

PATENT SPECIFICATION

Application Date: Jan. 29, 1938. No. 2865/38.

498,368

„ „ April 25, 1938. No. 12296/38.

One Complete Specification Left: Sept. 7, 1938.

(Under Section 16 of the Patents and Designs Acts, 1907 to 1938.)

Specification Accepted: Jan. 6, 1939.



PROVISIONAL SPECIFICATION

No. 2865, A.D. 1938.

A Coin Operated Machine for Vending Articles Stored in Piles

I, WILLIAM EDWARD BRYAN, London Road, Kegworth, Derby, a British Subject, do hereby declare the nature of this invention to be as follows:—

5 This invention relates to the kind of mechanism wherein articles, for instance picture postcards, are stored in a revolving drum or wheel, or in pigeon holes or similar storage and so arranged that the articles are in full view of the prospective purchaser.

10 The mechanism is so arranged that the purchaser can, by operating controls, move a hollow sucker until this sucker is opposite the particular article required. Alternatively, the article container may similarly be moved to effect the same purpose.

15 On the purchaser inserting a coin or coins, an electric motor is started up, by a coin operated electric switch. This motor drives a vacuum air pump connected to the sucker by a flexible tube.

20 The motor also drives cams, controlling levers which cause the sucker to move into contact with the article and then to carry the article, held to the sucker by vacuum, over a delivery chute, when a valve, operated by a cam destroys the vacuum in the air line and the article, thus released, is delivered to the purchaser. The article may be forcibly pulled by the sucker past obstructing finger pieces, thereby separating articles that may be slightly stuck together.

25 Alternatively the vacuum may be destroyed by means of a slight leak in the

vacuum line, to release the article.

When the cycle of operations is complete, the current is switched off and the coin or coins pass to the cash till.

Also in the vacuum air line is a cylinder, in which moves a piston. This piston is connected to a shutter in the coin chute and is so arranged that if the article is securely picked up by the sucker, the vacuum so caused moves this shutter so that the coin or coins pass to the cash till.

If, however the article, for any reason, does not attach itself to the sucker, or if the machine is empty, the piston is not influenced and the coin or coins are returned to the purchaser.

Alternatively, the whole mechanism may be so arranged that the coin or coins operate a pawl or similar device connecting up a wheel or lever which the purchaser can operate by hand, when the electric motor becomes unnecessary.

Also alternatively the sucker may be of the ordinary type, operating without the use of a vacuum air line. In this method of operation, the final destination of the coin or coins may be determined by the article being forcibly stripped from the sucker, the stripping fingers being coupled to the coin chute shutter.

The action would then be that if there was no resistance to the strippers, the coin or coins would be returned to the purchaser or *vice versa*.

Dated this 28th day of January, 1938.

WILLIAM EDWARD BRYAN.

PROVISIONAL SPECIFICATION

No. 12296 A.D. 1938.

A Coin Operated Machine for Vending Articles Stored in Piles

I, WILLIAM EDWARD BRYAN, London Road, Kegworth, Derby British Subject, do hereby declare the nature of this invention to be as follows:—

70 This invention relates to the kind of mechanism described in my Application for Provisional Patent Number 2865, dated the 29th January, 1938. In this particular invention the sucker used as

[Price 1/-]

described is very flexible allowing it to collapse when making contact with the article. Alternatively a valve can be arranged in the hole in the sucker. Either of these arrangements reducing the area of suction in contact with the first article in the pile.

Dated this 23rd day of April, 1938.

WILLIAM EDWARD BRYAN.

COMPLETE SPECIFICATION

A Coin Operated Machine for Vending Articles Stored in Piles

I, WILLIAM EDWARD BRYAN, of London Road, Kegworth, Derby, a British Subject, do hereby declare the nature of this invention and in what manner the same is
 5 to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to coin-operated vending machines of the type in which
 10 articles, such as postcards, stored in packs within the machine are mounted on a carrier so as to be visible to the customer from the exterior of the machine, the machine including means operable by the
 15 customer to select the pack from which he desires to obtain an article, and a mechanism operable after the insertion of a coin, for withdrawing the top article from the selected pack and delivering it to the
 20 customer.

With such machines the customer may fail to obtain an article either owing to the withdrawal mechanism failing to
 25 withdraw the top article from the selected pack, or owing to the customer having inadvertently selected a pack which has already been emptied of articles. In the event of unsuccessful operation of the
 30 withdrawal mechanism from either of these causes, it has hitherto been necessary for the customer to insert a fresh coin into the machine before he can obtain the article he requires.

The machine according to the invention
 35 includes a device functioning on successful operation of the withdrawal mechanism to deliver the inserted coin to a receptacle within the machine, but acting, in the event of unsuccessful operation of the
 40 withdrawal mechanism, to discharge the coin to the exterior of the machine, thereby enabling it to be recovered by the customer.

In the preferred form of the invention
 45 the withdrawal mechanism includes a sucker and driving means for the sucker which are rendered operative on the insertion of a coin to effect relative movement of the sucker and the carrier to bring
 50 the sucker into contact with the top article in the selected pack, followed by separation of the carrier and sucker, and delivery of the said article to the exterior of the machine.

In one form of the invention, on the
 55 customer inserting a coin or coins, an electric motor is started up, by a coin-operated electric switch. This motor drives a vacuum air pump connected to
 60 the sucker by a flexible tube.

The motor also drives cams, controlling
 levers, which cause the sucker to move
 into contact with the selected article and
 then to carry the article, held to the
 sucker by vacuum, over a delivery chute, 65
 when a valve, operated by a cam, destroys the vacuum in the air line and the article, thus released, is delivered to the customer. The article may be forcibly pulled by the
 70 sucker past obstructing finger pieces, thereby separating articles that may be slightly stuck together. Alternatively the vacuum may be destroyed by means of a slight leak in the vacuum line, to re-
 75 lease the article.

When the cycle of operations is complete, the current is switched off and the coin or coins pass to the cash till.

Also in the vacuum air line is a cylinder, in which moves a piston. This piston
 80 is connected to an abutment beneath the coin chute and is so arranged that if the article is securely picked up by the sucker, the vacuum so caused moves this shutter so that the coin or coins pass to
 85 the cash till.

If, however the article, for any reason, does not attach itself to the sucker, or if the machine is empty, the piston is not
 90 influenced and the coin is returned to the customer. Alternatively, the whole mechanism may be so arranged that the coin or coins operate a pawl or similar device connecting up a wheel or lever
 95 which the customer can operate by hand, to drive the mechanism, instead of employing an electric motor for this purpose.

As a further alternative, the sucker may be of the ordinary type, operating without the use of a vacuum air line. In
 100 this method of operation, the final destination of the coin or coins may be determined by the article being forcibly stripped from the sucker, the stripping fingers being
 105 coupled to the abutment beneath the coin chute. The action would then be that if there was no resistance to the strippers, the coin or coins would be returned to the customer and *vice versa*.

Where the articles in the packs are of
 110 a porous nature, it is desirable to safeguard against more than one article at a time being withdrawn by the sucker. This may be achieved by making the sucker of flexible material so that it will collapse
 115 when it makes contact with the article, so reducing the area of suction. Alternatively, a valve can be arranged in the suction hole in the sucker, which valve is normally held open by a spring, but is
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arranged to close and cut off the suction when contact is made with the article.

One form of coin-operated vending machine constructed in accordance with the present invention will now be described in detail by way of example with reference to the accompanying drawings, in which

Fig. 1 is a diagrammatic perspective view of the mechanism;

Fig. 2 is a corresponding view of certain parts of the mechanism in the displaced position which they occupy towards the close of the cycle;

Fig. 3 is a longitudinal section through the sucker on an enlarged scale;

Fig. 4 is a similar view of the sucker at the moment it has made contact with a card; and

Figs. 5 and 6 are views corresponding respectively to Figs. 3 and 4, showing an alternative type of sucker.

Like reference numerals indicate like parts throughout the drawings.

The machine comprises a casing, not shown, enclosing a rotatable carrier 10 on which are displayed a plurality of packs 11 of postcards, the postcards constituting each pack being held to the carrier by wires 12. The carrier is located so as to be clearly visible to the intending customer and can be rotated by means of a hand wheel 13 on the outside of the machine so as to bring any desired row of packs opposite the sucker 14.

The customer is able to select the postcard he desires to obtain firstly by bringing the appropriate row of packs opposite the sucker by rotation of the hand wheel 13, and then by raising the sucker into the position opposite the desired pack; this he can do by actuation of a further hand control (not shown) which rotates a pulley 15, so raising or lowering an arm 16 supporting the sucker through the agency of a belt 17 working round a lower pulley 18. At the lower end of the arm 16 is a bracket 19 which is slidably, but not rotatably mounted on a support 20.

When the customer has selected the desired card he inserts a coin into the coin slot of the machine. This, as described below, automatically sets the machine in operation, causing the sucker to approach the selected card, lift it from the pack, pull it past the wires 12 and finally deliver it to the customer through a discharge chute. If for any reason the sucker should fail to pick up a card the inserted coin is returned to the customer.

The action of the machine is as follows: The inserted coin passes down a coin chute 21 pivoted to the framework of the machine 22 and normally held

against a pin 23, as shown in Fig. 1, by a spring 23. The coin chute 21 carries a rearwardly projecting lever 24 which abuts against an arm 25 pivoted to the machine at 26 and carrying a counterweight 27.

When a coin is inserted it falls down the coin chute and depresses the right-hand end of the arm 25. This closes a mercury switch 29 carried by the arm 25 and starts an electric motor, which drives a shaft 30 in clockwise direction. The coin is held in position to depress the right-hand end of the arm 25 until the close of the cycle of operations when it is released in the manner described below.

The shaft 30 carries a crank 31, which actuates a piston rod 32 of a piston 39 of a suction pump 33 connected by a tube 34 with a balance cylinder 35 and a filter 36. From the filter 36 a pipe 37 communicates through the hollow interior of the arm 16 with the sucker 14. So soon therefore as the coin is inserted the suction pump 33 will commence to apply suction to the sucker. The shaft 30 is geared by gear wheels 38, 40 to a cam shaft 41 carrying a cam 42. This cam is rotated in counter-clockwise direction and after a time it will be moved clear of a roller 43 carried on a link 44 pivoted at 45 to the machine frame. As soon as the cam 42 clears the roller 43 the lever 44 will be rocked clockwise about its pivot by a spring 46, thereby moving to the left a rod 47 connected to an arm 48 on the lower end of the support 20. The effect of this will be to rock the sucker 14 inwards against the selected card 11.

When the leading edge of the cam 42 once more meets the roller 43 the lever 44 will be rocked back against the spring 46, thereby returning the sucker to its previous position and withdrawing the top card from the selected pack under the action of the suction. When the sucker engages a card the resultant suction in the balance cylinder 35 will draw a piston 49 into the cylinder, thereby through the agency of a connecting rod 50 rocking a bell crank lever 51 counter-clockwise about its pivot 52 against the action of a spring 53 and withdrawing an abutment 54 from beneath the coin chute 21.

The cam 42 carries a roller 55 which, shortly after the return angular movement of the sucker, strikes the upper end of a bell crank lever 56 and displaces the latter in clockwise direction about its pivot 57 against the action of a spring 58. To the bell crank lever 56 is fixed a lever 59 carrying the lower pulley 18, and the result of this clockwise displacement of the bell crank lever 56 is to lift the pulley 18, thereby releasing the tension in the belt

17 and allowing the sucker to drop under gravity into a position above the discharge chute.

The bell crank lever 56 is coupled by means of a rod 60, carrying a pin 61, to the tail-piece 62 of the coin chute 21. As therefore the bell crank lever 56 is rocked clockwise by the roller 55 the coin chute 21 will be rocked counter-clockwise about its pivot, allowing the coin to fall. When a card has been picked up the abutment 54 will have been removed from beneath the coin chute, as described above, with the result that the coin will fall down into a cash box in the interior of the machine. If, however, for any reason the sucker has failed to pick up a card, no suction will have been established in the balance cylinder 35 and the piston 49 and abutment 54 will be held in the positions shown in Fig. 1, by the spring 53, with the result that the coin will be prevented by the abutment from falling into the cash box and will be diverted down a ramp 63 to the exterior of the machine where it can be recovered by the customer.

The lever 24 continues to hold the arm 25 in the displaced position until after the return of the coin chute to its normal position under the action of the spring 23, and this does not take place until the roller 55 has moved past the bell crank lever 56 beyond the position shown in Fig. 2. In this position the roller 55 is about to displace a bell crank lever 64 pivoted at 65 against the action of a spring 66 thereby opening a valve 67 in the balance cylinder 35. This relieves the suction and causes the sucker to drop the card it has picked up down the delivery chute.

The displacement of the bell crank 64 and the release of the bell crank 56 take place practically simultaneously and once the bell crank 56 is released the coin chute 21 returns to its normal position, allowing the arm 25 to rock counter-clockwise under the action of the balance weight 27, thereby opening the mercury switch 29 and stopping the motor. The cam 42 will continue to move forward, owing to there being a certain amount of overrun in the mechanism, and return into its initial position shown in Fig. 1.

It will be appreciated that it is undesirable that the sucker should pick up more than one postcard and there is a danger that this may take place particularly where the postcards are of a porous nature. This danger can be obviated by making the sucker of very flexible material, so that when it meets the card it will flatten out as indicated in Fig. 4, so that the suction will only be effective over the very small area determined by the suction hole 68 in the sucker.

As an alternative, a valve 69, normally held open by a spring 70, may be provided in the suction hole as indicated in Figs. 5 and 6. When the sucker makes contact with a card the valve 69 will be closed by the pressure of the sucker against the card, as shown in Fig. 6, thus relieving the suction. Atmospheric pressure on the rear face of the card will be sufficient to cause it to adhere to the sucker during its removal from the pack, while at the same time there will be no danger of two or more cards being withdrawn from the pack by the sucker.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A coin-operated vending machine of the kind specified, which includes a device functioning on successful operation of the withdrawal mechanism to deliver the inserted coin to a receptacle within the machine, but acting, in the event of unsuccessful operation of the withdrawal mechanism, to discharge the coin to the exterior of the machine, thereby enabling it to be recovered by the customer.

2. A machine as claimed in Claim 1, in which the withdrawal mechanism includes a sucker and driving means for the sucker which are rendered operative on the insertion of a coin to effect relative movement of the sucker and the carrier to bring the sucker into contact with the top article in the selected pack, followed by separation of the carrier and sucker, and delivery of the said article to the exterior of the machine.

3. A machine as claimed in Claim 2, which includes a suction pump, for applying suction to the sucker, which pump is automatically set in operation or coupled for manual operation on insertion of a coin into the machine.

4. A machine as claimed in Claim 3, having an electric motor arranged to be started automatically on insertion of a coin so as to set in motion the driving means for the sucker and the suction pump.

5. A machine as claimed in Claim 3, in which the sucker is flexible so that it will collapse and reduce the area of suction when it makes contact with the article.

6. A machine as claimed in Claim 3, in which the sucker includes a valve arranged in its suction hole, the valve being normally held open but arranged to close the suction hole when the sucker makes contact with the article.

7. A machine as claimed in Claim 3, which includes an abutment normally

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operative to divert the inserted coin to the exterior of the machine on completion of the operation of the withdrawal mechanism, and means for displacing the abutment in the event of the sucker picking up an article, and thereby allowing the coin to pass into the receptacle within the machine.

8. A machine as claimed in Claim 7, in which the abutment is linked to a piston working in a cylinder connected between the suction pump and the sucker.

9. A machine as claimed in Claim 7, in which the inserted coin is held in position to displace a control member which couples a cam shaft for automatic or

manual rotation, said cam shaft effecting relative movement of the sucker and the carrier to cause the sucker to withdraw the selected article from the carrier and deliver it into position above a discharge chute and thereafter causing the release of the coin, and return of the control member to its initial position.

10. A coin-operated vending machine substantially as described herein with reference to Fig. 1 of the accompanying drawings.

Dated this 7th day of September, 1938.

BREWER & SON,
33, Chancery Lane, London,
Patent Agents for the Applicant.

[This Drawing is a reproduction of the Original on a reduced scale.]

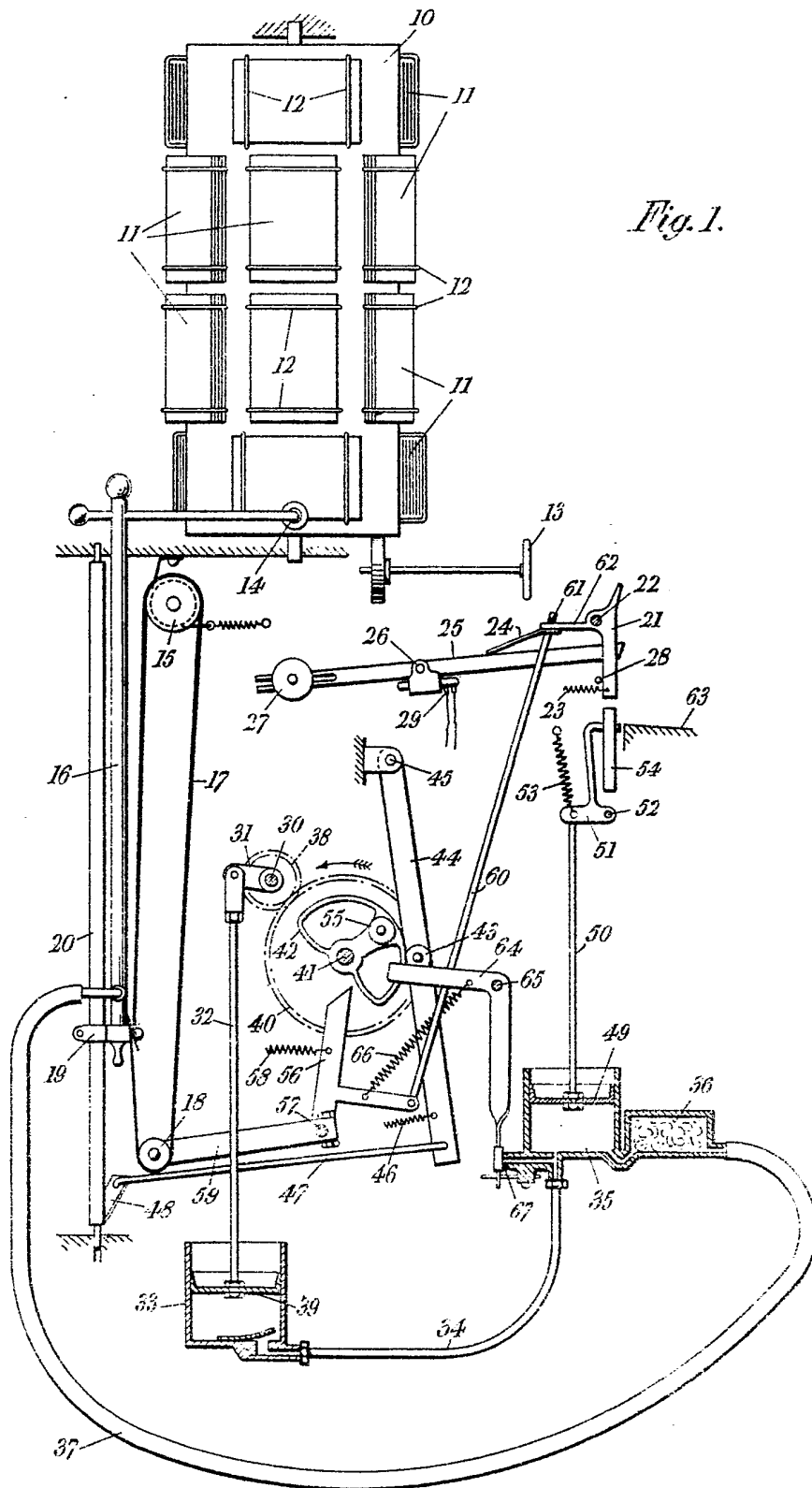


Fig. 1.

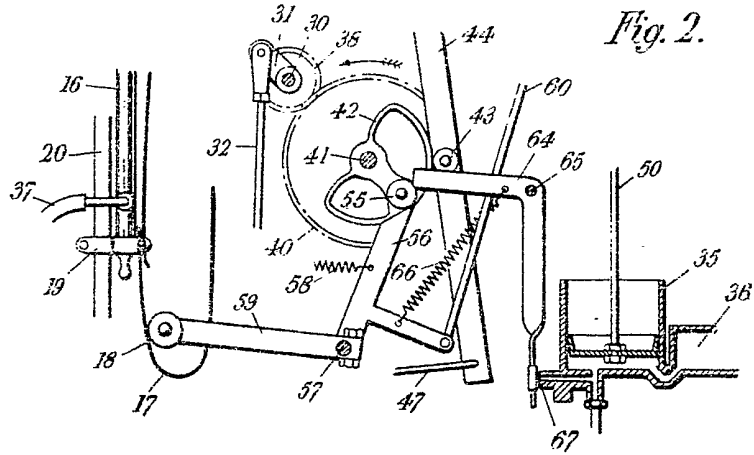


Fig. 2.

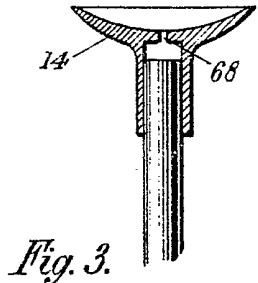


Fig. 3.

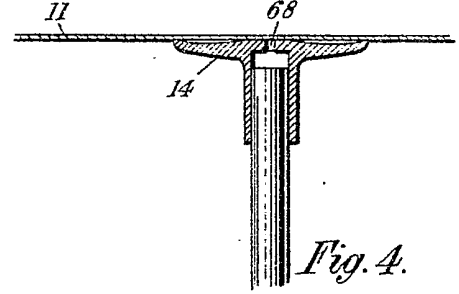


Fig. 4.

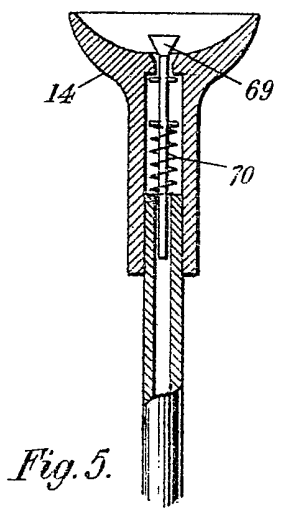


Fig. 5.

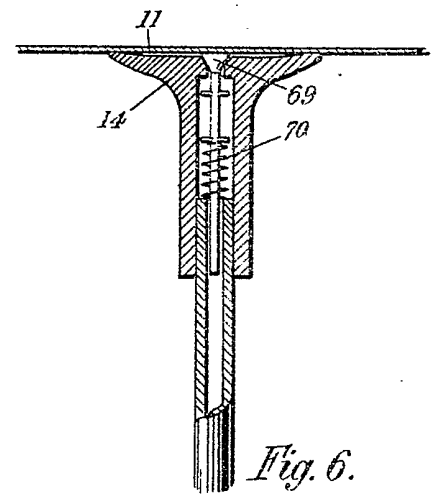


Fig. 6.

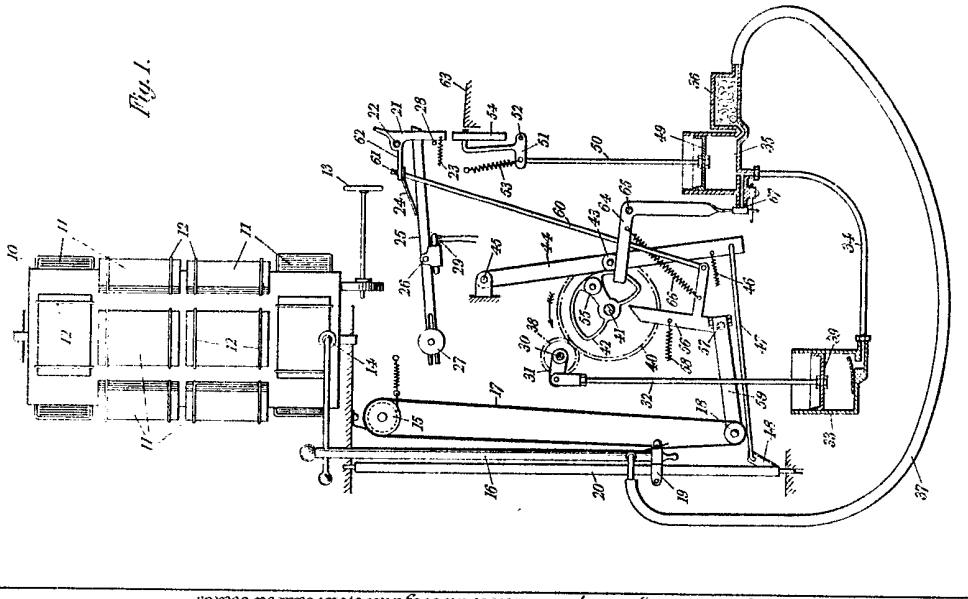


Fig. 1.

Fig. 2.

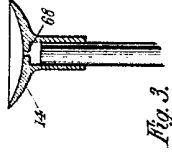
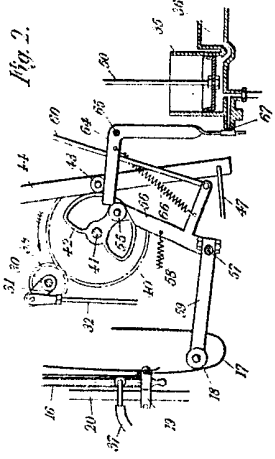


Fig. 3.

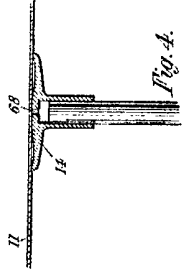


Fig. 4.

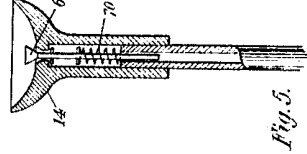


Fig. 5.

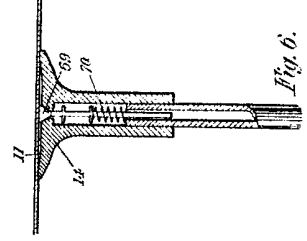


Fig. 6.

[This Drawing is a reproduction of the Original on a reduced scale.]