

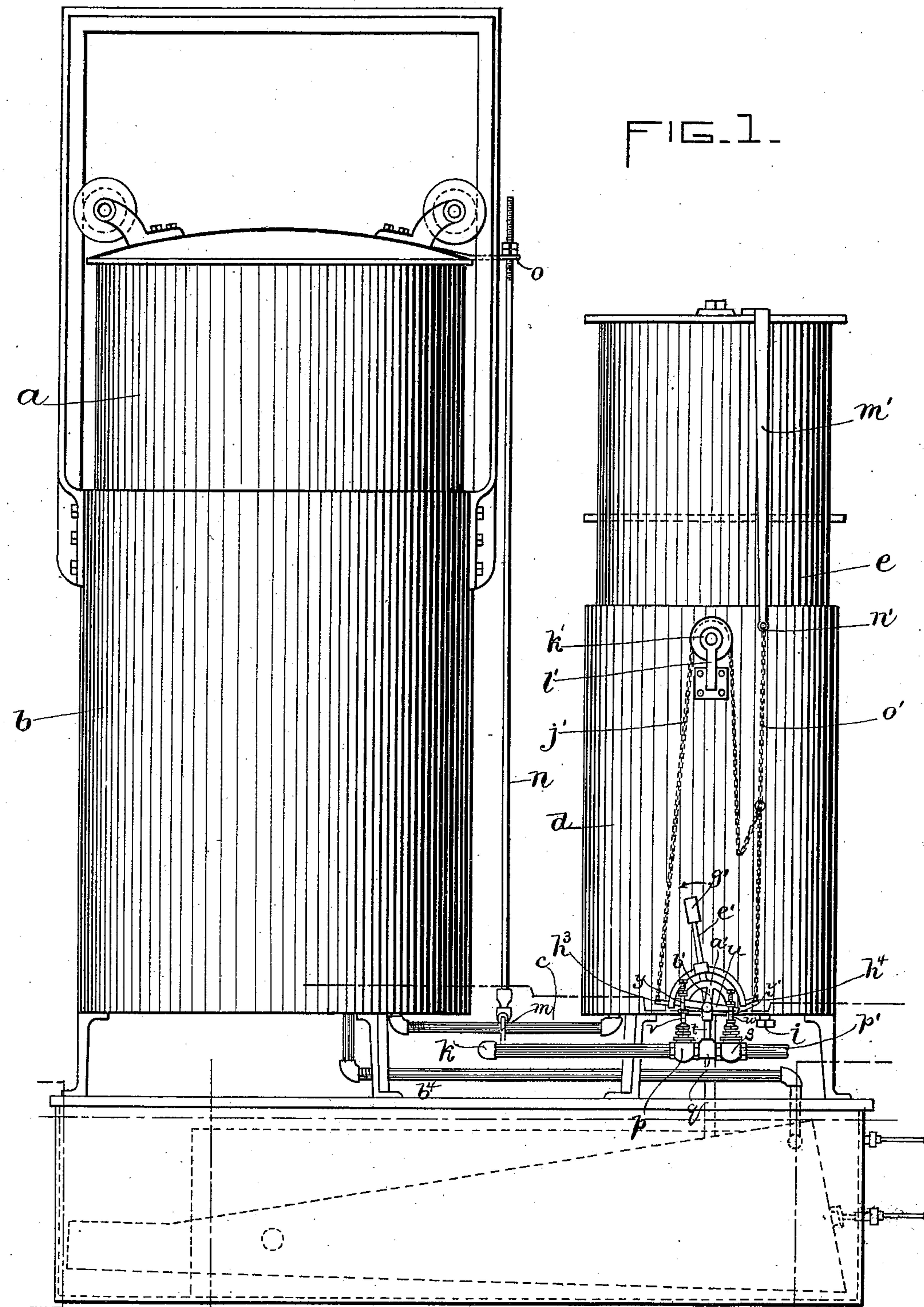
(No Model.)

3 Sheets—Sheet 1.

G. H. BURROWS.
BLOWER FOR CARBURETERS.

No. 563,563.

Patented July 7, 1896.



WITNESSES:

A. G. Harrison.

A. D. Adams.

INVENTOR:

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By Wright Knott & Son
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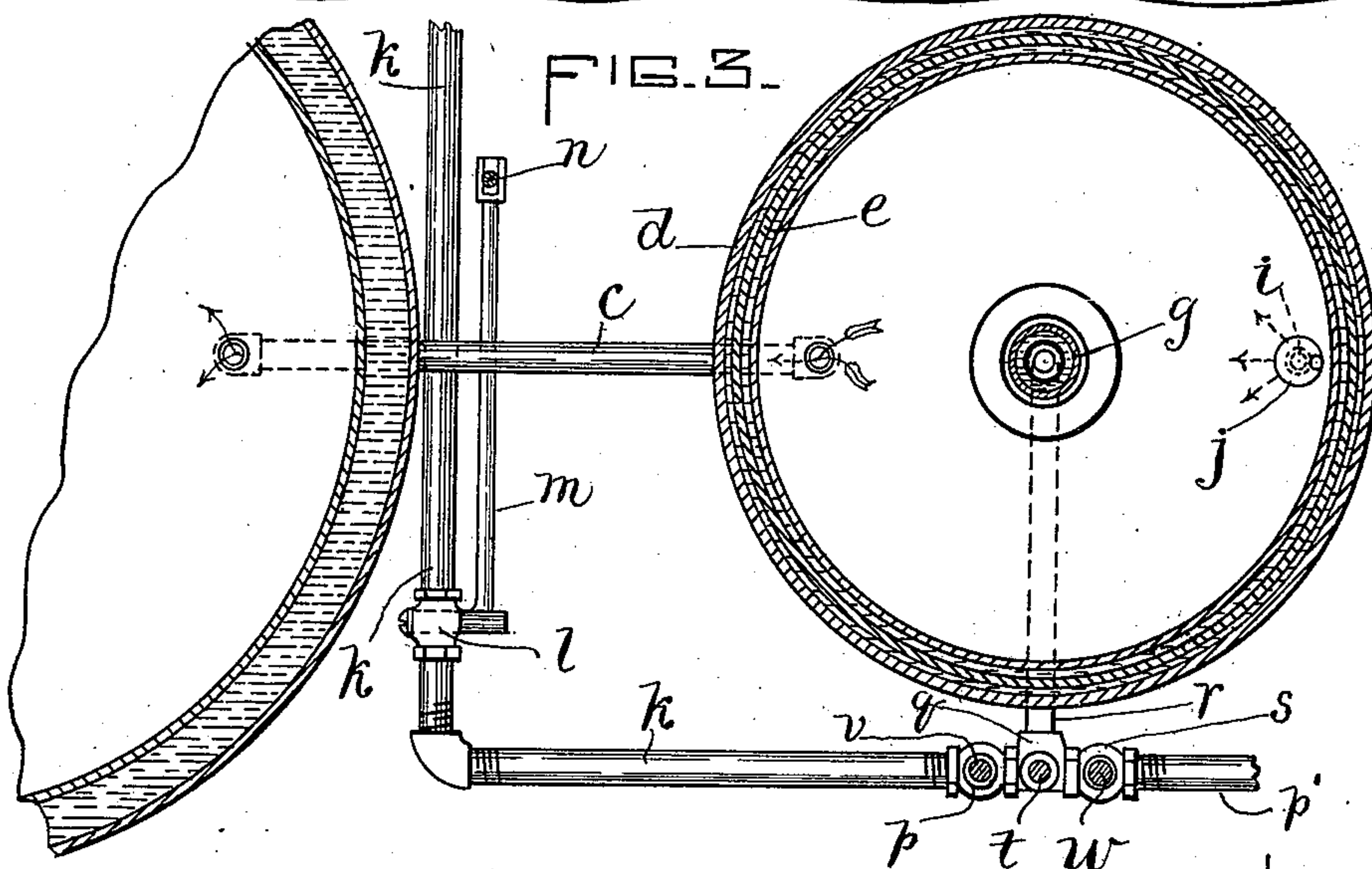
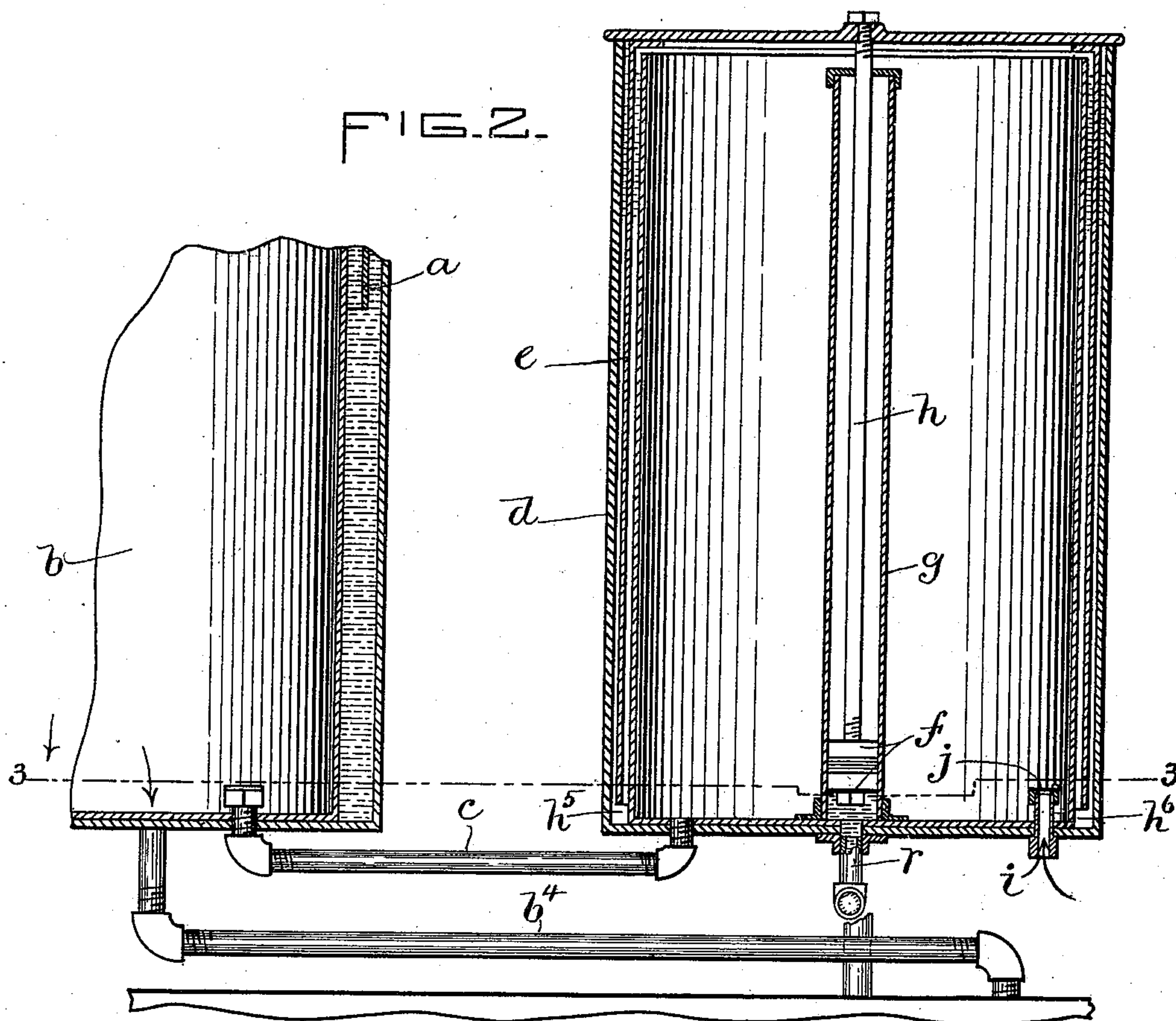
(No Model.)

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Patented July 7, 1896.



WITNESSES:

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(No Model.)

3 Sheets—Sheet 3.

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FIG. 4.

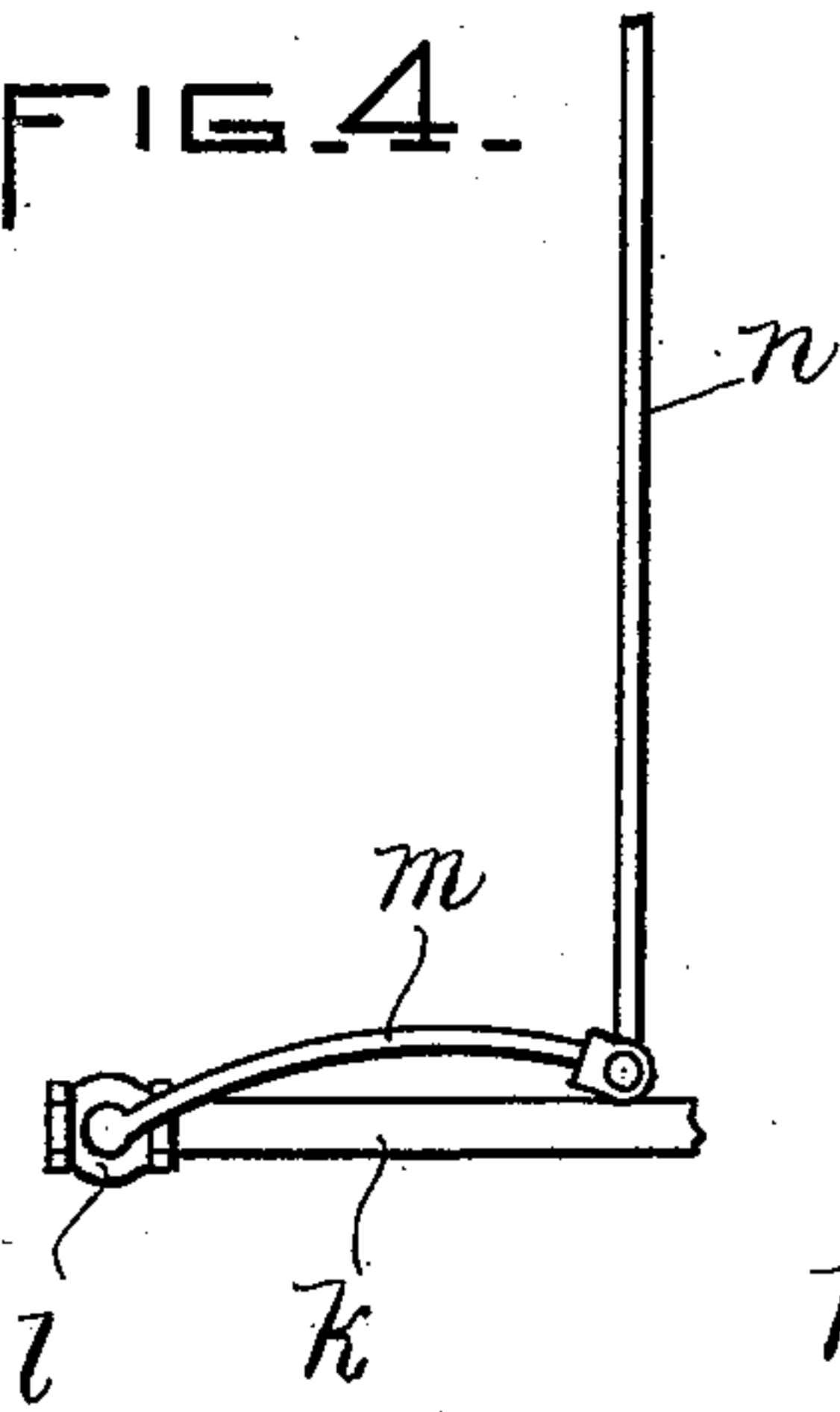


FIG. 5.

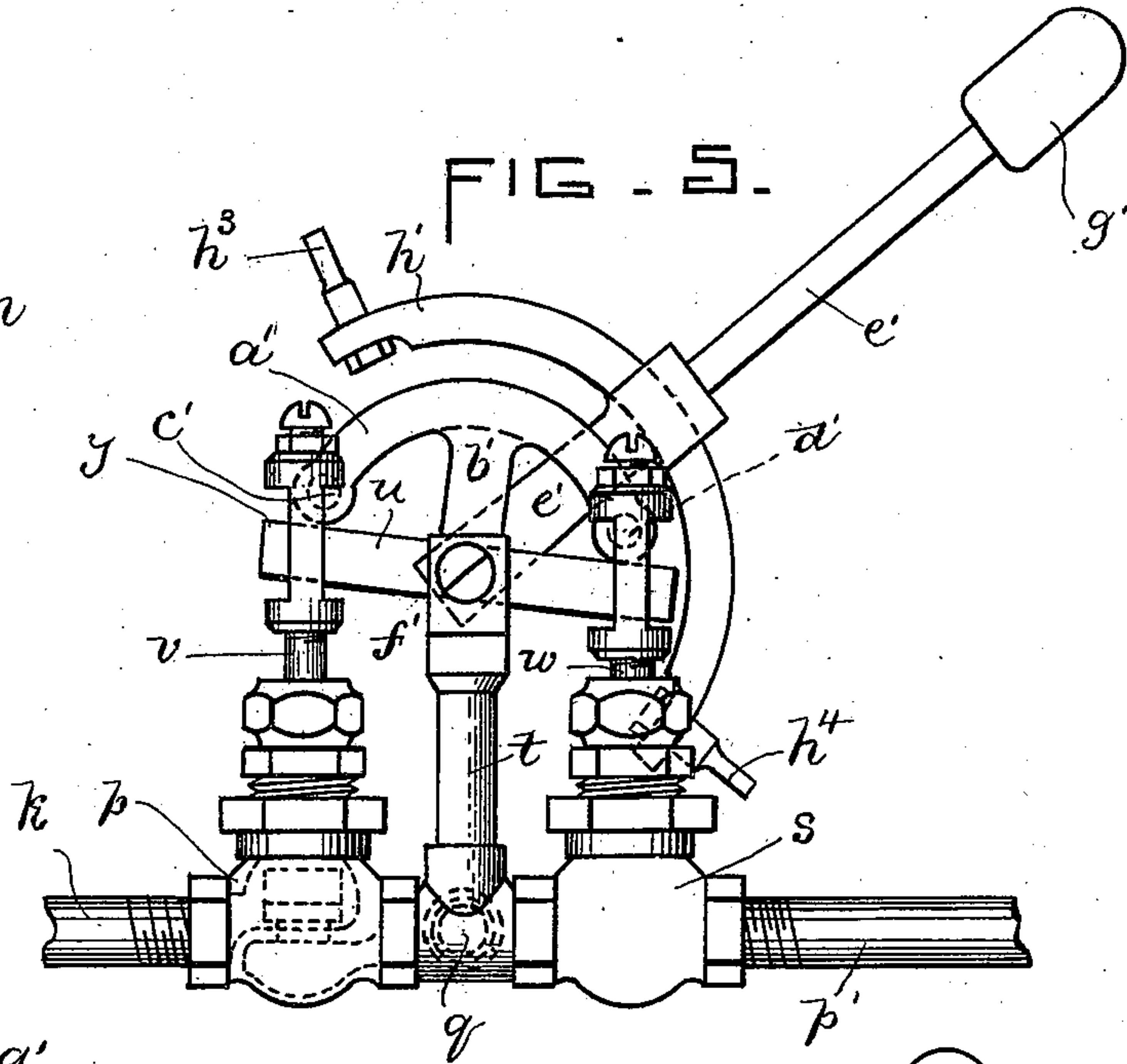


FIG. 6.

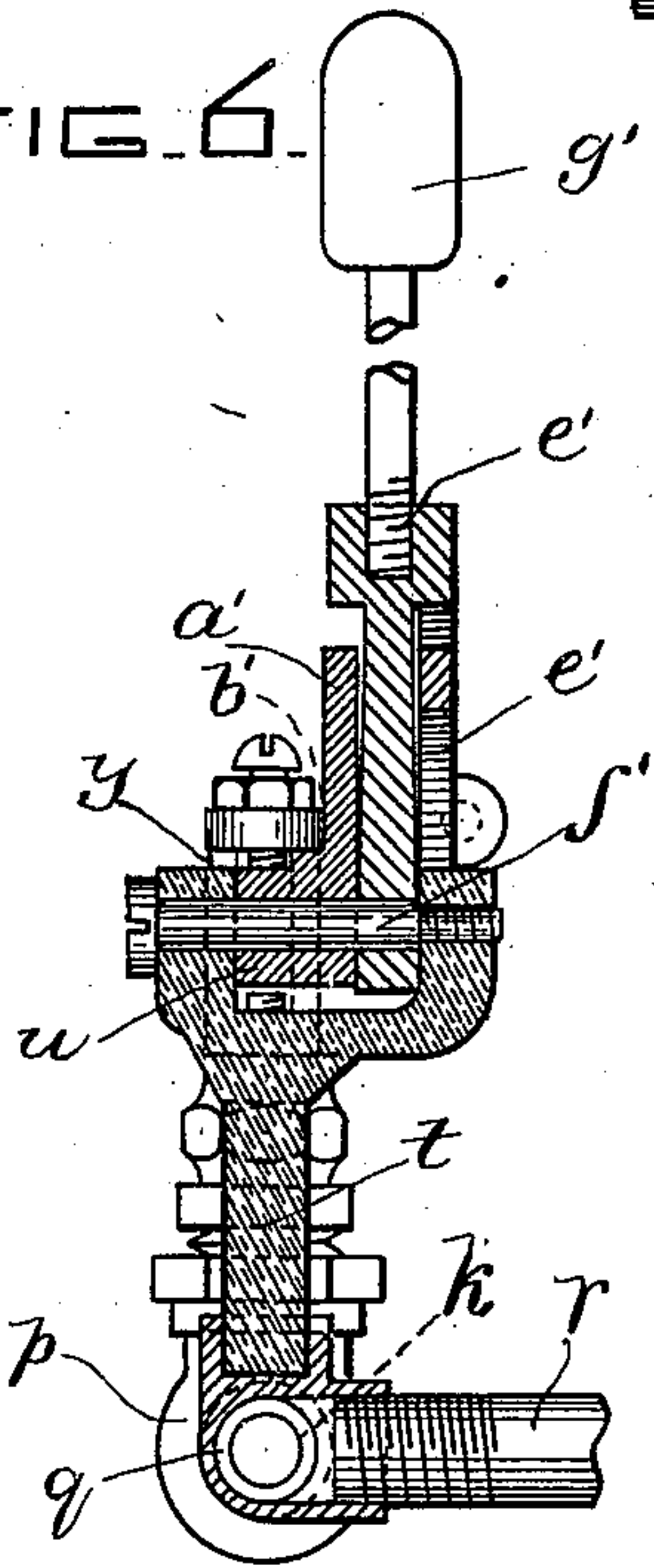


FIG. 7.

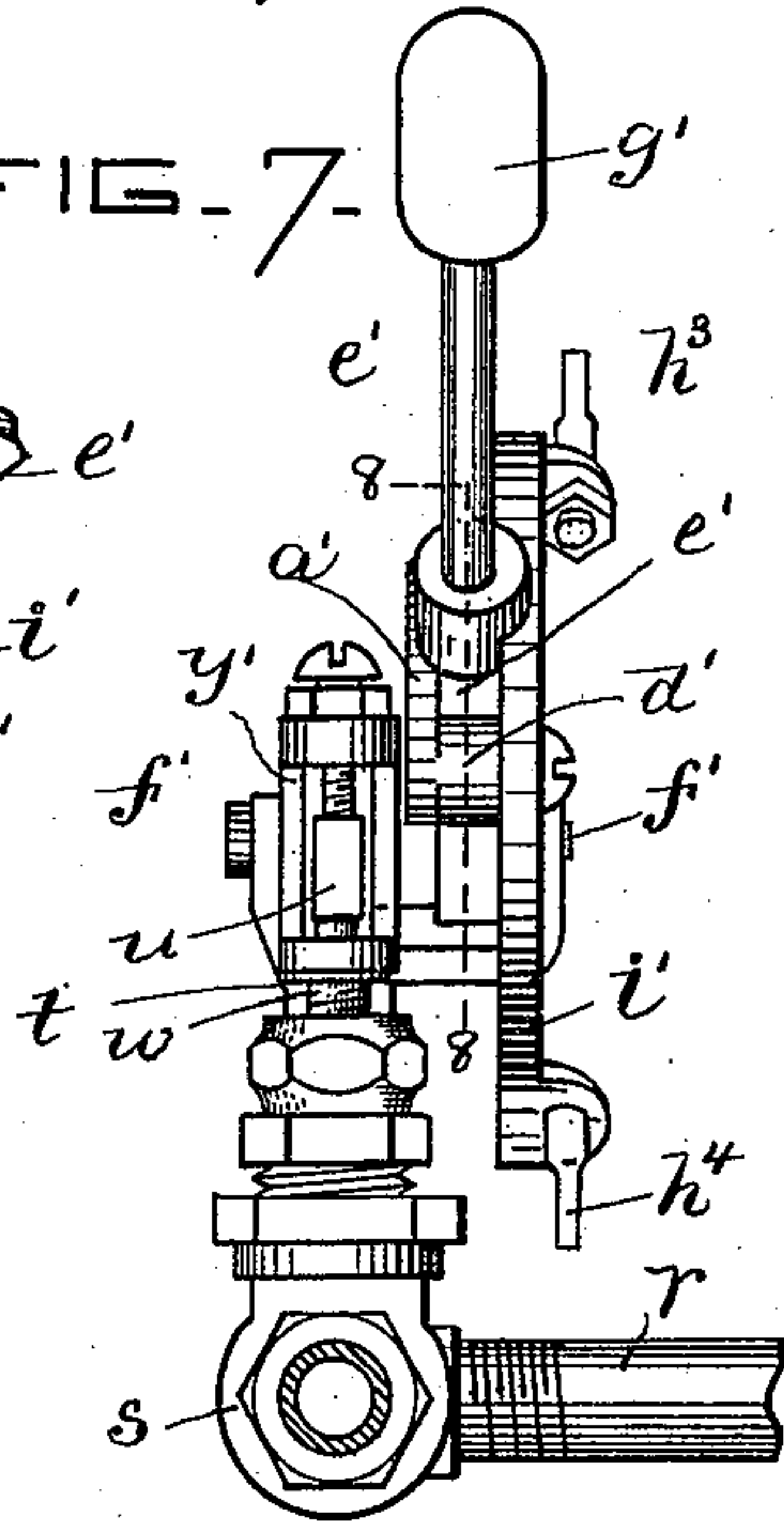
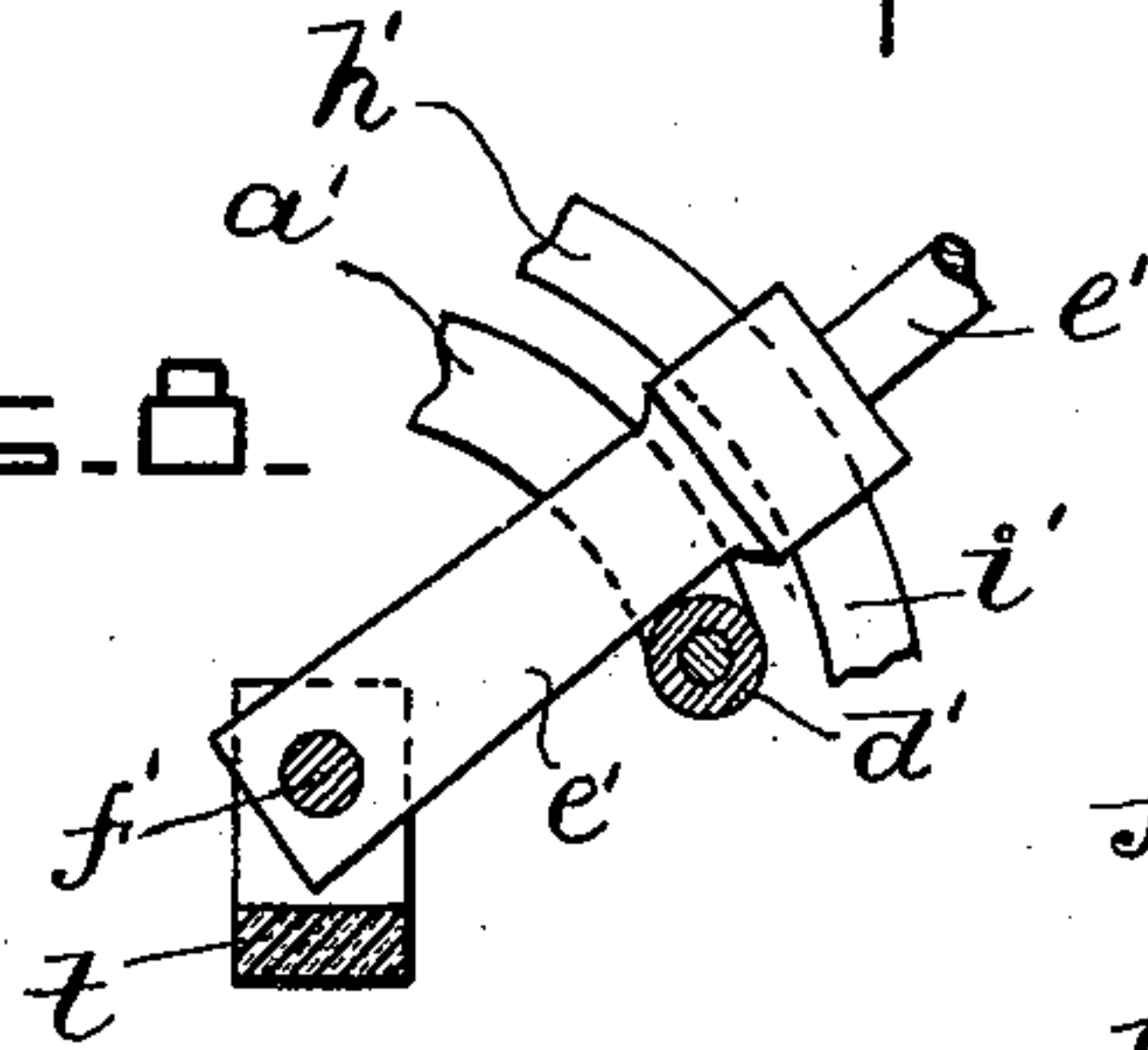


FIG. 8.



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UNITED STATES PATENT OFFICE.

GEORGE H. BURROWS, OF SOMERVILLE, MASSACHUSETTS.

BLOWER FOR CARBURETERS.

SPECIFICATION forming part of Letters Patent No. 563,563, dated July 7, 1896.

Application filed December 5, 1895. Serial No. 571,102. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. BURROWS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Blowers for Carbureters, of which the following is a specification.

This invention relates to air forcing or blowing mechanism operating automatically under impulse of water-pressure to supply air as needed to carbureting apparatus; and the invention consists in certain peculiarities of construction and combinations of parts which will be found recited in the appended claims.

The drawings which accompany and form part of this specification illustrate an embodiment of the invention.

Figure 1 shows the apparatus in side elevation. Fig. 2 shows an enlarged vertical sectional view of a portion of the apparatus. Fig. 3 shows a horizontal section on line 3 3 of Fig. 2. Fig. 4 shows a detail of certain water-valve-controlling means. Fig. 5 shows an enlarged elevation of means employed to control a double arrangement of water-valves. Fig. 6 shows a vertical section of the same. Fig. 7 shows an edge view thereof. Fig. 8 shows a section of the line 8 8 of Fig. 7.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents an inverted tank or air-holder, which floats in water in an annular tank *b*. The pipe *c*, which admits air to the floating holder *a*, has connection with the bottom portion of an annular tank *d*. A floating holder *e* is provided and is adapted to be raised by the force of water applied to a piston *f*, Fig. 2, in a cylinder *g*, the lower end of which is suitably secured to the tank *d*. The piston is provided with a rod *h*, the upper end of which is secured to the head or top of the floating tank or holder *e*, the arrangement being such that when the holder is raised air is induced to enter the tank through an opening *i*, provided with a suitable check-valve *j*, said air being forced into the tank *b* through the pipe *c*. The holder is raised, as before stated, by admission of water into the cylinder *g* under the piston *f*. Said water is obtained from the public or other water supply through the

means of pipe *k*, Fig. 3, and is provided with a valve *l*, which valve is provided with an operating-handle *m*, the outer end of which is pivotally secured to the lower end of a vertical rod *n*, the upper end of the latter being suitably secured to a lug *o*, formed upon the head of the inverted holder *a*, so that when the latter is moved upwardly by the air from the holder *e* to the required height, said upward movement closes the valve *l*, which remains in the closed position until the supply of air in the holder *a* has been diminished, when said holder is permitted to settle, by which action the valve *l* is opened, causing the water to operate holder *e* to supply air to holder *a*.

The supply-pipe *k* is connected at one end with a valve *p*, which valve is connected to a T-piece *q*, to which one end of a pipe *r* is connected, the other end of the pipe *r* communicating with the cylinder *g*. To the outer end of the T-piece *q* is connected a valve *s*, similar in construction to the valve *p*, but operating reversely. Said valves are opened and closed to control the entrance of water from the pipe *k* to the cylinder *g* and the escape of the water therefrom, as follows: A vertical support *t* is mounted upon the T-piece *q*, and centrally pivoted upon said support is a walking-beam *u*, adapted to operate the valves *p* and *s*, as hereinafter described. The valves are provided with a vertically-movable spindle or stem *v w*, the upper portions of which are screw-threaded, and are provided with yokes *y y'*, which receive the ends of the walking-beam *u*.

a' represents a semicircular guide supported by a standard *b'*, formed upon the walking-beam *u*. At each end of said guide and formed thereon are lugs *c' d'*, adapted to be engaged by a lever *e'*, Fig. 8, pivoted at *f'* to the standard *t*, and having a weight *g'* upon its upper end. Said lever is provided with arms *h' i'* to the ends of which are suitably secured lugs *h³ h⁴*, to which is affixed, preferably, a flexible chain *j'*, Fig. 1, the latter passing over a roller *k'*, mounted in a bracket *l'*, secured to the tank *d*. To the top of the holder *e* is secured a downwardly-projecting arm *m'*, the lower end of which is provided with an eye *n'*, to which is secured one end of a chain *o'*, the other end of said chain being suitably

attached to the chain *j*, the arrangement being such that when the holder *e* is raised, the weighted lever *e'* is carried from the position shown in Fig. 5 to the position shown in Fig. 1, from which position the lever is carried over in the direction of the arrow by gravitation and strikes the lug *c'* upon the guide *a'*, which causes motion to be communicated to the walking-beam through said guide, and the valve *p* to be closed and the valve *s* to be opened.

The parts are shown in Fig. 1 in the relative adjustments they assume when a charge of water has entered the cylinder *g*, and forced the float *e* up to a point where it throws over the weight *g'*, and thereby shuts off the water supply to said cylinder and opens the waste-pipe, so that the float *e* may settle and send its supply of air into the holder *a*. As the air in the said holder *a* diminishes by feeding the carbureter the holder lowers, and when it has settled to a certain point the vertical rod *n* will, through the arm *m*, cause the water-supply valve *l* to be opened, which will admit water through valve *p* into cylinder *g*, causing the piston *f* to rise and carry up therewith the holder *e*, which movement induces a current of air through air-passage *i* into the tank *d*. When the holder *e* has been carried up sufficiently to operate the valves, as just described, the valve *s* is opened and the water is allowed to escape from the cylinder *g* through said valve into the waste-pipe *p'*. The air which is contained in the holder *e* is now forced by the weight of the latter (which descends upon the escape of the water from the cylinder *g*) into the holder *a*, causing the latter to rise, and in so doing to close the water-supply valve *l*.

The above-described operation of the valve-operating means will be operated reversely when the water has escaped from the cylinder *g* and the holder *e* has settled sufficiently to operate the mechanism to close valve *s* and open valve *p* to admit water to cylinder *g* when holder *a* has descended sufficiently to operate water-supply valve *l*.

The reservoirs or holders are constructed on the principle of a gasometer, consisting of an outer cylinder or shell open at the top, and an inner annular partition forming an inner cylinder, and an inverted holder or cylinder closed at the top and adapted to move vertically between the outer and inner shells, the space between the outer and inner shells being filled with water to form a seal against the escape of air. The tank *b* is provided with a guide adapted to be engaged by grooved trucks secured to the upper portion or head of the reservoir *a*, so that it may be kept central of the tank *b* when rising or falling, a construction which is common in apparatus of this class. In the case of the holder *e* and

tank *d*, the guides are dispensed with, and the space *h*⁶ is filled with glycerin, which, being of greater specific gravity and of the nature of a lubricant, will enable the holder to operate against any friction caused by the lateral strain exerted upon the latter by the operation of the valves *p* and *s*.

It will be seen that the apparatus described will operate to keep a carbureter constantly supplied with air, being only dependent for its continued operation upon the presence of an adequate water-pressure, such as that in ordinary city water systems.

Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all the modes of its use, what I claim, and desire to secure by Letters Patent, is—

1. In an air-blower for carbureters, the combination of a tank; a water-cylinder therein; an inverted air-holder in said tank, and having a piston-rod and piston in the said water-cylinder; a water-supply pipe communicating with said cylinder; a cut-off valve; a waste-valve; a walking-beam between said valves and engaged with their stems, said walking-beam having projections or abutments on opposite sides of its pivot; a weighted lever pivoted concentrically with said walking-beam and extending between the abutments on the beam; and suitable connections between said weighted lever and the inverted air-holder, substantially as and for the purpose described.

2. In an air-blower for carbureters, the combination of a tank; a water-cylinder therein; an inverted air-holder in said tank, and having a piston-rod and piston in the said water-cylinder; a water-supply pipe communicating with said cylinder; a cut-off valve; a waste-valve; a walking-beam between said valves and engaged with their stems, said walking-beam having projections or abutments on opposite sides of its pivot; a weighted lever pivoted concentrically with said walking-beam and extending between the abutments on the beam, said lever having laterally-projecting arms; a chain or like flexible connection attached at its ends to the outer ends of said arms; a roller on the tank and supporting the middle portion of said chain; and suitable connections between the chain and the inverted air-holder, for the purpose described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 30th day of November, A. D. 1895.

GEORGE H. BURROWS.

Witnesses:

C. F. BROWN,
A. D. HARRISON.