r* and is carried to the place of consumption by means of appropriate pipes.

In the present case the example of construction shown in Fig. 2 has been chosen in order to explain the aforesaid apparatus in connection with a device for pumping water. The steam-producing apparatus *l* is placed on approximately the same level as the water *w*, which has to be pumped into the upper receiver *e*. The pumping device *P* shown as an example is a common form of pulsometer. By means of a hose *s* the steam-producing apparatus *l* is connected with the receiver, so that by opening the cock *h* water enters into the steam-producer *l* and steam is generated. This steam is naturally under a ten-

sion equal only to the pressure of a water column of a tube *s*, as by the production of an overpressure in the steam-producing apparatus *l* the water would be pressed back into the tube *s* and the steam production would be interrupted. The pulsometer *p* is connected with the source of water-supply *w* by a pipe *S'* and with tank *e* by pipe *S''* and with the generator *l* by steam-pipe *r*. The steam leaving the tube *r* passes to the pulsometer *p*, which operates to lift the water *w* and deliver it to the receiver *e* through the medium of pipe *S''*. It appears to be a paradox that steam of a tension which measured as a water column is hardly equal to the rising height should be able to attain not only the same rising height by direct pressure, but even to surpass it and to give a considerable effect. This effect is nevertheless produced by two causes, one of which is that a part of the steam is condensed, and the exterior atmospheric pressure pressing in consequence of the vacuum produced overcomes a part of the rising height. The other much more important cause is that, as already previously mentioned, there takes place an intermittent rise of the steam-tension, which is considerably higher than the pressure of the water column to be overcome. As soon as the steam produced in the steam-producing apparatus *l* has pressed back the feed-water in the pipe *s* and has thus lost some of its tension the water enters again with increased velocity into the steam-producer and continues to do so until its *vis viva* is compensated by the now again, increasing steam-pressure, whereupon the water is again pressed back, and so on. As the steam-pressure increases in the generator it exerts a correspondingly-increased pressure on the water column in the tube *s*, which is already in upward movement, and drives it into the receiver. In this apparatus the same result takes place as in the water-raising device known under the name of "hydraulic ram."

The importance of this invention lies in the means of operating the water-lifting device by steam-power without, as with hitherto known steam-generators, expensive outlay for steam-boilers, furnaces, chimneys, and the like.

Having now particularly described and as-

certained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is—

5 An apparatus for generating steam, consisting of an outer shell or casing, as shown, a receptacle centrally of said casing, a heat-containing body or bodies in said receptacle, a source of water-supply, a pulsometer connected with said source, a tank or receiver above  
10 the pulsometer to receive the water forced therethrough, means for supplying a column

of water to the generator, and a steam connection between the generator and the pulsometer, for operating the latter, substantially as specified.

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

RICHARD FIEDLER.

Witnesses:

HENRY HASPER,  
C. H. DAY.