

No. 691,746.

Patented Jan. 28, 1902.

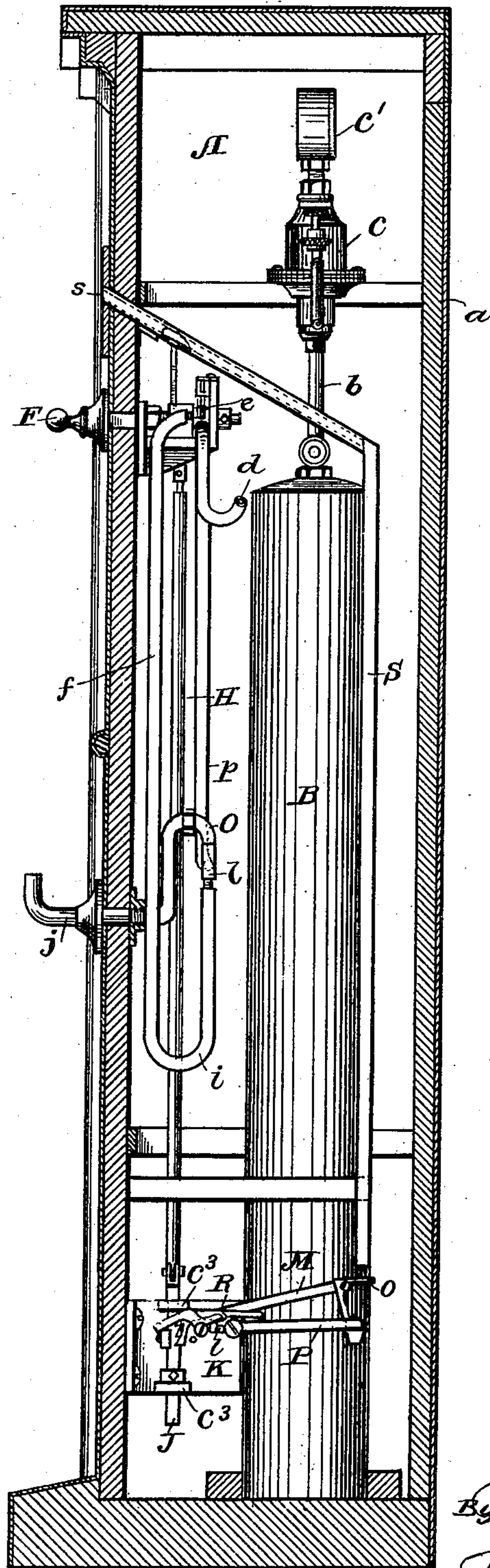
J. H. CHAMP.
COIN CONTROLLED APPARATUS.

(Application filed Sept. 25, 1900.)

(No Model.)

4 Sheets—Sheet 1.

FIG. 1-



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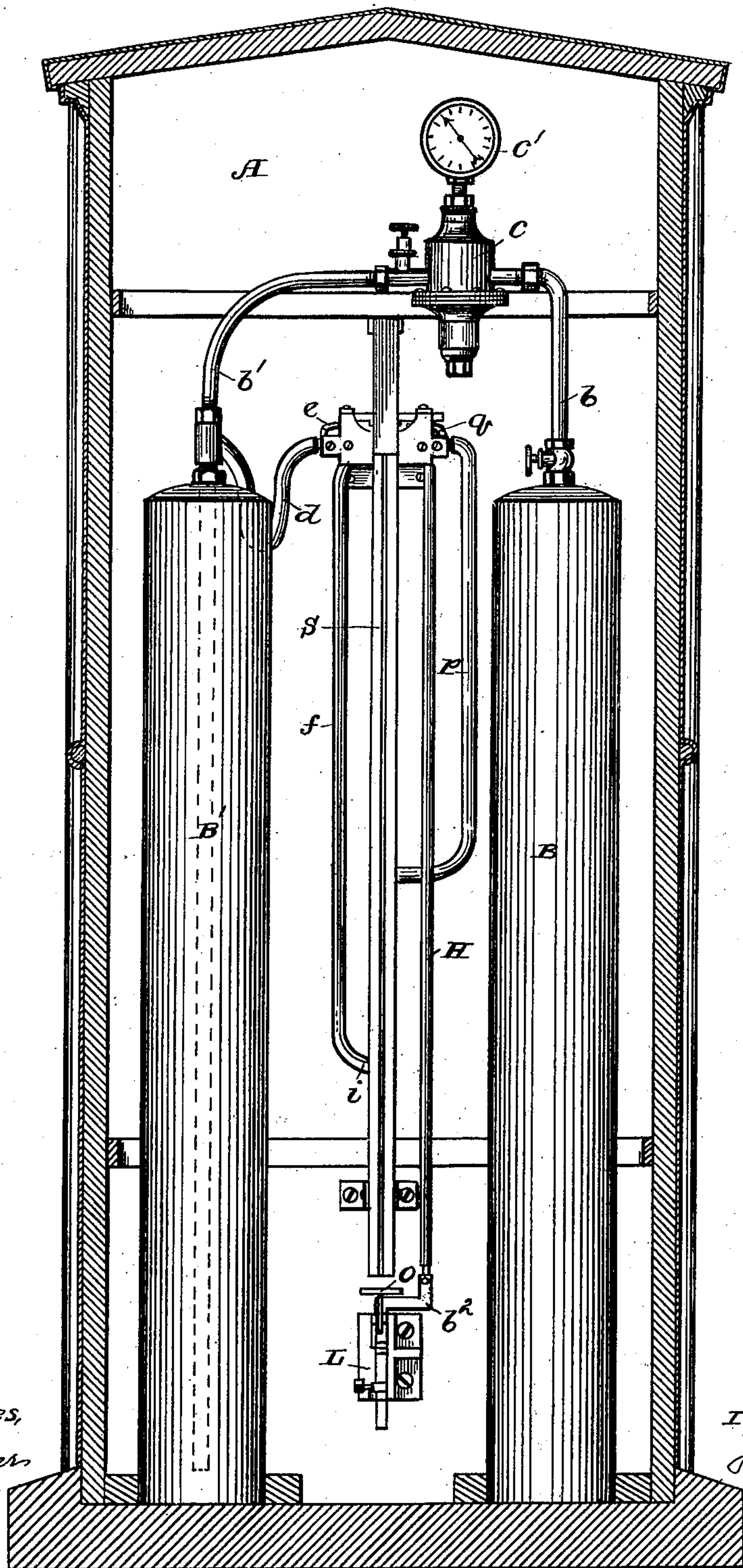
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—FIG. II—



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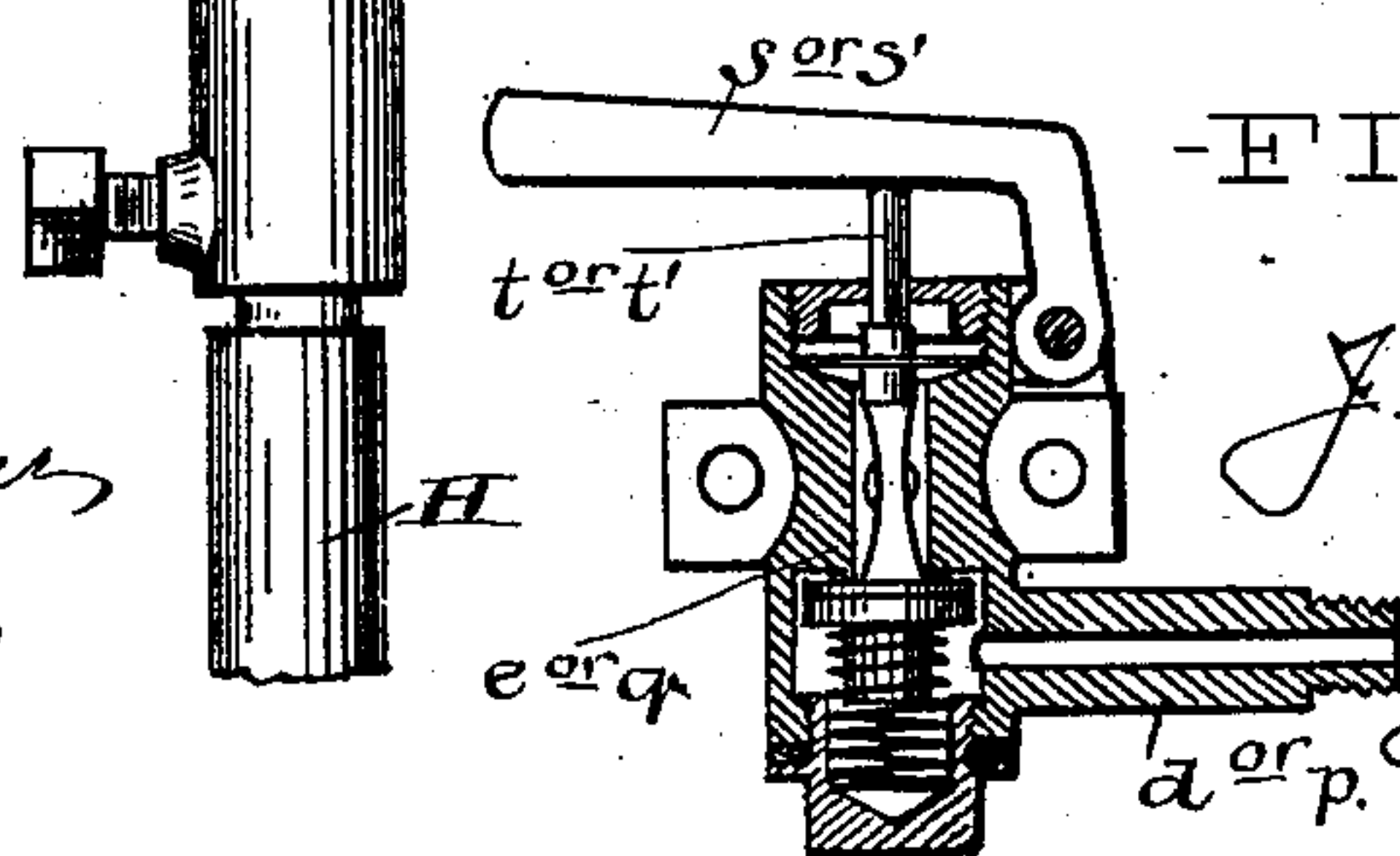
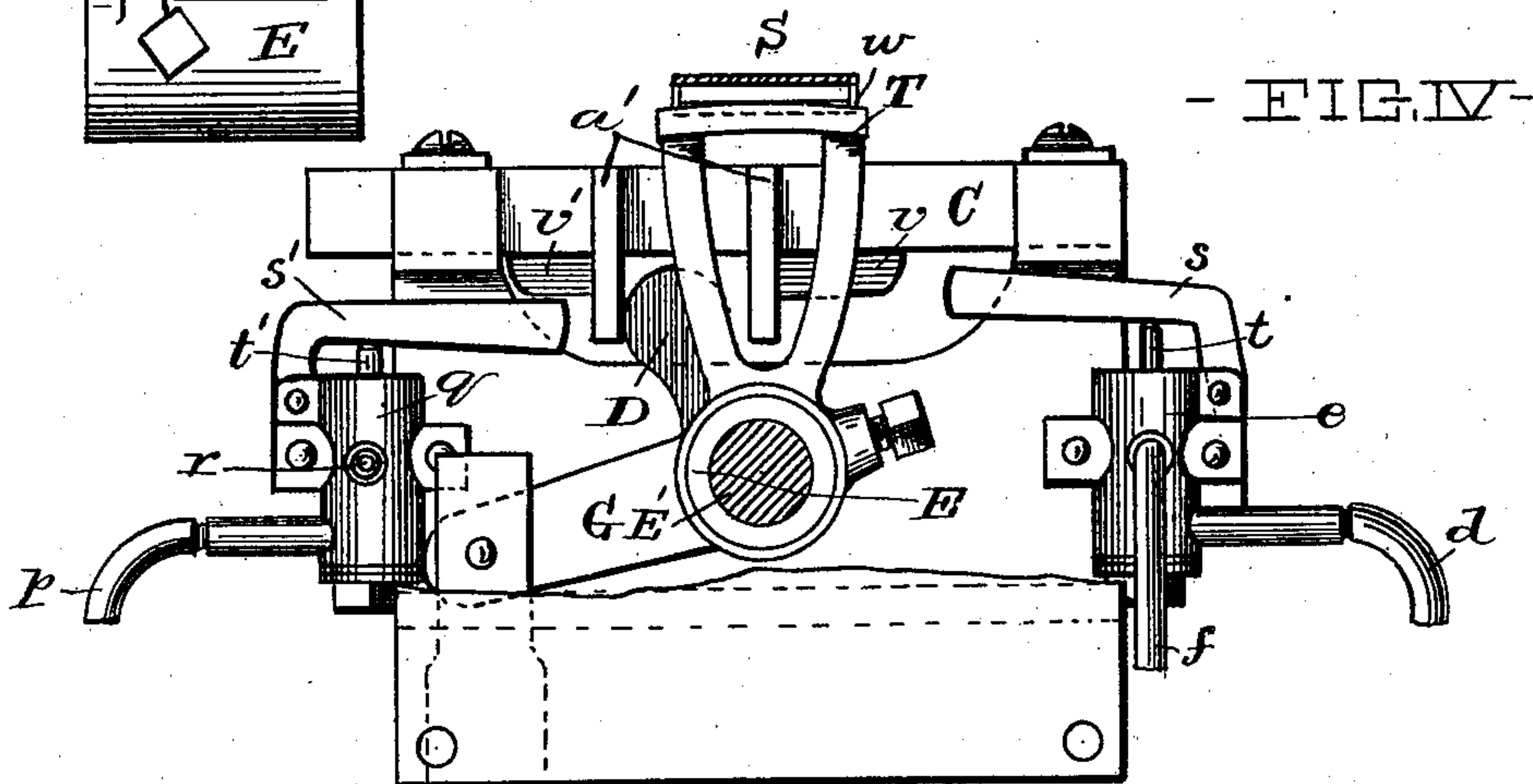
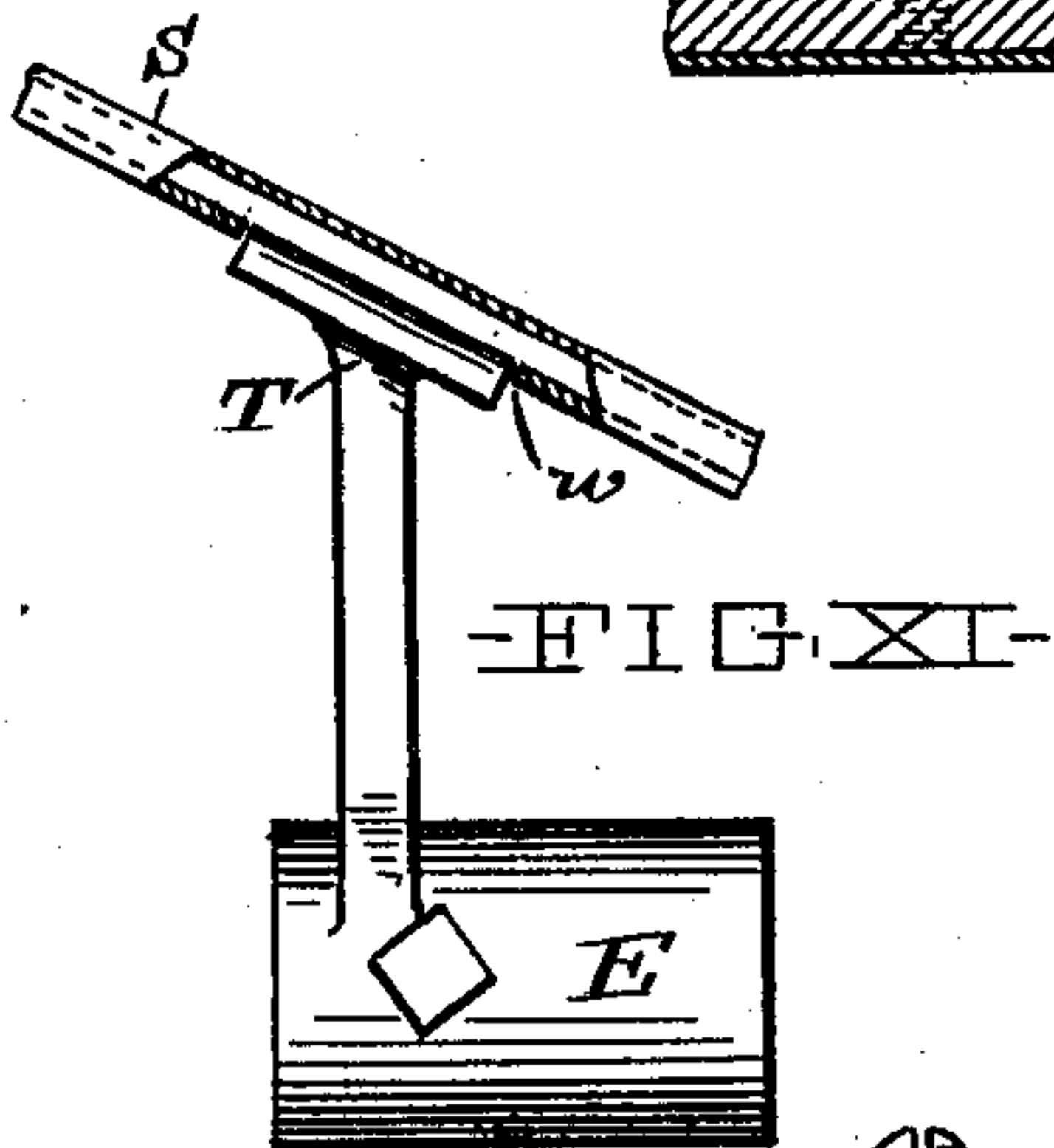
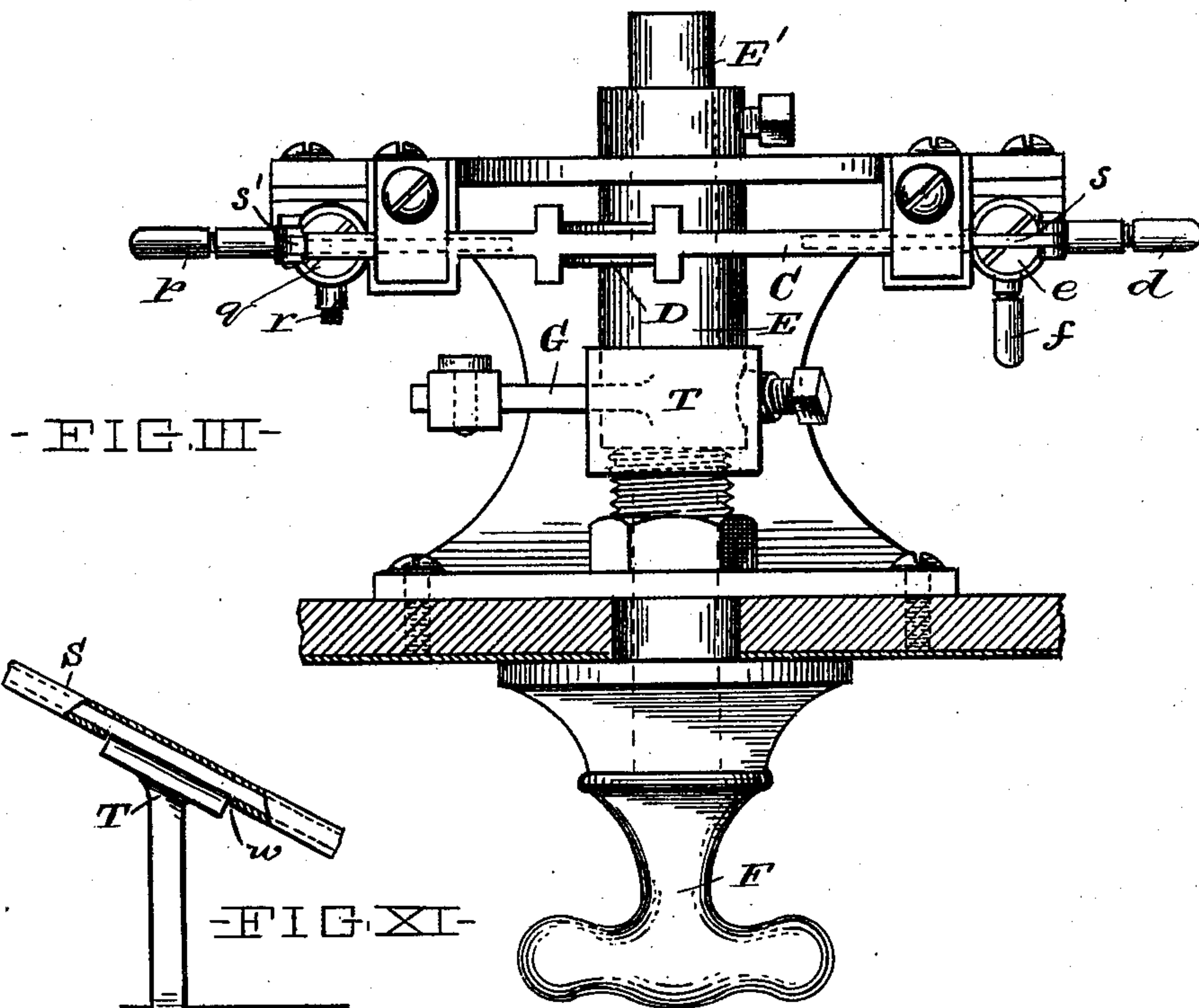
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4 Sheets—Sheet 3.



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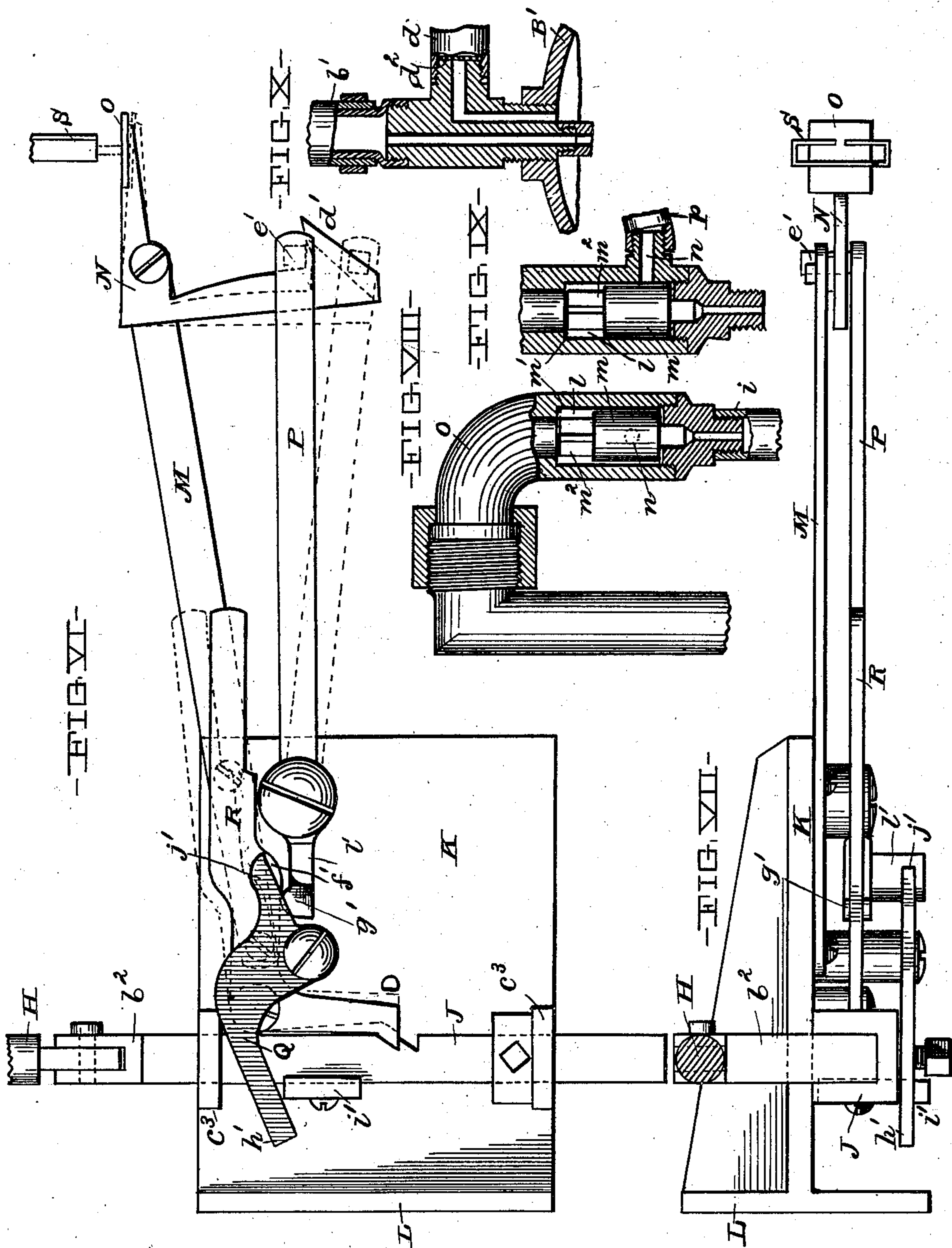
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

JOSEPH H. CHAMP, OF CLEVELAND, OHIO.

COIN-CONTROLLED APPARATUS.

SPECIFICATION forming part of Letters Patent No. 691,746, dated January 28, 1902.

Application filed September 25, 1900. Serial No. 31,034. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. CHAMP, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Coin-Controlled Apparatus, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The object of my invention is to provide an improved coin-controlled apparatus. It is especially adapted for use in the refilling of bicycle-tires with fluid under pressure.

It consists of the means hereinafter described, and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

Figure I is a vertical transverse section through the casing of the machine, but showing in side elevation all parts of the machine inclosed by such casing excepting the expansion-cylinder, which would be nearer to the observer. Fig. II is a rear elevation of the mechanism inclosed by the casing and showing the latter in vertical section at right angles to the section of the preceding figure. Fig. III is a detail top plan of the handle mechanism connected with the fluid supply and exhaust valve mechanisms and with the upper portion of the coin-controlling mechanism, such figure also showing the magnet that operates below the coin-chute. Fig. IV is a front elevation of said members of the immediately-preceding figure, but having that portion of the front casing which carries the handle removed. Fig. V is a detail, partly in vertical section and partly in vertical side elevation, of one of the twin valve mechanisms shown in the immediately-preceding figure. Fig. VI is a detail in side elevation of the lower portion of the coin-controlling mechanism. Fig. VII is a top plan view of the members of the immediately-preceding view. Fig. VIII is a detail of the back-pressure-valve mechanism, showing the valve-

chamber in section and the valve in side elevation. Fig. IX is a detail, partly in side elevation and partly in vertical section, of the members of the immediately-preceding figure in a plane at right angles to such latter figure. Fig. X is a detail view, mainly in vertical section, of the fluid connections of the expansion-cylinder. Fig. XI is a detail view representing the magnet in side elevation and the cooperating portion of the coin-chute in longitudinal section.

The casing A may be of any desired suitable construction, its purpose being to exclude the public from access to the inclosed mechanism and also protect the latter from the weather. It is preferably provided at its rear with a door *a*, whereby privileged access may be had to its interior. Two upright cylinders B B' are provided—the one, B, being a storage-cylinder of compressed carbonic-acid gas and the other, B', being an expansion-cylinder to permit the cool and condensed gas to warm and rarefy before being subject to draft for tires, respectively communicating by tubes *b b'* with the pressure-regulator *c*, having a gage-dial *c'*, under conditions adapted to automatically cause gas from the storage-cylinder to pass under a predetermined pressure into the expansion-cylinder. A tube *d*, provided with a strainer *d'*, carries the fluid from the expansion-cylinder B' to the bottom of the valve-cylinder *e*, wherein communication with tube *f*, connected with the central portion of said cylinder, is controlled by a valve having a tendency to be maintained in raised position by a spring, such raised position of the valve shutting off communication within the valve-chamber between said tubes *d* and *f*. This fluid-supply-valve mechanism is a duplicate of the exhaust-valve mechanism hereinafter referred to, and the interior construction of each is shown by the single view of Fig. V. Said tube *f* depends in the lower loop *i* below the horizontal line of the tire-feed nozzle *j*, which latter passes through the lower portion of the front wall of the casing A. The rear upper portion of such lower loop *i* connects with the bottom of back-pressure-valve chamber *l*, which chamber has its top communicating with upper loop *o*, which empties into said tire-feed nozzle *j*. Within this chamber *l*, thus located within the line of the pas-

sage of the fluid in outflow, is valve *m*, loosely fitted and allowing sufficient space between itself and the inner wall of its chamber to permit passage of the fluid between the two. This valve is circular in horizontal section, which section is of such less diameter than the similar section of said chamber *l* as to permit a limited quantity of fluid to pass freely between the vertical circular walls of said valve and chamber as the fluid passes from the lower to the upper portion of said valve-chamber. The valve is disconnected from its valve-chamber and is of vertical dimension sufficient to have its side wall extend upwardly beyond the waste-port *n*, hereinafter described. The valve is free to have movement lengthwise of the chamber and is adapted when in its uppermost position to fit against valve-seat *m'*, formed at the top of said chamber, and thereby effectually cut off passage of fluid into said upper loop *o*. A stem *m*² projects upwardly from the central top of the valve and passes up into said upper loop when the valve rises, so as to insure the valve properly fitting against the valve-seat, so as to seal the latter. The side port *n* in the lower portion of said back-pressure-valve chamber connects with tube *p*, the upper end of such tube connecting with the lower portion of valve-cylinder *q*, such cylinder *q* being of construction and having an inclosed upwardly-spring-pressed valve, such as shown in Fig. V, the side port *r* of such cylinder *q* being open to the interior of the casing and acting as an exhaust.

Each of the twin valve-cylinders *e* and *q* has a pivotal angular lever whose lower portion engages with the top of a valve-stem, each such pivotal lever being adapted to be depressed by a cam carried on the lower slide of horizontal slide C, such lever, stem, and cam of the supply mechanism being respectively lettered as *s t v*, while the corresponding members of the exhaust mechanism are respectively lettered as *s' t' v'*, said slide being thrown in either direction by arm D, fastened on rock-shaft E and working loosely between two lugs *a'*, depending from the slide between said two cams *v v'*. The shaft projects through the upper front wall of the casing and is provided with exterior handle F. An arm G is fastened to said shaft E at a point thereof between said slide-bar C and the front casing-wall, such arm being pivoted to the upper end of rod H, which latter has its lower end connected to angle-iron *b*³, which latter is also connected to depending ratchet-bar J. This latter bar has vertical sliding movement in guideways *c*³, projecting horizontally from vertical web K of bracket L, fastened to the lower portion of the front wall of the casing. An arm M projects rearwardly from said web K and has pivoted to its outer extremity the bell-crank N, the free end of the horizontal arm of such bell-crank carrying the coin-plate O, the free end of the vertical depending arm of the bell-crank carry-

ing the hook *d'*, upon which detachably rests the horizontal lug *e'*, projecting laterally from the free end of the long arm of trip P. Pawl R is pivoted to said web K so as to swing in a vertical plane in and out of engagement with said ratchet-bar J, its horizontal arm being provided with a depending cam *f'*, adapted to be engaged by upwardly-projecting lug *g'* on the free end of the short arm of said trip P. A dog Q is also pivoted to said web K and has its front arm *h'* adapted to be engaged by horizontal lug *i'*, carried on ratchet-bar J, the rear arm *j'* of the dog being adapted to bear down upon lug *l'*, projecting laterally from the short arm of said trip as the ratchet-bar completes its upward movement.

A coin-slot *s* is formed in the front wall of the casing and connects with a coin-chute S, the latter adapted to conduct the coin so as to discharge itself on coin-plate O. The magnet T is suitably mounted by sleeve E on rock-shaft E' and is adapted to have rocking movement as actuated by said rock-shaft transversely beneath the opening *w*, formed in the floor of the coin-chute, the construction and adaptation of said members being such as to permit the desired coin to pass freely down through the chute without hindrance from the magnet, but to arrest slugs and pieces of matter which might be wrongfully introduced into the coin-slot and to cause all undesirable material possible to be attracted by the magnet to be lodged on the latter, and thus to prevent such undesirable material from passing down through the coin-chute to the point where the desired coin should fulfil its function in the operation of the machine. When the rock-shaft is turned by the handle F, all such base material which has been attracted to the working face of the magnet will be thrown from off the latter and fall down within the casing.

The operation of the machine is as follows: The bicyclist removes the cap from the nipple of his tire and places his wheel on the tire-feed nozzle *j*, with the opened nipple fitting in the open end of such nozzle, the mouth of the latter being of size and shape adapted to effect, substantially, an air-tight joint with such open nipple of a wheel-tire. The bicyclist then slips a suitable coin into the slot, whence the coin passes through the coin-chute and is discharged onto the coin-plate. The latter thereupon swings downwardly and tilts the vertical arm of the bell-crank N toward ratchet-bar J, so as to cause hook *d'* to pass from under lug *e'* of trip P. The long arm of the trip thereupon falls of its own weight and causes lug *g'* on its short arm to engage with cam *f'* of pawl R, thereby causing such pawl to disengage itself from the ratchet-bar. The bicyclist then turns the handle F to the right and there maintains it. As the handle F is thus turned toward the right its arms D throws slide C toward the right, thereby causing the cam *v* to be disengaged from lever *s'*, so as to permit the up-

ward spring-pressed valve in cylinder *q* to rise and close communication between tube *p* and waste-port *r*, and simultaneously therewith cam *v* depresses lever *s*, which latter depresses the upwardly-spring-pressed valve in cylinder *e*, thereby establishing communication between tubes *d* and *f*. At the same time with such movement of slide *C* toward the right arm *G* of rock-shaft *E* raises rod *H*, which latter raises ratchet-bar *J*, so that lug *i'* of the latter engages with arm *h'* of dog *Q*, thereby causing the remaining arm *j'* of said dog to bear down upon lug *l'* of the short arm of trip *P*, so as to raise the long arm of the latter and permit hook *d'* to automatically swing beneath lug *e'*, so that when ratchet-bar *J* again descends and releases dog *Q* from pressure upon the short arm of trip *P* the long arm of the latter will in turn descend, and its lug *e'* will again seat itself on hook *d'*. Communication of gas from expansion-cylinder *B'* being had with tube *f* by reason of said movement of slide *C* toward the right, such gas under pressure passes through lower loop *i* upwardly into valve-chamber *l* and thence upwardly through upper loop *o* and then downwardly into and out through the tire-feed nozzle into the nipple of the tire. The back pressure of the fluid is, so long as the wheel is in place on said nozzle, sufficient to prevent the valve *m* from rising upwardly, so as to seat itself against outward passage of the fluid. The said back pressure is due to the presence of the wheel-tire on nozzle *j*, which pressure is sufficient to so affect the conditions of the gas in the upper portion of valve-chamber *l* as to result in sufficient back pressure against the top of valve *m* to cause the latter to remain in its down position, it being understood that when gas first enters said valve-chamber its pressure in the latter is slight and insufficient to raise valve *m*, so that it passes upwardly around the latter and thence to the tire. When the bicyclist is satisfied as to refilling of his tire, he lets go of the handle *F* and lifts off the wheel from nozzle *j*, whereupon and whereby the previous condition will be so changed as to relieve valve *m* from the said back pressure of the fluid. Such valve will thereupon be immediately forced upwardly against its seat *m'* by the fluid under pressure from below and further discharge of fluid from out nozzle *j* will be stopped. The removal of the tire from nozzle *j* causes the gas in the upper portion of valve-chamber *l* to be suddenly relieved of its said back pressure, so that valve *m* is thereby subjected to great pressure of the fluid against its bottom, while its top is relieved from fluid-pressure to such extent as to cause it to be at once forced upwardly against its valve-seat *m'* by reason of the then excess of gas-pressure against its bottom relatively to the gas-pressure against its top. As soon as the bicyclist lets go of the handle *F* the weight of rod *H* and its ratchet-bar will be sufficient to over-

come the inertia of slide *C* and rock-shaft *E* will be automatically turned to the left, thereby releasing lever *s* from cam *v*, so that the upwardly-spring-pressed valve in cylinder *e* will cut off communication between tubes *d* and *f* and cam *v'* will depress lever *s'*, which latter will depress valve-stem *t'*, thereby causing the upwardly-spring-pressed valve in cylinder *q* to be depressed, so as to open communication between tube *p* and waste-port *r*. This latter communication will then permit the fluid under pressure beneath valve *m* to pass out through port *n* into tube *p* and thence through cylinder *q* out through waste-port *r*. Valve *m* thus being relieved from fluid-pressure below, automatically drops of its own weight into its lower and open position. When the ratchet-bar *J* has dropped into its lowermost position, its lug *i'* will have released arm *h'* of dog *Q* from causing the remaining arm *j'* of such dog from bearing upon lug *l'* of trip *P*. The long arm of such trip will therefore have dropped so as to seat its lug *e'* upon hook *d'* of the bell-crank *N*, and also so as to cause lug *g'* of the short arm of such trip to release bearing upwardly against cam *f'* of pawl *R*. Such pawl will thereby have automatically rejoined engagement with the ratchet-bar, so as to positively lock the latter against upward movement until the drop of a coin shall again operate the coin-controlling mechanism. The different members of the machine are thereby restored to their respective positions, such as they were assumed to be in at the beginning of the described operation.

The back-pressure valve *m* and its coworking members fulfil the office of automatically and absolutely rendering it impossible for a plurality of tires to be charged with fluid by the introduction into the machine of but a single coin. The construction is thereby such that the machine must receive a coin for every tire that is supplied with fluid from it, and communication between the expansion-cylinder and the back-pressure-valve chamber is cut off before such back-pressure-valve chamber is placed into communication with the exhaust, and when this latter communication takes place the back-pressure valve and its chamber become idle until the operation of the bicyclist hereinbefore described is repeated. The construction and relative proportions of the intermediate members between the exterior operating-handle of the machine and the fluid supply and exhaust valve mechanisms are such as to work together toward the accomplishment of the above-described result—that a coin must be slipped in the slot for each tire supplied with fluid from the machine. To such end the arm of the handle-shaft and its two engaging lugs on the slide whose cams depress the spring-pressed valves respectively of the fluid supply and exhaust mechanisms are so relatively proportioned that there is a decided

lost motion between said arm and lugs. The construction of said fluid supply and exhaust valve mechanisms is also such that the pressure of the fluid coworks with the springs of the upwardly - pressed valves of said two mechanisms to maintain such valves respectively closed against passage of fluid except when and as desired in the normal operation of the machine.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. The combination of a vertically-sliding rack-bar, having a lug, a vertically-swinging dog adapted to engage with said lug, a vertically-swinging trip having a lug adapted to engage with said dog, a vertically-swinging pawl adapted to engage with said rack-bar and said trip, a vertically-swinging bell-crank whose horizontal arm carries a coin-plate and whose depending arm carries a hook adapted to engage a lug on said trip, substantially as set forth.

2. The combination of a vertically-sliding rack-bar, a vertically-swinging bell-crank pawl adapted to engage said rack-bar, a vertically-swinging trip adapted to engage said bell-crank pawl, a vertically-swinging bell-crank hook adapted to engage said trip and carrying a coin-plate, substantially as set forth.

3. The combination of a vertically-movable rack-bar having a lug, a vertically-swinging dog adapted to be engaged by said lug as said bar moves upwardly, a vertically-swinging trip adapted to be engaged by said dog, a vertically-swinging pawl adapted to engage with said rack-bar and said trip, a vertically-swinging bell-crank having a depending hook adapted to be engaged by said trip and carrying a substantially horizontal coin-plate, substantially as set forth.

4. The combination of a longitudinally-sliding rack-bar having a horizontal lug, a vertically-swinging dog having two arms projecting in opposite directions from its pivotal point, a vertically-swinging trip adapted to engage one of said two arms while the other arm engages said horizontal lug on said vertically-sliding rack-bar, a vertically-swinging pawl adapted to engage said rack-bar and said trip, a vertically-swinging bell-crank carrying a coin-plate and having a hook adapted to engage a lug on said trip, substantially as set forth.

5. The combination of a vertically-sliding rack-bar, a vertically-swinging bell-crank pawl having its lower arm adapted to engage with the teeth of said rack-bar, a vertically-swinging trip adapted to have its one arm engage with the horizontal arm of said bell-crank pawl, a vertically-swinging bell-crank

whose depending arm is adapted to engage with the remaining arm of said trip and whose horizontal arm carries a coin-plate, substantially as set forth.

6. The combination of a vertically-sliding rack-bar having a horizontal lug, a vertically-swinging dog having two arms respectively projecting in substantially opposite directions, one of said arms adapted to be engaged by said lug in the upward movement of said rack-bar, a vertically-swinging trip adapted to have one arm engage with said remaining arm of said dog, a vertically-swinging bell-crank having a depending hook adapted to engage with the horizontal lug on the remaining arm of said trip, the remaining arm of said bell-crank carrying a coin-plate, substantially as set forth.

7. The combination of a vertically-sliding rack-bar, a vertically-swinging bell-crank whose depending arm is adapted to engage with said rack-bar and whose horizontal arm is provided with a cam, a vertically-swinging trip having a cam adapted to engage with said pawl-cam, and also having a horizontal lug, a vertically-swinging bell-crank whose horizontal arm carries a coin-plate and whose depending arm carries a hook adapted to engage with said horizontal lug on said trip, substantially as set forth.

8. The combination of vertically-swinging bell-crank N having substantially horizontal coin-plate O and depending hook d' and horizontally pivoted at a point between said plate and hook, vertically-swinging trip P located in a vertical plane adjacent to the vertical plane of said bell-crank and horizontally pivoted at a point nearer to the end portion that is farthest from said bell-crank, the long arm of said trip having horizontal lug e' located in the same vertical plane with said hook d' , the short arm of said trip P having cam g' projecting from its end farthest from the pivotal point of the trip, vertically-swinging bell-crank pawl R having cam f' , said cams f' and g' being located in the same vertical plane and adapted to engage each other, depending rack-bar J adapted to have vertical sliding movement and with which said pawl R is adapted to engage, substantially as set forth.

9. The combination of vertically-swinging bell-crank N having substantially horizontal coin-plate O and depending hook d' and horizontally pivoted at a point between said plate and hook, vertically-swinging trip P located in a vertical plane adjacent to the vertical plane of said bell-crank and horizontally pivoted at a point nearer to the end portion that is farthest from said bell-crank, the long arm of said trip having horizontal lug e' located in the same vertical plane with said hook d' , the short arm of said trip P having cam g' projecting upwardly from its end farthest from the pivotal point of the trip and also provided with horizontal lug l' , vertically-swinging bell-crank pawl R having cam f' , verti-

5 cally-swinging dog Q having arms j' and h'
substantially parallel and projecting in oppo-
site directions, such dog being horizontally
pivoted at a point between said two arms, de-
10 pending rack-bar J adapted to have vertical
sliding movement and provided with horizon-
tal lug i' ; said bell-crank pawl R being in
substantially the same vertical plane with
said rack-bar J and adapted to engage there-
15 with, said cams f' and g' being located in the
same vertical plane and adapted to engage
with each other, said lug i' and said arm j' be-

ing located in the same vertical plane and
adapted to engage with each other, said arm
 h' and lug i' being located in the same verti- 15
cal plane and adapted to engage with each
other, substantially as set forth.

Signed by me this 4th day of September,
1900.

JOSEPH H. CHAMP.

Attest:

THOS. B. HALL,
D. T. DAVIES.