June 17, 1930. A. S. ROSS 1,764,985

SLUG EJECTOR

Filed Aug. 20, 1928 2 Sheets-Sheet 1

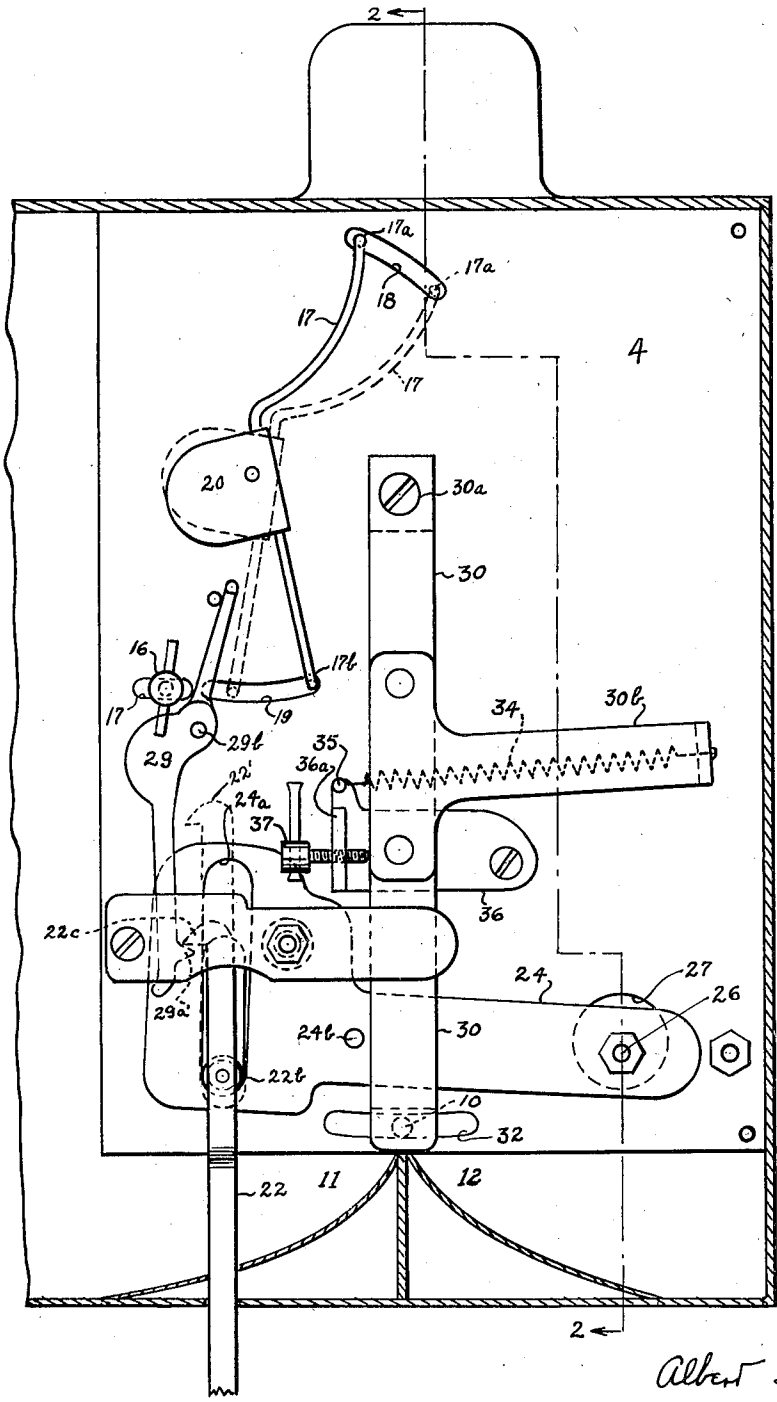


Fig. 1.

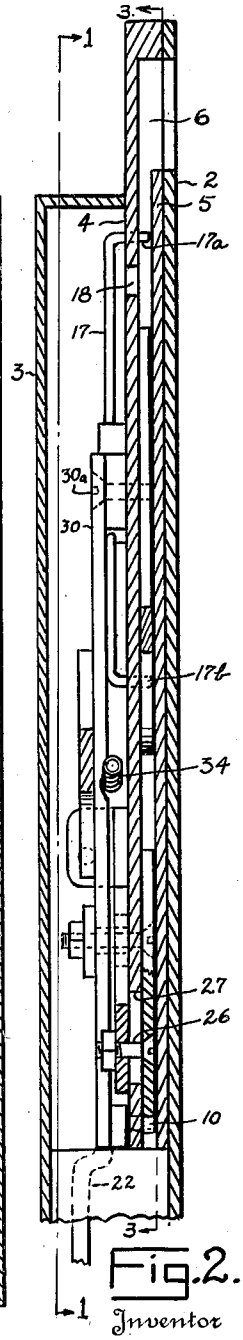


Fig. 2.

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SLUG EJECTOR

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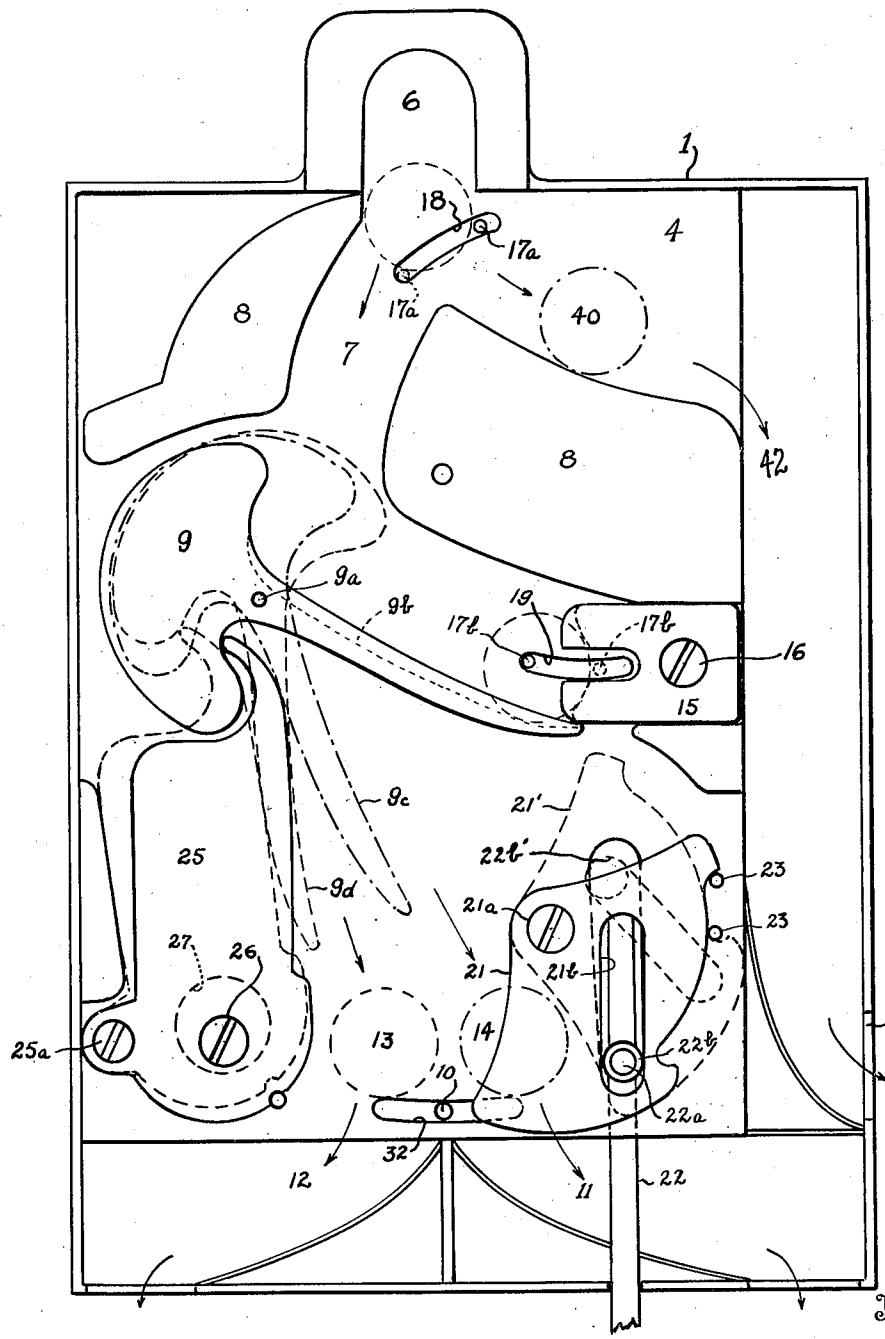


Fig.3.

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UNITED STATES PATENT OFFICE

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SLUG EJECTOR

Application filed August 20, 1928. Serial No. 300,645.

This invention relates to slug ejectors for coin actuated money changers, vending machines and the like, and has for its general object the provision of certain new and useful improvements on the slug ejector covered by my pending application for Letters Patent of the United States filed on the 22nd day of August, 1927, Serial No. 214,515.

One specific object of the invention is to provide new and useful fraud preventive means to eject all slugs which are magnetic, too light, or too heavy, said means being adjustable.

Other objects will appear in the following specification.

In the accompanying drawings, illustrating the preferred embodiment of the invention, Fig. 1 is a sectional rear elevation of the slug ejector, on the line 1—1 of Fig. 2; Fig. 2, a sectional side elevation on the line 2—2 of Fig. 1; and Fig. 3, a sectional front elevation on the line 3—3 of Fig. 2.

The slug ejector may be enclosed within a suitable casing 1 having a front wall 2 and a rear wall 3, the operative parts thereof being mounted upon the rear plate 4. The rear plate 4 and the front plate 5 are spaced apart, as shown.

The deposit slot, through which operating coins may be inserted, is indicated at 6, and it communicates with the entrance passageway 7 defined by the plates 4 and 5 and the plate spacing guide members 8. Below the passageway 7 the coin selecting beam 9 is pivotally mounted on the front side of the plate 4, and below said beam the pin 10 divides the coin passageway 11 and the slug passageway 12. The slug passageway may lead to a suitable tray (not shown) on the outside of the machine. Passageway 11 may be adapted to direct operating coins to the coin actuated money changer, vending machine, or other device with which the slug ejector is used.

Elements corresponding generally to the elements just described are disclosed in my application above identified. The operation thereof will briefly be described.

When a coin 14 of the proper denomination is inserted in the deposit slot 6 it will roll downwardly through the passageway 7 and fall substantially upon the pivot 9^a of the coin selecting beam 9 and roll to the right on the inclined upper edge 9^b, slowly rotating said beam into the predetermined position indicated by the dotted lines 9^c, whereupon it rolls off said beam. The position referred to is such with respect to the pin 10 that the coin 14 falls to the right of said pin and passes through the coin passageway 11 to be thereby directed to the coin-actuated machine.

Should a slug 13, heavier than a coin of the proper denomination be inserted, it too will fall upon the pivot 9^a of the coin selecting beam 9, and roll to the right on the inclined upper edge 9^b, rapidly rotating the beam into the predetermined position indicated by the dotted lines 9^d whereupon it will roll off said beam. This position of the beam is such with respect to the pin 10 that the slug 13 falls to the left of said pin and into the slug passageway 12 through which it is ejected to the tray (not shown).

Now the mechanism constituting the preferred embodiment of the present invention includes new and improved adjustable means to control the selection of coins by the beam 9. It will be obvious that rotation of the beam 9 in a clockwise direction on its pivot 9^a will be dependent on the weight of the coin and the lever arm, that is, approximately the distance between the pivot 9^a and the point of contact of the coin with the edge 9^b. And so, to rotate said beam, a light coin must roll a much greater distance to the right on said edge than must a heavy coin. To limit the movement of the coin to the right on said edge, I provide the stop member 15 (this stop member is a magnet, but its function as a stop member is not dependent upon its magnetic properties). The stop member is adjustably held on the front side of the plate 4 by the bolt 16 fitting in the slot 17 in said plate. It may, therefore, be moved to the left to stop all coins when they reach a predetermined distance from the pivot 9^a and thus prevent rotation of the beam by a coin of less than a predetermined weight. It may be moved to the right to permit said light coin to roll a much greater distance to the right from the pivot 9^a before stopping it, so that said light

coin will rotate said beam. The slug ejector may be tested before use, and if it is found that slugs slightly lighter than coins of the proper denomination rotate said beam 9 and find their way into the coin passageway, the stop member 15 may be moved to the left to prevent such rotation. If it should be found that coins of the proper denomination are unable to rotate the beam 9, the stop member 15 may be moved to the right to permit such rotation.

Referring now to the entrance passageway blocking means adapted to prevent the insertion of coins during the detention of a light slug. It is preferably in the form of a lever 17 pivoted at 17^c on the rear side of the plate 4, the upper end 17^a of said lever extending through the arcuate slot 18 in the plate 4 and communicating with the entrance passageway 7; the lower end 17^b thereof extending through the arcuate slot 19 in the plate 4 into the path of the coins rolling down the edge 9^b of coin selecting beam 9. The weight 20 normally holds the blocking lever 17 in the position shown by the solid lines. Light coins or slugs rolling to the right on the edge 9^b strike the lower end 17^b of said lever and move it to the right, so that said lever assumes the position shown by the dotted lines, the upper end 17^a thereof being moved into the entrance passageway 7 to direct coins and slugs 40 into the discharge passageway 42 from whence they pass through the discharge slot 41 into a suitable tray (not shown).

As above stated, the stop member 15 is a magnet. The beam 9 and the lever 17 are preferably made of metal other than iron, in order that the magnet will not interfere with the movements thereof. Should a slug containing iron be inserted in the deposit slot 6, and roll down the edge 9^b of the coin selecting beam 9, it will be attracted and held by the magnet 15. It will actuate the lever 17 as said lever is actuated by light coins, as above described.

The slug ejector, therefore, includes means to arrest and detain magnetic slugs as well as slugs lighter than coins of a predetermined weight.

To prevent the entrance of such slugs into the coin passageway 11 when they are released, (by means hereinafter described) I provide the gate 21 (see Fig. 3) pivoted at 21^a to the front side of the plate 4 and having a slot 21^b for the reception of the roller 22^b carried by the spindle 22^a of the actuating rod 22 reciprocable on the rear side of the plate 4. The rotation of this gate 21 about its pivot 21^a may be limited by suitable pins 23. The normal relative positions of the gate 21 and roller 22^b are indicated by dotted lines $21'$ and $22^{b'}$. When the rod 22 is moved downwardly, the gate will close the coin passageway 11, as shown by the solid lines.

Referring now to Fig. 1, it will be seen that the roller 22^b carried by the rod 22 is also movable in the slot 24^a of trip lever 24 pivoted at 24^b on the rear side of the plate 4. The trip lever 24 is pivotally connected to the link lever 25 (pivoted at 25^a) on the front side of the plate 4 (see Fig. 3) by the bolt 26, which is movable in the opening 27 in the plate 4. And so the trip lever 24 and the coin selecting beam 9 are operatively connected together by the link lever 25.

A release lever 29, pivoted at 29^b on the rear side of the plate 4, is normally in the position shown by Fig. 1.

The operation of the releasing mechanism just referred to is as follows.

Assuming that a light or magnetic slug is being detained by the means above described, the entrance passageway 7 is blocked by the end 17^a of the blocking lever 17, and the rod 22 is in its normal position $22'$. Now the rod 22 may either constitute, or be operatively connected to, the actuating member of the machine with which the slug ejector is used; and so when an attempt is made to operate the machine, the rod 22 is moved downwardly and assumes first the position shown by the solid lines. When the member 22 is moved to this position it closes the gate 21 as above described, so that the detained slug when released cannot pass into the coin passageway 11. The upper end of said rod has a finger 22^c which has been brought into engagement with the shoulder 29^a of the releasing lever 29. And the roller 22^b has been brought to bear against the trip lever 24 at the end of its slot 24^a.

When the rod 22 is moved further downward, it will not change the closed position of the gate 21 (Fig. 3) but it will rock trip lever 24 (Fig. 1) on its pivot 24^b in an anticlockwise direction, whereby the bolt 26 will be moved upwardly to rock the link lever 25 (Fig. 3). And the link lever 25 will rock the beam 9. And the finger 22^c of the rod 22 will ride downwardly upon the inclined surface of the shoulder 29^a of releasing lever 29, thereby rocking said lever in a clockwise direction on its pivot 30, so that the upper end thereof quickly moves the lower end of blocking lever 17 into engagement with the detained slug, whereby said slug is kicked away from the magnet 15.

By the means described, the detained slug is practically simultaneously released by the beam 9 and kicked away from the magnet 15 so that it falls downwardly into the slug passageway 12, the gate 21 being meanwhile closed, as above described.

Attention is now invited to the supporting means for the pin 10 which divides the coin passageway 11 and the slug passageway 12. This pin is adjustably supported by means independent of the other elements of the device. It may comprise the member 30 (Fig. 1) pivotally mounted at 30^a upon the

back of plate 4 and upon the lower end of which the pin 10 is mounted to project through the arcuate slot 32 in the plate 4. The support 36, rigidly fixed to the plate 4, has a flange 36^a in which the set screw 37 is threaded to bear against the member 30. The spring 34, connected to the projecting arm 30^b of the member 30 and to the support 36, serves to hold the member 30 against the inner end of the set screw and so the disposition of the pin 10 may be changed to the right or left (Fig. 1) by screwing the set screw 37 inwardly or outwardly, respectively. As suggested at the outset, the passage of coins and slugs into the coin and slug passageways, respectively, will be dependent on the relative positions of the beam 9 and pin 10 when the coin or slug falls from said beam.

The adjusting means for the pin 10, just described, may, of course, be made in various ways. So also may the other elements of the preferred embodiment hereinabove described. It is to be understood therefore, that the hereinafter appearing claims are not limited to the device shown by the drawings.

I claim:

1. A slug ejector having a pivoted coin-selecting beam and a magnetic stop member adjacent said beam to arrest and hold magnetic slugs and to arrest and hold coins and slugs of less than a predetermined weight.

2. A slug ejector having a coin-selecting beam and a magnetic stop member adjacent said beam and adjustable with respect thereto to arrest and hold magnetic slugs and to arrest and hold coins and slugs of less than a pre-determined weight.

3. A slug ejector having a coin-selecting beam, a magnet adjacent said beam, to arrest and hold magnetic slugs and releasing means to kick slugs away from said magnet and to rock said beam.

4. A slug ejector having an entrance passageway, a coin-selecting beam, a stop member, and a blocking lever, said beam serving to direct slugs to said stop member and blocking lever said blocking lever being movable by said slugs into said entrance passageway.

5. A slug ejector having an entrance passageway, a magnet adjacent said passageway, and a blocking lever extending between said magnet and said passageway, said magnet serving to cause magnetic slugs to engage and move said lever into said passageway.

6. A slug ejector having an entrance passageway, a magnet adjacent said passageway, a blocking lever extending between said magnet and said passageway, said magnet serving to detain and cause magnetic slugs to engage and move said lever into said passageway, and means to cause said lever to kick magnetic slugs away from said magnet.

7. A slug ejector having an entrance passageway, a magnet, a blocking lever, said magnet serving to detain slugs, said lever being movable by detained slugs into said entrance passageway and means to cause said lever to kick slugs away from said magnet, and to move said lever out of said entrance passageway.

8. A slug ejector having a coin passageway, a slug passageway, means to arrest and detain slugs, a gate for said coin passageway, and means to close said gate and release detained slugs.

9. A slug ejector having a coin-passageway, a slug passageway, a pivoted coin-selecting beam adapted to detain slugs, a gate for said coin passageway, and means to close said gate and rock said beam to release detained slugs.

10. A slug ejector having a magnet, a coin passageway and a slug passageway, a gate for said coin passageway, and means to close said gate and release slugs detained by said magnet.

11. A slug ejector having a coin passageway, a pivoted gate for said passageway, said gate having a slot therein, and an actuating rod extending into said slot, said gate being closed by said rod during said rod's initial movement in a closing direction and held closed by said rod until said rod completes its movement in said direction.

12. A slug ejector having entrance, coin and slug passageways, a coin-selecting device, a blocking lever adapted to be moved by detained coins into said entrance passageway, a gate for said coin passageway, and means to close said gate, move said lever out of said entrance passageway, and release said coin.

13. A slug ejector having entrance, coin, and slug passageways, a magnet, a blocking lever movable by detained slugs into said entrance passageway, a gate for said coin-passageway, and means to close said gate and cause said lever to release slugs detained by said magnet, and to move said lever out of said coin passageway.

14. A slug ejector having a coin passageway, a slug passageway, a gate for said coin passageway, a coin-selecting beam, and an actuating member operatively connected to said gate and beam to close said gate and, holding said gate closed, rock said beam to release detained slugs.

15. In a slug ejector, a coin passageway, a slug passageway, a pin dividing said passageways, and an adjustable support for said pin comprising a pivotally mounted element, a set screw, and a spring urging said element into engagement with said set screw.

16. A slug ejector having entrance, coin and slug passageways, a blocking lever for said entrance passageway, a gate for said coin passageway, a coin selecting beam, and an

actuating member operatively connected to said lever, gate and beam to close said gate, move said lever out of said entrance passageway, and rock said beam to release detained slugs.

In testimony whereof I hereunto affix my signature.

ALBERT S. ROSS.