(No Model.) 2 Sheets—Sheet 1.

S. JENKINS.

ELEVATOR FOR LIQUIDS.

No. 509,437. Patented Nov. 28, 1893.

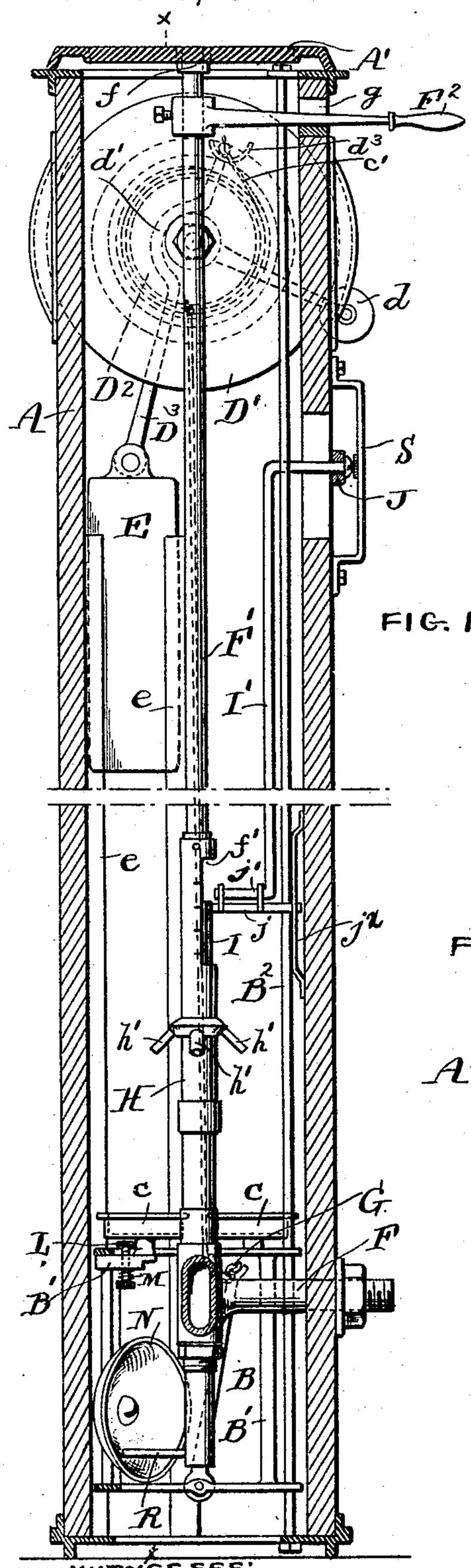

FIG. 1.

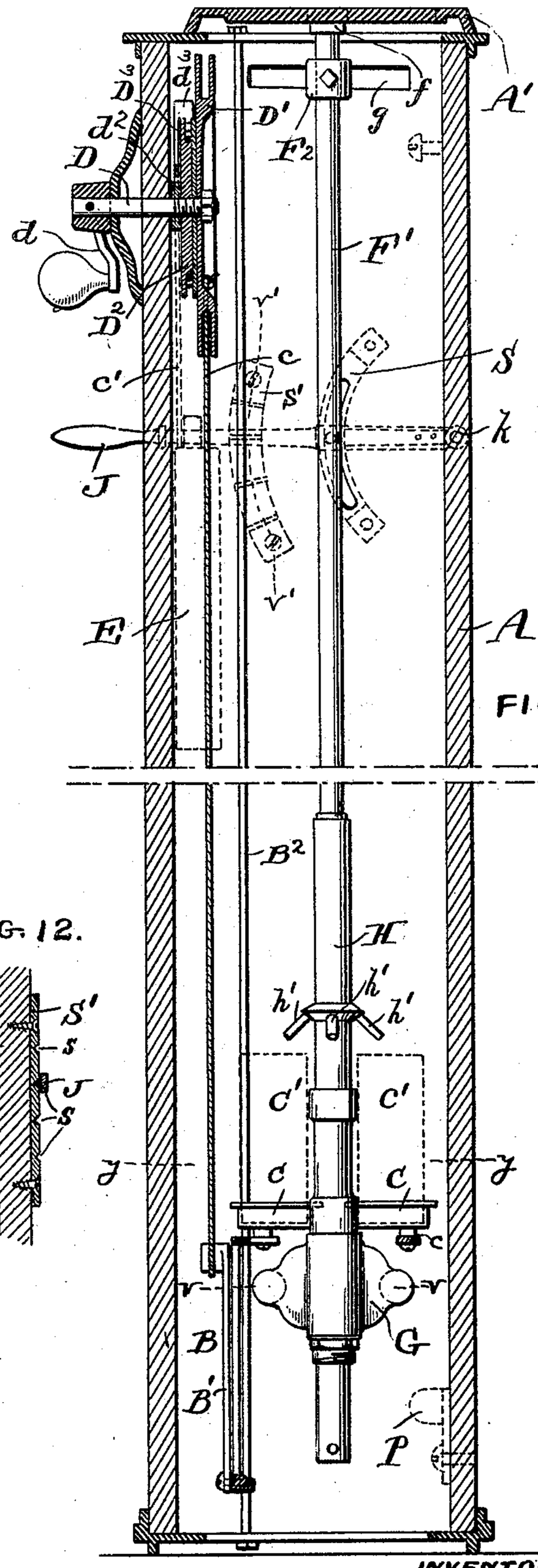

FIG. 2.

FIG. 12.

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(No Model.) 2 Sheets—Sheet 2.

S. JENKINS.

ELEVATOR FOR LIQUIDS.

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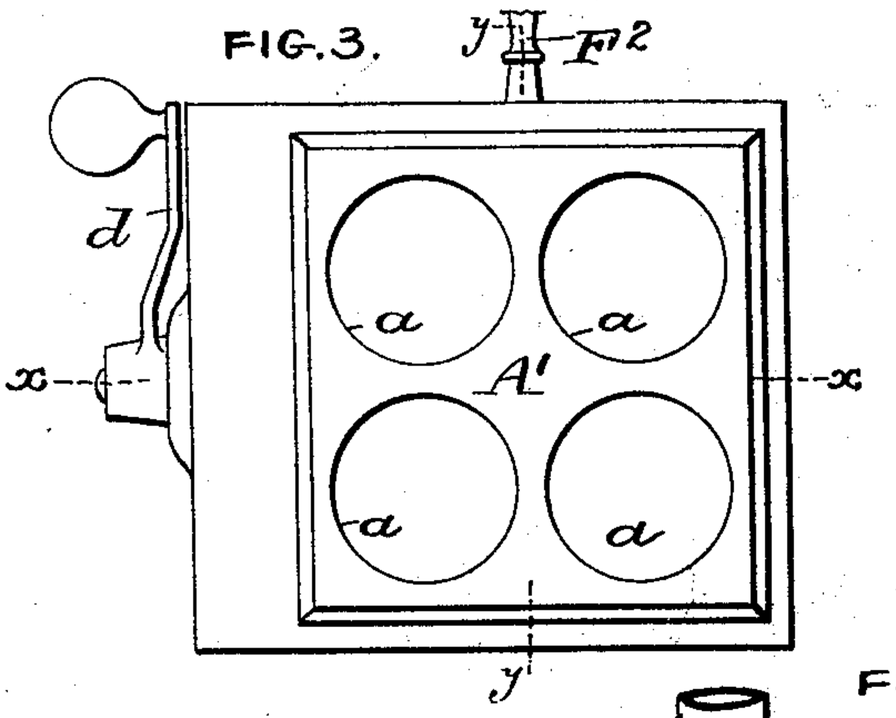
FIG. 3.



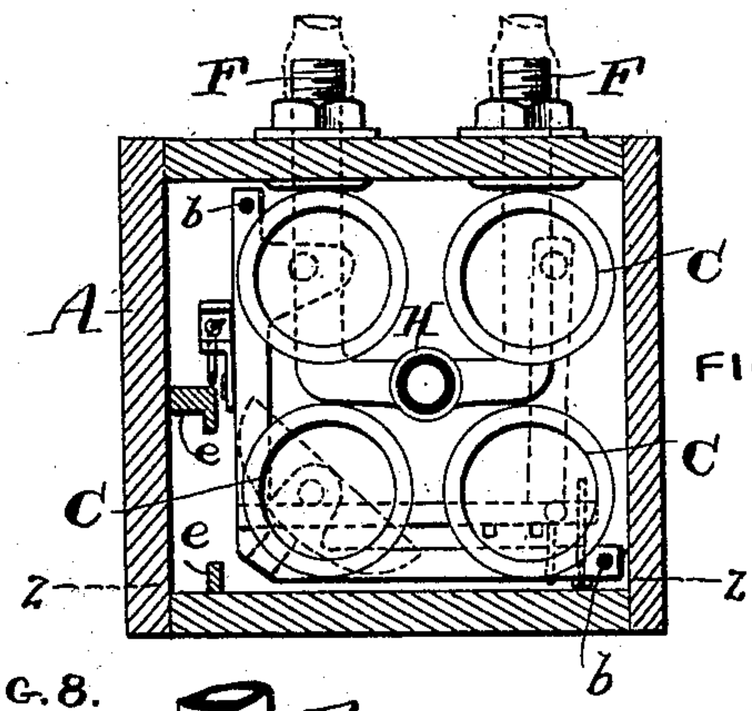


FIG. 4.

FIG. 8.

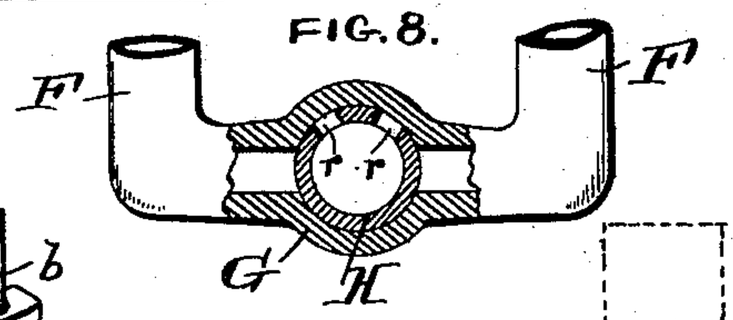
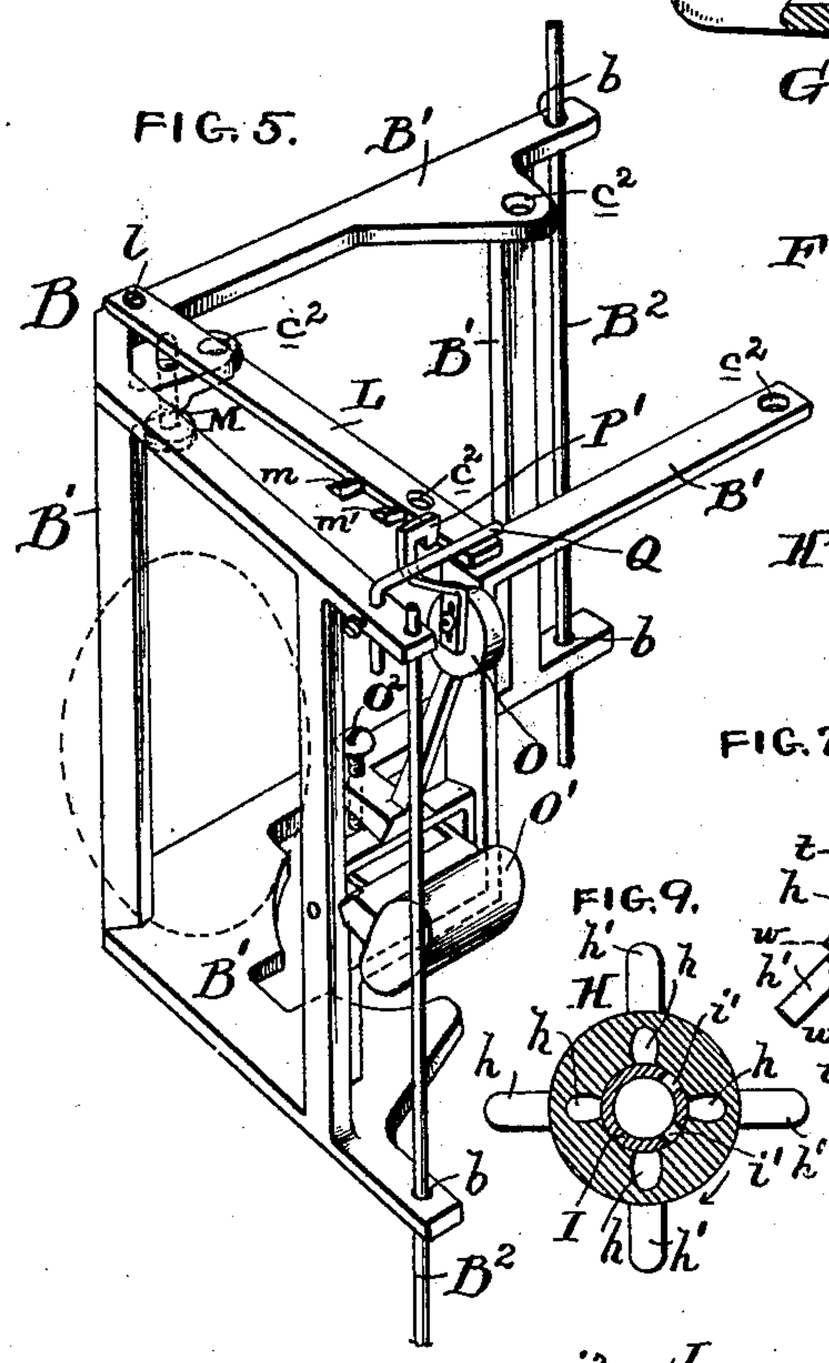


FIG. 5.



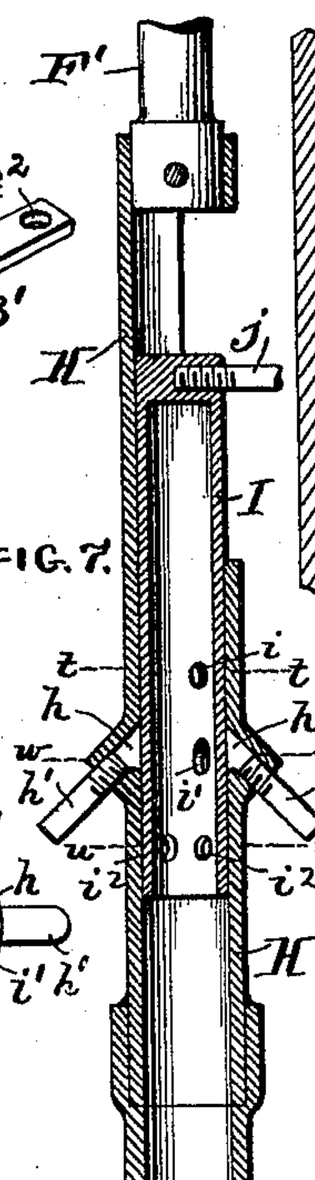


FIG. 7.

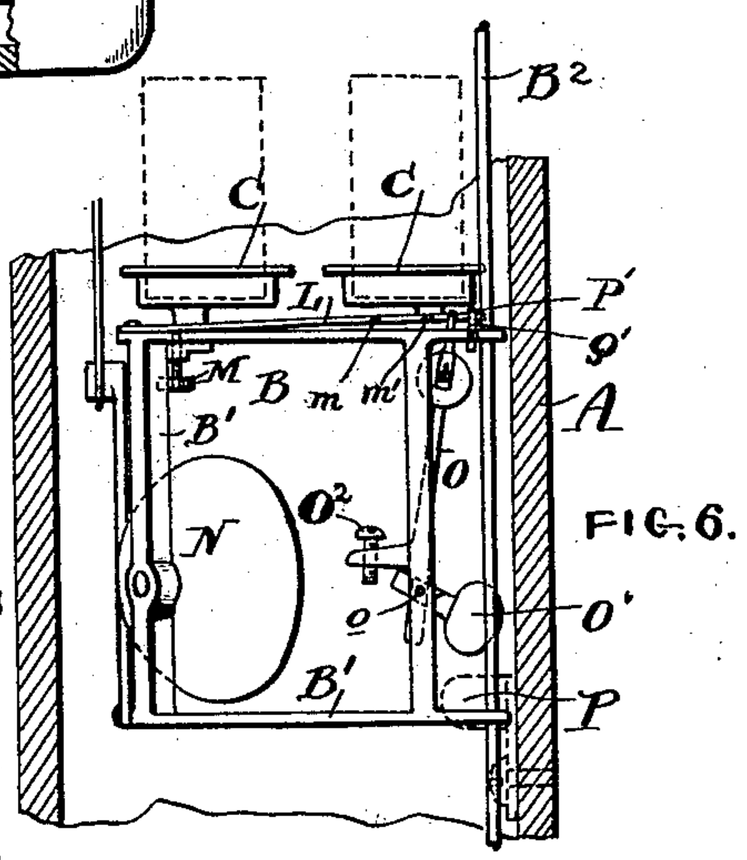


FIG. 6.

FIG. 9.

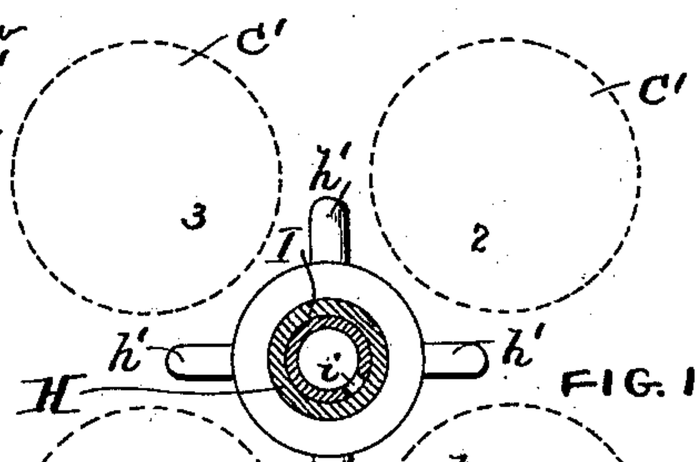
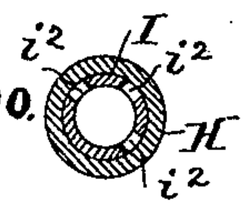


FIG. 11.

FIG. 10.



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UNITED STATES PATENT OFFICE.

SYLVESTER JENKINS, OF LANSDALE, PENNSYLVANIA.

ELEVATOR FOR LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 509,437, dated November 28, 1893.

Application filed February 2, 1893. Serial No. 460,674. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER JENKINS, of Lansdale, county of Montgomery, and State of Pennsylvania, have invented an Improvement in Liquid-Elevators, of which the following is a specification.

My invention relates to elevators for liquids, and consists of certain improvements which are fully set forth in the following specification and are shown in the accompanying drawings which form a part thereof.

My invention is particularly designed for lifting ales and other liquors from a cellar or portion of a building where they may be kept in quantity, as in the barrels or kegs, to the bar room or place of delivery. Some liquors, such as ales, are injured if they are forced through pipes by pressure as it is necessary that they should be quietly drawn from the barrel or keg when desired for use. My invention is designed to permit these liquors to be drawn from the barrel or keg into glasses lowered in the elevator, without rendering it necessary for the attendant to leave the bar or place of delivery.

It is also an object of my invention to enable the attendant to so control the delivery of the liquor, that one, two, or more glasses may be filled at a time, as may be desired, so that no more liquor may be drawn from the keg or barrel than is actually required.

It is also an object of my invention to prevent the overflowing of the glasses while being filled, and also to avoid any spilling of the liquor due to the jolting of the elevator carriage while it is being raised and lowered.

I shall now refer to the accompanying drawings for the purpose of describing my improvements.

In the drawings: Figure 1 is a vertical sectional view of my improved elevator for liquids. Fig. 2 is a similar view on the line *x*—*x* of Fig. 1. Fig. 3 is a plan view of the top of the same. Fig. 4 is a horizontal sectional view on the line *y*—*y* of Fig. 2. Fig. 5 is a perspective view of the elevator carriage. Fig. 6 is a vertical sectional view on the line *z*—*z* of Fig. 4. Fig. 7 is a longitudinal sectional view of the valve device on an enlarged scale. Fig. 8 is a horizontal sectional view on the line *v*—*v* of Fig. 2 on an enlarged scale. Fig. 9 is a horizontal sectional view on the line *w*—*w* of Fig. 7. Fig. 10 is a similar view on the line *u*—*u* of Fig. 7. Fig. 11 is a similar view on the line *t*—*t* of Fig. 7; and Fig. 12 is a vertical sectional view on the line *v'*—*v'* of Fig. 2.

A is the elevator shaft, which will usually extend from the cellar, or lower floor at which the liquor is discharged, to an upper floor or point of delivery. The upper portion of the shaft may be located in a bar or counter to present a neat and attractive appearance; the upper end of the shaft A may be closed by a cover or cap A' provided with apertures *a* for the glasses, thus concealing the elevator carriage, and its mechanism from view.

B is the carriage which consists of a suitable frame B' adapted to move freely up and down in the shaft A. Carried by the top of the carriage frame B' are a series of glass seats or cups C which receive the glasses C'. I have shown the frame B' provided with four of these seats or cups C, and I consider that number preferable, but more or less may be employed as may be desired. The seats or cups may be received in sockets or holes c^2 in the frame B'.

The carriage B is guided in its vertical movement by a suitable guide. This I have shown composed of vertical rods B^2 within the shaft A extending through eyes *b* in the frame B'. Suitable lifting mechanism is connected with the carriage B for the purpose of raising and lowering it.

The particular form of lifting mechanism which I have shown is as follows:

D is a small shaft journaled in the upper portion of one of the walls of the shaft A, provided on its outer end with a crank *d* by which it may be rotated.

D' and D^2 are two disks fast upon the inner ends of the shaft D, one of the disks, as D^2 being of smaller diameter than the other. The larger disk D' is connected by a cord or cable *c* with the carriage B, so that the carriage B will be raised or lowered in the shaft A, when the cord *c* is wound up or unwound upon the disk D' when the latter is rotated by its shaft D. The smaller disk D^2 is connected by a cord or cable *c'* with a lever D^3 hinged to a sliding weight E and having a notch *d'*. The weight E is guided in suitable guides *e* in the shaft A. The disk D^2 may be

provided with a hub d^2. The disks D′ and D² may be grooved upon their peripheries as shown to permit the cords *c* and *c′* respectively to be wound up upon them. The cords *c* and *c′* are so disposed with reference to one another that the one will be wound up upon its disk while the other is being unwound, and vice versa. Thus when the cord *c* is unwound to lower the carriage B in the shaft, the cord *c′* is wound upon the disk D² and the weight E is elevated. The end of the lever D³ to which the cord *c′* is connected is provided with a finger d^3 which projects over and rests upon the periphery of the disk D² when the cord *c′* is wound thereon.

The object of employing the smaller disk D² with its connections, is to prevent the jolting of the carrier B and quietly arrest it when it is raised or lowered in the shaft, so as to prevent it from stopping with a sudden jolt which might upset the glasses. In Figs. 1 and 2 I have shown these devices as they will be when the carriage B is lowered. When the handle *d* is turned to raise the carriage B, the cord *c* is wound upon its disk D′ and the cord *c′* is unwound from the disk D² allowing the weight E to descend. As the disk D² rotates to unwind the cord *c* the lever D³ at first swings outwardly away from the hub d^2 and then descends under the action of the weight E. During this movement the finger d^3 of the lever D³ travels over the periphery of the disk D². When the carriage B is fully elevated it is on a substantial level with the top of the shaft A immediately under the cap or cover A′, so that the glass supports C, or the glasses carried by them, extend up through the apertures *a*. When the carriage B is lowered by turning the handle *d* to unwind the cord *c*, the cord *c′* is wound upon the disk D² elevating the weight E and lever D³. When the cord *c′* is wound upon its disk D² the end of the lever D³ reaches the disk, and as the disk continues to rotate, the finger d^3 travels over a portion of the periphery of the disk until it reaches the position shown in Fig. 1, when the notch *d′* fits over the hub d^2. With this construction the movement of the carriage B when it reaches the top or the bottom of the shaft is gradually arrested without a jolt or jar. Ordinarily during the rotation of the disks D′ and D² the carriage B is raised or lowered for any extent of rotation a distance equal to the length of cord *c* or *c′* wound or unwound. When, however, the carriage is almost lowered in the shaft, the end d^3 of the lever D³ comes in contact with the periphery of the disk D², and as the disks continue to rotate, it travels over the periphery of the disk D² until it reaches the position shown in Fig. 1. At the same time the cord *c* has been wholly unwound from the disk D′, and at the time the end of the lever D³ reaches the disk D² the point of connection of said cord *c* with the disk D′ is approximately ninety degrees from the vertical line. As the disks continue to rotate this point of connection travels down with the disk into the vertical line passing through the axis of the disks as shown in Fig. 1 so that the distance which the carriage B is lowered by this downward movement is only equal to the vertical distance which the point of connection of the cord *c* has moved from its position at ninety degrees to its position on said vertical line, instead of the distance equal to the length of the cord that would be unwound from approximately a quadrant of the periphery of the disk. The movement of the carriage B is consequently diminished at this point for the same amount of movement of the disks D′ D², and as the movement is a gradually retarded one, the carriage B is quietly arrested in its descent, and without a sudden jar. A similar action takes place when the carriage B is raised. Just before the carriage reaches its highest elevation, the cord *c′* becomes entirely unwound from the disk D² and its point of connection with the disk D² is approximately forty-five degrees from the vertical line passing through the axis of the disk. Upon the further rotation of the disk D² this point of connection travels down with the disk until it reaches said vertical line and similarly brings the carriage to a gradual stop. The finger d^3 in traveling over the periphery of the disk D² also acts to some extent as a brake. The weight E acts to counterbalance the carriage B. When the end of the lever D³ reaches the position shown in Fig. 1 further movement is arrested. The end d^3 of the lever D³ at this moment should be slightly to the right of the line extending from the hinge point of lever with the weight through the axis of the disks D′, D², so that the weight shall not act to turn the disk D² back and thus again raise the carriage B. The carriage B is thus automatically stopped and held in its lowered position.

F, F, are liquor pipes extending through the lower portion of the shaft A into a tubular sleeve G located centrally within the shaft A. The pipes F, F, may be connected externally with the barrels or liquor reservoirs through suitable pipes or hose.

I have shown two feed pipes F, F, either of which may be connected with a barrel or reservoir by the valve mechanism hereinafter described. It is to be understood, however, that a single feed pipe may be used.

H is a tubular liquid supply pipe or valve section extending through the sleeve G and free to turn therein. This tubular supply pipe or valve section is provided with valve ports or openings *r*, *r* adapted when the part H is turned to open either of the pipes F, F through the sleeve G. The section H is also provided with outlets *h* above the pipes F, F fitted with projecting nozzles *h′*.

F′ is a rod arranged vertically within the shaft A, journaled at its upper end, as at *f*, in a suitable bearing and connected at its lower end with the upper portion of the valve

section H. The rod F′ may be provided with a handle F^2 at its upper portion projecting through a slot *g* in the shaft A. By moving the handle F^2 the rod F′ may be turned and with it the valve section H so as to open either of the openings *r*, *r* to the pipes F, F. When a single pipe F is employed, one opening *r* will suffice.

I is a tubular valve piece closed at one end and open at the other, located within the valve section H with its closed end at the top, and movable longitudinally within the section H.

The valve piece I is provided with a series of valve holes *i*, *i′* and i^2. A single hole *i* is located at a distance from the open end of the piece I, two holes *i′*, *i′*, are located in a row at a point below the hole *i*, and three holes i^2, i^2, i^2 are located in a row at a point below the holes *i′*, *i′*. The holes *i′* and *i′*, and i^2, i^2, i^2 are located a distance apart corresponding with the distance between the outlets *h* of the section H. With this construction any number of outlets *h* in the tube H may be opened through the valve piece I. Normally the valve piece is in its lowest position within the tube H, and the highest hole is below the level of the outlets *h*. It is apparent that with the valve piece I in this position the outlets *h* will all be closed. If now the valve piece I be moved up sufficiently to bring the single hole *i* in line with the outlets *h* and the tube H be turned until one of the outlets *h* is opposite the hole *i*, a single outlet *h* will be opened, and the liquor may flow through the holes *i* and *h* and the nozzle *h′*. If the rod be lifted higher, so as to bring the row of two holes *i′*, *i′* in line with the outlets *h*, two of the valves will be opened. By lifting the piece I still higher until the holes i^2 are in line with the outlets *h*, three of the valves may be opened, and if the piece I be raised so that its end passes above the outlets *h*, all will be opened.

It will be observed that I have shown the holes *i*, *i′* and i^2 in the valve piece I arranged to suit the number of outlets *h* from the tube H. If the number of these outlets *h* be increased or diminished the number of valve openings or holes in the piece I will of course be correspondingly altered. The valve piece I is thus provided with valve openings arranged in successive series of increasing number at different elevations.

The valve piece I is provided with suitable connections for moving it vertically in the section H. The particular devices for this purpose shown in the drawings are as follows:

I′ is a rod located within the shaft A and connected by a pin *j* with the valve piece I through a slot *f* in the section H. The rod I′ may be connected with the pin *j* by a hinge connection *j′* and the outer end of the pin may be guided vertically in a suitable guide j^2.

J is a lever pivoted as at *k* on the outside of the shaft A and connected with the upper end of the rod I′, so that when the lever J is moved on its fulcrum the rod I′ will be raised or lowered.

It is apparent that the amount of movement of the lever J upon its fulcrum *k* will regulate the extent of vertical movement of the valve piece I and consequently the number of the nozzles *h′* that are opened. A segmental catch bar S′ may be arranged upon the outside of the shaft provided with catches to indicate the extent of movement of the lever J to open one, two, three or more of the outlets *h*. The lever J may be guided in its movements in a suitable guide S.

The seats or cups C are arranged upon the upper portion of the frame B′ of the carriage B. One or more of these seats or cups may be carried by a yielding supporting piece. Ordinarily it is sufficient for one of the seats or cups C to be so carried.

L is the yielding support for one of the cups. In the drawings I have shown this support as a spring fastened at one end as at *l* to the top of the frame B and adapted to carry the cup or seat C at its other end.

M is a set screw carried by a lug of the frame B for adjusting the spring support L, and thus regulating the amount of its movement.

m is a stop or projection carried by the spring support L.

N is a bell or gong carried by the frame B′.

O is a hammer adapted to strike the gong N. The hammer O is pivoted as at *o* to the frame B′ and is adapted normally to fall by gravity and strike the gong N.

O^2 is a set screw carried by the hammer O and adapted to strike the frame B′ when the hammer falls, so as to cause the hammer to strike the gong with a spring blow and return out of contact with it.

O′ is a weighted dog pivoted to the hammer O or adjacent to it, and normally bearing upon the hammer below its pivot point so as to hold it out of action in an elevated position as shown in Figs. 5 and 6.

P is a projection located within the shaft A near the bottom and adapted to strike the dog O′ when the carriage B reaches its lowest position so as to elevate the dog and lift it out of contact with the hammer O.

P′ is a finger carried by the hammer O and so located that it will normally strike the stop *m* when the hammer is released and prevent it striking the gong N.

When the support L is in its normal position, *i. e.* when it is sustaining the weight of the cup C and the empty glass supported thereby, the stop *m* will obstruct the finger P′ and prevent the hammer O striking the gong. When, however, the weight sustained by the support L is increased by the addition of the liquid to the glass which it carries, the support L is depressed so as to free the finger P′ and permit the hammer O to fall. This device is intended to sound an alarm so as to indicate when the glass has been filled. It is desirable that the hammer should not be permitted to strike the gong until the proper

quantity of liquor has been received by the glass. To insure this action, and to prevent the accidental release of the hammer O before the glass is filled, which might be caused by a slight jar to the carriage when it is lowered tending to depress the yielding supports for an instant, I prefer to employ a second or auxiliary stop m', located immediately in front of the stop m and holding the hammer O, so that, if for any accidental reason the yielding support L is depressed for an instant and releases the hammer O, the hammer will be arrested by the stop m and will be held thereby until the support L is positively depressed by the increased weight due to the flow of the liquor in the glass supported by it. By this means the action of the alarm at the proper time is insured. My invention, however, so far as this yielding support and the alarm mechanism controlled thereby, are concerned, is not limited to the use of an auxiliary stop m'. It will be observed that as soon as the carriage B is raised so that the weighted dog O′ is lifted from the stop P, the dog O′ will swing back to its normal position and lift the hammer O.

Q is a stop carried by the frame B′ and extending over the support L to act as a stop to prevent the spring support rising unduly high when it is relieved of the weight of the glass.

R is a pin carried by the lower extension of the tubular valve piece H and adapted, when the valve piece H is turned in the manner heretofore described to open the opening r, to project over a portion of the frame B′ so that the carriage may not be elevated in the shaft A until the valve piece H is turned back and the opening r is closed. As the outlet nozzles h' are turned with the tube H so as to project over the glasses when the carriage B is lowered, it is apparent that if through the carelessness of the operator the carriage B were raised before the tube H were turned back the glasses would be caught by the projecting nozzles h' and would be upset. The pin R effectually prevents this, however, and compels the attendant to turn the tube H back and close the valve before the carriage can be elevated. The pin R thus constitutes a lock controlled by the valve mechanism to lock the carriage against movement until the valves are closed. While it is highly preferable, it is not, however, essential to the invention.

I shall now describe the operation of this apparatus. In its normal condition when the carriage B is elevated the tube H is turned in such a position that the openings r are closed and no liquor may flow through the pipes F into the tube H. The valve piece I is in such a position that its valve apertures are all out of line with the outlets h. When the tube H is in this position the projecting nozzles h' are so located that they will present no obstruction to the descending carriage B. The frame B′ of the carriage extends about the tube H and rod F′ so that when the carriage is lowered in the shaft the glasses C′ are grouped about the tube H as is indicated in dotted lines in Fig. 11. This particular shape of the frame B′ so as to group the glasses about the tube H is, of course, not essential to the invention. The carriage B when elevated is immediately below the top or cap A′ and the glasses C′ are placed in the seats or cups C. The carriage is then lowered by the rotation of the handle d in the manner heretofore particularly described, and when it reaches the bottom it will be in the position shown in Figs. 1 and 2 with the tops of the glasses C just below the nozzles h'. The stop or projection P′ elevates the dog O′ so as to release the hammer O, which is, however, held out of action by the stop m, as has been explained. The lever J is now moved to operate the valve piece I according to the number of glasses which it is desired to fill. If one glass is to be filled it will be moved so as to bring the single opening i in line with the apertures h, or if more glasses are to be filled, it will be moved proportionately as has been explained. The extent of the movement of the lever J in each case may be indicated upon the catch bar S. The handle F^2 is now shifted to turn the rod F′ and tube H so as to open the port r and permit the liquor to flow through the pipe F into the tube H. When two pipes F, F are employed, the lever may be shifted either to the right or to the left to open the one pipe F or the other as may be desired. The turning of the tube H to open the port r at the same time turns the nozzles h' over the glasses C′ and brings the outlets h in coincidence with the valve openings i, &c., so that the liquor may flow from the nozzles h' into the glasses. When the alarm mechanism is employed with a single glass the outlets i, i', i^2, &c., should be so located that the single opened valve, or when a series of the outlets are opened one of the series, shall be opened to the glass that is supported by the yielding frame L which controls the alarm mechanism, so that whether one or more glasses are filled the alarm will be operated and indicating for one glass, will indicate for all. For this purpose the outlet i and one of the outlets of each of the succeeding series as i' and i^2 should be in the same vertical line and in a position to supply the glass carried by the yielding support.

While I prefer the details of construction that have been shown I do not limit my invention to them as it is apparent that they may be varied without departing from the invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an elevator for liquids, the combination of an elevator carriage, means to raise and lower the carriage, a supply pipe having a series of liquor outlets, valve mechanism to control one or more of the outlets, a liquor feed pipe adapted to communicate with the liquor supply pipe, and a valve to control the

flow of liquor from the feed pipe to the outlet supply pipe.

2. In an elevator for liquids, the combination of an elevator shaft, an elevator carriage, means to raise and lower the carriage, a supply pipe having a series of liquor outlets centrally located within the shaft, valve mechanism to control one or more of the outlets, a liquor feed pipe extending into the shaft with which the supply pipe is adapted to communicate, and means to operate the supply pipe and thereby control the flow of liquor from the feed pipe to the outlet supply pipe.

3. In an elevator for liquids, the combination with an elevator carriage and means to raise and lower the carriage of a liquid feed pipe, and a rotary liquid supply pipe having a valved part adapted to communicate with the feed pipe and thereby control the supply of liquid from the feed pipe to the supply pipe.

4. In an elevator for liquids, the combination with an elevator carriage and means to raise and lower the carriage, of a liquid feed pipe, a rotary liquid supply pipe having a valved part adapted to communicate with the feed pipe and thereby control the supply of liquid from the feed pipe to the supply pipe, and a series of supply outlets, and valves to control one or more of said supply outlets.

5. In an elevator for liquids, the combination with an elevator carriage and means to raise and lower it, of a liquor supply pipe having a series of outlets, and a movable valve piece located in the liquor supply pipe and adapted to control one or more of the liquor outlets therein.

6. In an elevator for liquids, the combination with an elevator carriage and means to raise and lower it, of a liquor supply pipe having a series of outlets, and a movable valve piece located in the liquor supply pipe and provided with apertures arranged in series of different number at different elevations, whereby the valve pieces may be moved to open one or more of the outlets of the supply pipe.

7. In an elevator for liquids, the combination with an elevator carriage and means to raise and lower it, of a rotary liquor supply pipe having a series of outlets, a liquor feed pipe adapted to communicate with the liquor supply pipe, and a movable valve piece located in the liquor supply pipe and controlling one or more of the liquor outlets therein.

8. In an elevator for liquids, the combination with an elevator carriage and means to raise and lower it, of the feed pipe F, the rotary valved supply pipe H having a series of outlets, and the movable valve piece I having the series of outlet apertures i, i', i^2 located within the pipe H.

9. In an elevator for liquids, the combination with an elevator shaft, an elevator carriage and means to raise and lower it of the feed pipe F, the rotary valved supply pipe H having a series of outlets and located within the shaft, the movable valve piece I having the series of outlet apertures i, i', and i^2 located within the pipe H, and means to operate the valve piece I extending a distance from the valve piece.

10. In an elevator for liquids, the combination with the elevator carriage and means to raise and lower it, of the feed pipe F, and the rotary valved pipe H adapted to communicate with the feed pipe through the valves, and having a series of outlets h.

11. In an elevator for liquids, the combination with the elevator carriage and means to raise and lower it, of the feed pipe F, the rotary valved pipe H adapted to communicate with the feed pipe through the valves and having a series of outlets h, and the movable valve piece I within the pipe H having the series of apertures i, i', i^2.

12. In an elevator for liquids, the combination of a centrally located liquor supply pipe, and a movable elevator carriage arranged about the liquor supply pipe.

13. In an elevator for liquids, the combination of an elevator shaft, a valved liquor supply pipe centrally located within the shaft, means to operate the valve of said pipe from a different elevation in the shaft, and a movable elevator carriage arranged about the liquor supply pipe.

14. In an elevator for liquids, the combination of the feed pipe F, the rotary valved supply pipe H having outlets, the rod F′ connected with the pipe H, the lever F^2 connected with the rod F′, and the movable elevator carriage.

15. In an elevator for liquids, the combination of the feed pipe F, the rotary valved supply pipe H having outlets, the rod F′ connected with the pipe H, the lever F^2 connected with the rod F′, the movable valve piece I, and the movable elevator carriage.

16. In an elevator for liquids, the combination of the elevator shaft, an elevator carriage movable therein, and a rotary valved liquor supply pipe within the shaft having a projection adapted when said pipe is turned to be moved into the path of the carriage and prevent its movement.

17. In an elevator for liquids, the combination of an elevator carriage, means to raise and lower the carriage, a series of feed pipes F communicating with a common sleeve G, and a rotary valved supply pipe carried by the sleeve G, whereby the supply pipe when turned may be opened to any of the pipes F.

18. In an elevator for liquids, the combination of a rotary valved liquor supply pipe having a series of liquor supply outlets, an elevator carriage having a series of seats for glasses, one of the seats being yielding, and an alarm controlled by the yielding seat.

19. In an elevator for liquids, the movable

carriage having stationary seats for glasses and a yielding seat, a gong carried by the carriage, a hammer adapted to strike the gong a stop carried by the yielding seat to prevent the action of the hammer until the seat is depressed, and a second stop also carried by the yielding seat to arrest the hammer after it has been released by the first stop and hold it until the seat is depressed further.

20. In an elevator for liquids, the movable carriage having stationary seats for glasses and a yielding seat, a gong carried by the carriage, a hammer adapted to strike the gong, a weighted dog to hold the hammer out of action, a stop projection independent of the carriage to act upon the dog and release the hammer.

21. In an elevator for liquids, the combination of the elevator shaft and the movable carriage, of a rotary liquor supply pipe having a series of projecting outlet nozzles and centrally located within the shaft, and valves to control the flow of liquor from said supply pipe.

22. In an elevator for liquids, the combination with the elevator shaft, of a carriage movable therein, a liquor supply pipe within the shaft, a rotary disk, a flexible connection between the rotary disk and the carriage, a second rotary disk on a common shaft with the first, a counterbalance weight and a flexible connection between the counterbalance weight and second disk, each of said flexible connections being connected with the periphery of its disk and having a length of less than the length of the movement of the carriage up or down in the shaft.

23. In an elevator for liquids, the combination with the elevator shaft of a carriage movable therein, a liquor supply pipe within the shaft, rotary disks D′ D^2 on a common shaft in the upper part of the elevator shaft, a connection between the disk D′ and the elevator carriage, a counterbalance weight, a lever D^3 connected with the weight, and a flexible connection between the lever D^3, and the disk D^2.

24. In an elevator for liquids, the combination of a carriage, devices to raise and lower the carriage, a supply outlet, valve mechanism to control the outlet, and a lock controlled by the valve mechanism to lock the carriage against movement.

25. In an elevator for liquids, the combination of a carriage, devices to raise and lower the carriage, a supply pipe, one or more movable outlets adapted to communicate with the supply pipe, devices to move the outlets into the path of the carriage so as to supply fluid thereto, and a lock controlled by said devices to operate the movable outlets to lock the carriage against movement.

26. In an elevator for liquids, the combination of the rotary shaft D, the disk D′ and D^2 carried thereby, the carriage B, the flexible connection *c* between the carriage and the disk D′, the counterbalance weight E, the lever D^3 hinged to the weight E, and the flexible connection *c′* between the lever D^3 and the disk D^2, the connections *c* and *c′* being so arranged that the one will be wound upon its disk while the other is unwound.

27. In an elevator for liquids, the combination of the rotary shaft D, the disk D′ and D^2 carried thereby, the carriage B, the flexible connection *c* between the carriage and the disk D′, the counterbalance weight E, the lever D^3 hinged to the weight E and having a notch *d′*, and the flexible connection *c′* between the lever D^3 and the disk D^2, the connections *c* and *c′* being so arranged that the one will be wound upon its disk while the other is unwound.

In testimony of which invention I have hereunto set my hand.

SYLVESTER JENKINS.

Witnesses:

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