PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Apparatus for Vending Stamps, Tickets and the like

We, ASSOCIATED AUTOMATION LIMITED, a British Company, of 70, Dudden Hill Lane, Willesden, London, N.W.10, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a coin-freed machine for issuing postage stamps, strip tickets or the like, which will be referred to in this specification and claims simply as "stamps", for convenience and clarity.

Coin-freed stamp issuing machines are well known. In one type of machine, motive power is given by a falling weight which is lifted by insertion of a coin and which is associated with a weight-retaining latch. The coin trips the latch, after the coin has passed the usual coin-testing device, so that the weight is released and descends to operate the machine. This type of machine is not convenient for some conditions of use, particularly where small, lightweight coins are used which may not be heavy enough to trip the latch. Also this type of machine is not readily adapted for multiple coin operation, that is, when two or more coins have to be put into the machine for the issue of a single stamp.

In another type of machine, motive power is given manually by rotation of a wheel, but this is not convenient, since it requires a precisely determined operating distance. It is not sufficiently robust for the rather rough conditions of operation by the public, and may be subject to strain and damage.

It is an object of this invention to provide a coin-freed stamp issuing machine which can be operated efficiently by a small coin, or by several coins. Further the invention provides a machine which is not critical in operation, and in which damage will be avoided in the event of jamming.

According to this invention the machine comprises a frame, storage means for the stamps, a rotatable delivery device for delivering stamps from the storage means, coin freed means for operating the rotatable delivery device, a horizontally movable actuating member and a resilient connection between the actuating member and the coin freed means, wherein the resilient connection is strong enough to transmit the required operating force but is not strong enough to transmit a force in excess of the required operating force. The storage means and the rotatable delivery device preferably comprises a self-contained magazine unit which may be removed as a whole from the machine for easy replenishment with another roll of stamps. (This unit will be hereinafter called "the magazine unit"). Such units are well known, one being shown in United Kingdom Patent No. 616,524.

A stamp issuing machine in accordance with the invention will now be described in more detail by way of example, with reference to the accompanying drawings in which:—

Figure 1 is a front elevation;

Figure 2 is a side elevation in the direction of arrow A in Figure 1;

Figure 3 is a side elevation in the direction of arrow B in Figure 1;

Figure 4 is similar to Figure 3, but with the magazine unit removed;

Figure 5 is a detail, drawn to a large scale, showing the construction of the plunger;

Figures 6 and 7 are detail side elevations, also drawn to a larger scale, showing the mechanism in two positions; and

Figures 8 and 9 are further details, drawn to a larger scale.

The known magazine unit will first be generally described. It is seen in outline Figure 3. A drum, with spaced radially extending pins for engaging the perforations between the stamps, is rotatable for issuing the stamps, one or two or more at a time, as the case may be. This drum is driven through a Geneva

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mechanism whose operating pins are fixed on a disc carried by a shaft driven from outside the magazine unit by a shaft 8 of the coin-freed mechanism. In addition, a stop plunger, slidably mounted on the magazine unit, is kept inwardly pushed against a spring when the unit is held in position in the machine, which has a projection 15B for this purpose. Unless in its inward position, the stop plunger prevents operation of the magazine unit. Use of a Geneva mechanism permits an initial lost motion before the stamps are moved for issue. This initial lost motion is necessary where, as in the present instance, a coin is used to raise a latch which permits a sale to take place. Also it is necessary to compensate for variations in the distance of travel of the manual operating plunger.

Referring now to Figure 1, the front plate 1A of the machine is mounted on a frame 1 and has a coin slot 1B, a push button 2, an instruction plate 2A, and a cover 3 hingedly mounted on axis 3A. This cover 3 is lifted to reveal the stamp issuing opening when a stamp is being bought.

Behind the coin slot is the usual coin testing device 4 (see Figures 2 and 3) leading to a coin chute 4A and a rotatable coin hopper 5 (of known construction) mounted on a shaft 5A (see also Figure 9). A locking lever 5B is pivotally mounted at 5C, and has a detent 5D for normally preventing rotation of the hopper. The lever is held in this position by a tension coil spring 5E carried on a bracket 5F extending from the frame. When a coin falls into the hopper and the hopper is initially rotated, the coin is carried round and pushes the locking lever 5B to the dotted line position shown in Figure 2, so that the detent 5D is removed from the hopper and the latter can continue its rotation, thus permitting operation of the machine. On the other hand if there is no coin in the hopper, the detent only allows the hopper to rotate a very short distance, thus preventing operation of the machine. Although a one coin hopper is shown, it is possible to provide for multiple coin operation by adding further coin slots, coin chutes, coin compartments in the hopper, and so on, in known manner. Improper manipulation of the machine are prevented by a two-way non-return pawl 14 acting on the hopper drive, as will be described subsequently.

After a good coin has been inserted and has fallen to the hopper, operation of the machine is by manually and linearly directed pressure on an actuating member, that is, by manual and horizontal rearward movement of the push button 2.

Behind the front plate 1A, the shank 2B (see Figure 5) of the push button 2 is fixed in a tube 2C which is slotted at 2D at each side to receive a pin 6A of a lever 6 rockably mounted at 6B in the frame. The pin 6A is slidable in the slot 2D. Slidably fitting in the tube 2C is a piston 2E which is held in contact with the pin 6A by a strong compression coil spring 2F, whose other end abuts the inner end of the shank 2B within the tube. The strength of the spring is such that when the push button is pushed in the lever 6 is rocked about the axis 6B. On the other hand if the mechanism is inoperative for any reason, such as because a coin has not been inserted, because the magazine unit is empty or because of a fault, then the push button can still be pushed in and the spring will absorb the movement. In this way damage to the mechanism is avoided.

A tension coil spring 7 is connected to the frame at 7A and to the lever 6 at 7B. This spring causes the upper end of the lever 6, with the push button assembly, always to return to the normal forward position.

The lower end of the lever 6 is formed as a toothed quadrant 6C which is in mesh with two trains of gears, 8A and 8B, and 9A and 9B. Gear 8A drives gear 8B which is freely rotatable on a drive shaft 8. The gear 8B (see Figure 8) is formed with an integral cam having two detents 8C, spaced apart 180°, for driving an arm 10 fixed on the shaft 8, through the medium of a pawl 10A pivotally mounted on the arm at 10B and urged against the cam by a spring 10C. The arm 10 is rotated through half a revolution when its pawl 10A is engaged by either cam detent 8C. The shaft 8 is journalled in the frame, through which it projects, and also in a bracket 8D. When the push button 2 is pressed in, the quadrant 6C drives the gears 8A and 8B and the cam on the latter drives the shaft 8 through half a revolution. This motion is transmitted, by a diametral tongue 8E (see Figure 4) on the inner end of the shaft, to the magazine unit for issuing a stamp.

Over-running of the shaft 8 is prevented by the engagement of the arm 10 with a depending stop 11 on the lever 7 (see Figure 7). Rotation of the shaft and lever in the other (non-driving direction) is prevented by a rockable catch 12, pivotally mounted on the frame at 12A and having a weight 12B which normally causes the catch to remain in the path of rotation of the arm, (see Figure 7). When the arm 10 is being rotated in the driving direction it can rock the catch out of its path (see Figure 6).

The other gear train 9A, 9B is for the purpose of rotating the hopper shaft 5A on which the hopper 5 is fixed. The gear ratio is such that one stroke of the toothed quadrant 6C is sufficient to rotate the hopper through approximately 120°, for permitting the coin to move the locking lever 5B and then to fall from the hopper to a coin box (not shown). The gear 9B is not toothed throughout 360° but has two gaps 13A and 13B, defining a toothed sector 13 with which a two-way non-

return pawl 14 engages. This pawl 14 is pivotally mounted at 14A in the frame and is constantly urged to a central position by a tension coil spring 14B, connected to the pawl at one end by a pin 14C and at the other end to the frame by a pin 14D. In Figure 9 the pawl is shown in its central position in the gap 13A, just before the start of an operating, forward stroke of the lever 6 and quadrant 6C. When the forward stroke is in progress the gear 9B rotates anti-clockwise (as seen in Figure 9), the pawl 14 is deflected clockwise about its pivot mounting 14A, and its nose rides over the toothed sector 13 of the gear 9B. Clockwise rotation of the gear is prevented whilst the forward stroke is taking place, and consequently none of the meshing parts (quadrant 6C, gears 8A, 8B, 9A and 9B) can be moved in the reverse direction. This prevents improper manipulation of the machine whilst it is being operated by depression of the push button.

When the stroke is completed, the nose of the pawl 14 enters the other gap 13B and thereafter, during the return stroke, the pawl only permits the parts to move in the return direction, again preventing improper manipulation.

Referring to Figure 4, which shows the machine with the magazine unit removed, the drive tongue 8E will be noticed, and also projections 15A and 15B which are for locating the unit accurately. The projection 15B engages and depresses the stop plunger in the unit, for freeing the latter so as to make it ready for operation, as soon as the unit is fixed in position in the machine.

The magazine unit is held in place by a removable bar which is inwardly bowed for holding the unit firmly.

WHAT WE CLAIM IS:—

1. A coin-freed stamp issuing machine comprising a frame, storage means for the stamps, a rotatable delivery device for delivering stamps from the storage means, coin freed means for operating the rotatable delivery device, a horizontally movable actuating member and a resilient connection between the actuating member and the coin freed means, wherein the resilient connection is strong enough to transmit the required operating force but is not strong enough to transmit a force in excess of the required operating force.

2. A machine according to claim 1 in which the actuating member is a push button mounted on a shank fixed in a tube, the tube housing a compression coil spring which transmits the drive to an operating lever.

3. A machine according to claim 2 in which the lever has a laterally projecting pin which is slidably received in slots in the tube, the end of the pin being engaged by a plunger slidably carried in the tube and engaged by the end of the spring remote from the shank.

4. A machine according to claim 3 in which the operating lever is rockably mounted on the frame and at its upper end is driven from the push button, its lower end being formed as a toothed quadrant which is in mesh with two sets of gears, a first set of gears driving the magazine unit and a second set of gears driving a coin-controlled release device.

5. A machine according to claim 4 in which a spring is operative on the lever to cause the parts to return to the inoperative position.

6. A machine according to claim 4 wherein the first set of gears comprises two gears in mesh the second of which is freely rotatable on a drive shaft for the magazine unit, the second gear having a cam for driving a member fixed on the shaft.

7. A machine according to claim 6 in which the cam has two detents and in which is an arm carrying a spring-pressed pawl for engaging the detents successively.

8. A machine according to claim 7 in which a weight operated catch prevents reverse rotation of the arm and shaft.

9. A machine according to claim 4 in which the release device is a rotatable hopper for carrying a coin into engagement with a locking lever, so that the coin can move the locking lever out of locking engagement with the hopper to permit movement of the toothed quadrant and the two sets of gears.

10. A machine according to claim 9 in which the second set of gears has two gears, the second gear of which is fixed on a shaft on which the hopper is fixed.

11. A machine according to claim 10 in which the second gear has two gaps and is adapted to be engaged by a two-way non-return pawl.

12. A coin freed stamp issuing machine substantially as described herein, with reference to the accompanying drawings.

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Agents for the Applicants.

PROVISIONAL SPECIFICATION

Apparatus for Vending Stamps, Tickets and the like

We, ASSOCIATED AUTOMATION LIMITED, a British Company, of 70, Dudden Hill Lane, Willesden, London, N.W.10, do hereby declare this invention to be described in the following statement:—

This invention relates to apparatus for vending stamps, tickets and the like, which apparatus will be described herein simply in relation to stamps, for convenience.

Coin-freed stamp issuing machines are

return pawl 14 engages. This pawl 14 is pivotally mounted at 14A in the frame and is constantly urged to a central position by a tension coil spring 14B, connected to the pawl at one end by a pin 14C and at the other end to the frame by a pin 14D. In Figure 9 the pawl is shown in its central position in the gap 13A, just before the start of an operating, forward stroke of the lever 6 and quadrant 6C. When the forward stroke is in progress the gear 9B rotates anti-clockwise (as seen in Figure 9), the pawl 14 is deflected clockwise about its pivot mounting 14A, and its nose rides over the toothed sector 13 of the gear 9B. Clockwise rotation of the gear is prevented whilst the forward stroke is taking place, and consequently none of the meshing parts (quadrant 6C, gears 8A, 8B, 9A and 9B) can be moved in the reverse direction. This prevents improper manipulation of the machine whilst it is being operated by depression of the push button.

When the stroke is completed, the nose of the pawl 14 enters the other gap 13B and thereafter, during the return stroke, the pawl only permits the parts to move in the return direction, again preventing improper manipulation.

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The magazine unit is held in place by a removable bar which is inwardly bowed for holding the unit firmly.

WHAT WE CLAIM IS:—

1. A coin-freed stamp issuing machine comprising a frame, storage means for the stamps, a rotatable delivery device for delivering stamps from the storage means, coin freed means for operating the rotatable delivery device, a horizontally movable actuating member and a resilient connection between the actuating member and the coin freed means, wherein the resilient connection is strong enough to transmit the required operating force but is not strong enough to transmit a force in excess of the required operating force.

2. A machine according to claim 1 in which the actuating member is a push button mounted on a shank fixed in a tube, the tube housing a compression coil spring which transmits the drive to an operating lever.

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5. A machine according to claim 4 in which a spring is operative on the lever to cause the parts to return to the inoperative position.

6. A machine according to claim 4 wherein the first set of gears comprises two gears in mesh the second of which is freely rotatable on a drive shaft for the magazine unit, the second gear having a cam for driving a member fixed on the shaft.

7. A machine according to claim 6 in which the cam has two detents and in which is an arm carrying a spring-pressed pawl for engaging the detents successively.

8. A machine according to claim 7 in which a weight operated catch prevents reverse rotation of the arm and shaft.

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Coin-freed stamp issuing machines are

* C L M S *

widely used and it is usual for a stamp machine to be driven by the descent of a weight which is released on insertion of a coin, the coin tripping a weight retaining latch. Such an arrangement may not be convenient when a small coin must be used, because the coin may be too light to free the retaining latch. An object of this invention is to provide a coin-freed stamp issuing machine which can be operated efficiently with a small coin. Further the invention provides a machine which may be adapted to operate with one or two or more coins, and a machine in which damage will be prevented in the event of jamming.

One construction according to the invention will now be described in more detail, by way of example.

The machine comprises two main parts, the coin-freed mechanism, and the stamp magazine and issuing unit (hereinafter called 'the magazine unit'). The latter is preferably self-contained so that it can be easily removed for replenishment with a fresh roll of stamps. A suitable unit is described in Patent No. 616,524.

In the magazine unit, a drum, with spaced radially extending pins for engaging the perforations between the stamps, is rotatable for issuing the stamps, one or two or more at a time, as the case may be. This drum is driven through a Geneva mechanism whose operating pins are fixed on a disc carried by a shaft driven from outside the magazine unit by the coin-freed mechanism. In addition, a stop plunger, slidably mounted on the magazine unit, is kept inwardly pushed against a spring when the unit is held in position in the apparatus, which has a suitable projection for this purpose. Unless in its inward position, the stop plunger prevents operation of the magazine unit. Use of a Geneva mechanism allows an initial lost motion before the stamps are moved for issue. This initial lost motion is necessary where, as in the present instance, the coin is used to raise a latch which permits a sale to take place.

The coin-freed mechanism has the usual coin slot, with a coin testing device leading to a coin hopper in which the coin is movable by a slider to raise a latch and so permit operation of the apparatus. If there is no coin in the hopper the latch only permits the slider to move a short initial distance, so that the apparatus cannot be operated. The hopper may be divided into two compartments, for operation by two or more coins in appropriate cases. The slider has a two-way non-return pawl and ratchet to prevent unauthorised manipulations.

Thus when a good coin is put into the apparatus it passes through the testing device, and falls into the hopper ready to be pushed forward by the slider into contact with the latch, for raising the latch clear of the slider so as to allow the slider to continue movement for operation of the apparatus.

Operation is by horizontally and rearwardly directed manual pressure on a push button projecting from the front of apparatus. The shank of the push button forms a spring pressed plunger slidably carried with a tube, the rear end of which abuts against the upper end of a lever rockably carried by the apparatus. A tension coil spring is connected to the lever below its fulcrum mounting to urge the upper end of the lever, and the tube and push button, forwardly, in other words, tending to return these parts to the normal, rest position. Below the spring, the forward end of a slider moving link is pivotally connected to the lever, and the rear end of this link is pivotally connected to the slider.

Thus if a coin is in the hopper and the push button is pressed in, the lever can be swung to its full extent, against the spring.

The lower end of the lever is formed as a toothed quadrant, in mesh with the smaller gear wheel of a freely rotatably mounted compound gear. The larger gear wheel of this compound gear meshes with a freely rotatable spur on a driving shaft, which is one with the driving shaft of the magazine unit when the latter is in position in the apparatus. The spur is integral with a cam having two detents, either of which is engageable by a pawl carried by an arm fixed on the shaft. Thus rotation of the spur in one direction causes rotation of the cam, either of whose detents can be engaged by the pawl and so drive the arm and the driving shaft, and consequently the magazine unit. Reverse rotation of the gear train when the plunger is released does not rotate the arm being held by a weighted catch and the pawl riding on the cam and over the detents in the other direction.

The apparatus may be easily varied in construction to make it suitable for various types of operation. The number of stamps issued at each sale may be varied according to the amount of revolution of the main shaft. The amount of revolution of the main shaft may be varied according to the ratios of the spur and its driving gear wheel, which forms one component of the compound gear wheel. Different sized coins may be accommodated by varying the coin slot, coin testing device and the hopper, slider and latch mechanism. Further the latter mechanism may be arranged to operate with one, two or more coins, of like or differing sizes. More than one latch could be used. One or more hoppers could be designed to accommodate more than one coin.

The number of detents on the cam which is integral with the spur wheel on the driving shaft, may be varied. In the construction described above there are two detents corresponding to issue of two stamps per revolution of the shaft.

Use of a spring-controlled push button

allows the manual pressure required for operation to be fairly accurately determined and it also allows for manual pressure to be exerted when the apparatus is empty, or the coin inserted is not good, without damage to the apparatus.

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