

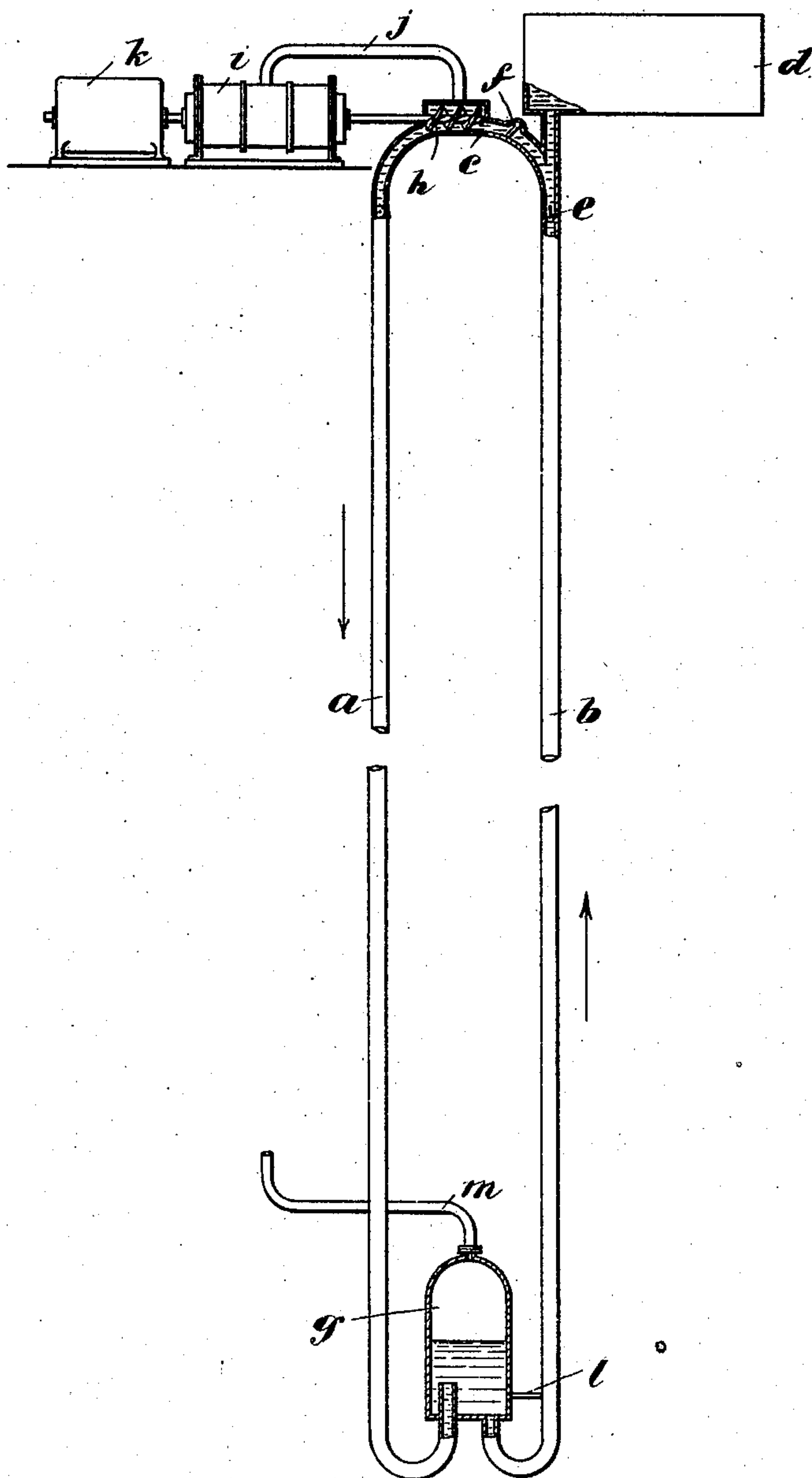
No. 847,569.

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J. GILL.

MEANS FOR COMPRESSING AIR AND THE LIKE.

APPLICATION FILED JUNE 3, 1905.



Witnesses.

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JOHN GILL, OF EDINBURGH, SCOTLAND.

MEANS FOR COMPRESSING AIR AND THE LIKE.

No. 847,569.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed June 3, 1905. Serial No. 263,676.

To all whom it may concern:

Be it known that I, JOHN GILL, a subject of the King of Great Britain, residing at Edinburgh, Scotland, have invented new and useful Improved Means for Compressing Air and the Like, of which the following is a specification.

This invention relates to means and apparatus for compressing air, gas, or other elastic fluid which is intended to be used for actuating motive-power engines, pneumatic tools, and for other purposes.

The accompanying drawing is a sectional elevation of an apparatus constructed in accordance with my invention.

According to this invention there are provided two lines of piping *a* and *b*, filled with water. The pipes may be of any suitable height and diameter and may be perpendicular or inclined, straight, or curved. These lines of piping are joined at the top by means of a short pipe *c* or otherwise, as may be found convenient. One of the aforesaid pipes *a* I call the "downward" pipe and the other, *b*, the "upward" pipe. The upward pipe is continued somewhat above its junction *c* with the downward pipe *a* and may end in an open or covered reservoir *d*. There may be two valves, one, *e*, in the upward pipe *b* immediately below the junction *c*, above mentioned, to admit of water coming up the pipe *b* and to prevent any from going down. The other valve *f* in the junction-pipe *c* to admit of water flowing toward the downward pipe *a* and to prevent water and air from escaping backward. Generally, however, valves may be dispensed with. The upward and downward pipes may be connected together at their upper ends by means of the above-mentioned reservoir *d* instead of by a junction *c* and at their lower ends through the medium of an air-reservoir *g*. The lower end of the downward pipe *a* is continued into the bottom, side, or end of the said air-reservoir *g*, which may be of any suitable shape and dimensions. The lower end of the upward pipe *b* is also connected in a similar manner with the air-reservoir *g*. The pipes are filled with water up to the level of the bottom of the reservoir *d* on the top of the upward pipe *b*.

The column of water in the downward pipe *a* balances that in the upward pipe *b*, and both equally compress the air in the air-reservoir *g* at the bottom.

The water in the pipes is made to circulate by pressure applied at or near the junction between the pipes at the top, and a supply of air is drawn or forced into the pipe at or near the same point, so that a mixture of water and air is caused to descend by the downward pipe *a*. The air is carried down with the water till it reaches the air-reservoir *g*, where it rises above the water therein as an addition to the compressed air already in the upper part thereof, and the water free from air then ascends by the upward pipe *b* and is caused to descend again down the downward pipe *a*, carrying with it more air, which it delivers to the air-reservoir *g*, and so on continuously as long as may be required. Any water in the circuit displaced by air rises to the water-reservoir *d*, placed on the top of the upward pipe *b*.

The circulation of the water and the intake of air at the top are obtained by means of any suitable kind of pumping and blowing apparatus. For example, a screw-propeller *h*, arranged to rotate in the junction-passage *c*, may be employed to keep the water in circulation in the direction of the arrow—that is to say, down the downward pipe *a* and up the upward pipe *b*—and a Root's blower *i* for introducing the air through a pipe *j* and junction-pipe *c* to the upper end of the downward pipe *a*. The circulating-screw *h* and air-blower *i* may be driven by any ordinary engine—such as a turbine *k*, for example—which may be driven by a steam, by a supply of compressed air taken from the air-reservoir *g*, or by any other suitable motive power.

I claim—

1. In an apparatus for compressing air or other elastic fluid by means of a descending column of incompressible liquid the combination of a downward pipe *a* and an upward pipe *b* and a closed pipe *c* connecting together the pipes *a* and *b* to their upper ends, an air-reservoir *g* having connected to it the lower ends of the pipes *a* and *b*, a pump *h* for circulating the water or other incompressible liquid, and a blower *i* for delivering the air to be compressed to the upper end of the downward pipe, substantially as described.

2. In an apparatus for compressing air or other elastic fluid by means of a descending column of incompressible liquid the combination of a downward pipe *a* and an upward pipe *b* and a closed pipe *c* connecting to-

gether the pipes *a* and *b* at their upper ends,
an air-reservoir *g* having connected to it the
lower ends of the pipes *a* and *b*, a pump *h* for
circulating the water or other incompressible
5 liquid, and a blower *i* for delivering the air to
be compressed to the upper end of the down-
ward pipe and a reservoir *d* at the top of the
upward pipe *b*, substantially as described.

In testimony whereof I have signed my
name to this specification in the presence of 10
two subscribing witnesses.

JOHN GILL.

Witnesses:

ALBERT LIVINGSTON CARSON,
JAMES DONALD GARRETT.