

Mar. 5, 1929.

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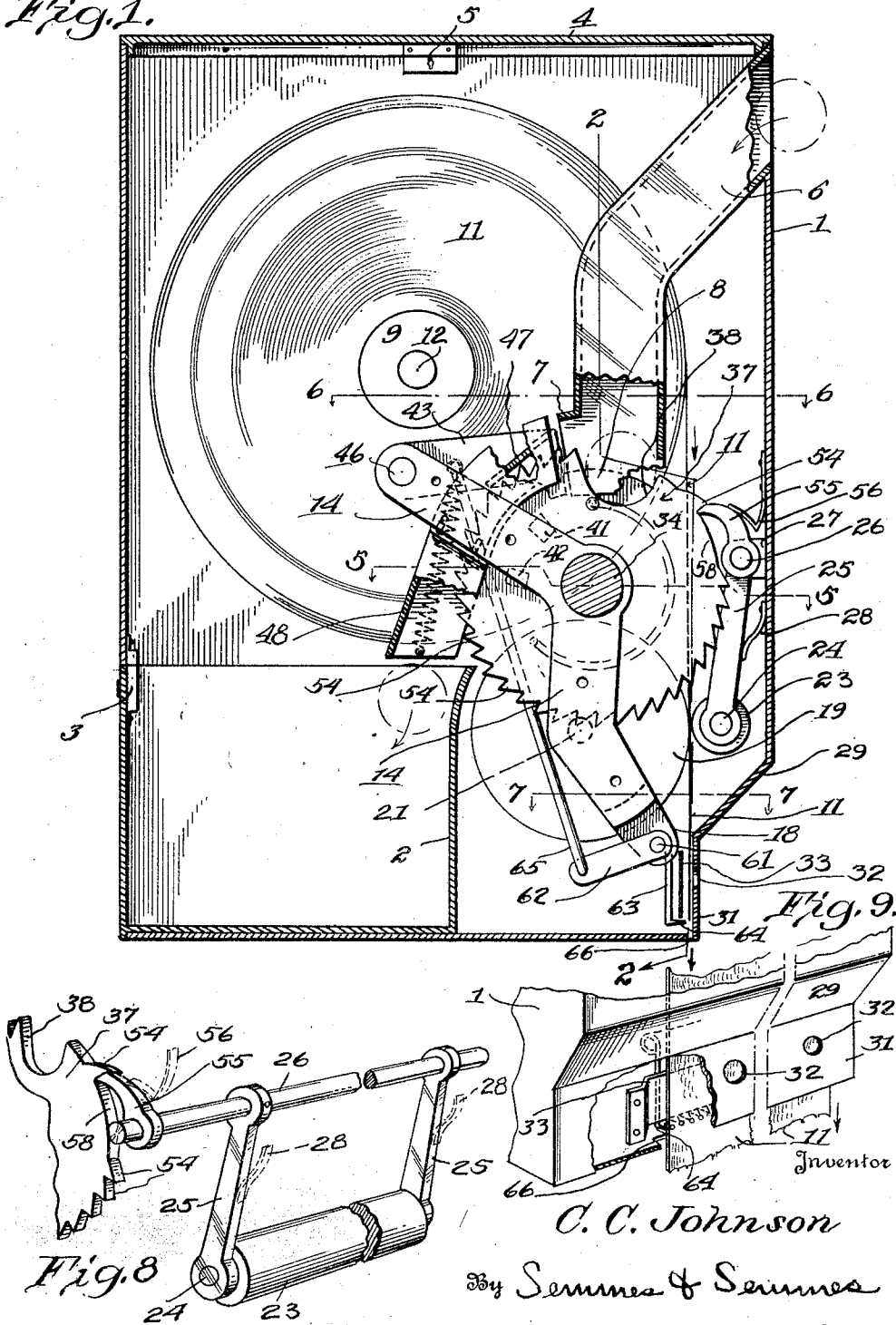
1,703,937

SHEET FEEDING DEVICE

Filed March 31, 1923

3 Sheets-Sheet 1

Fig. 1.



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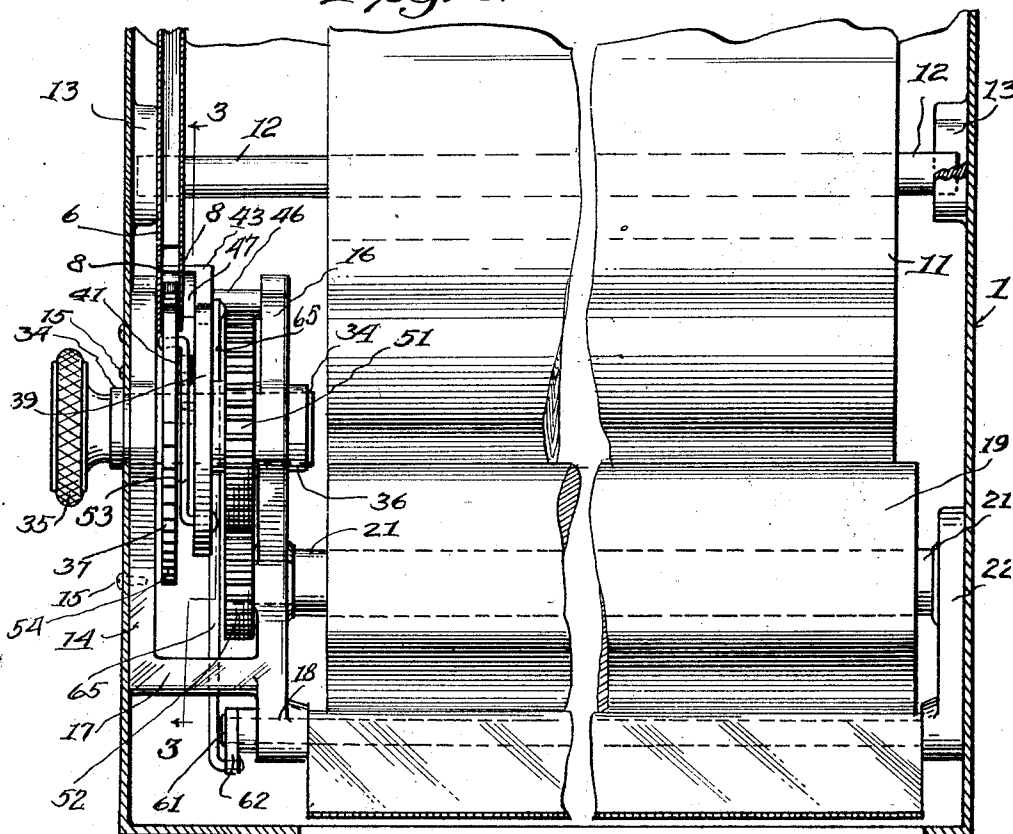
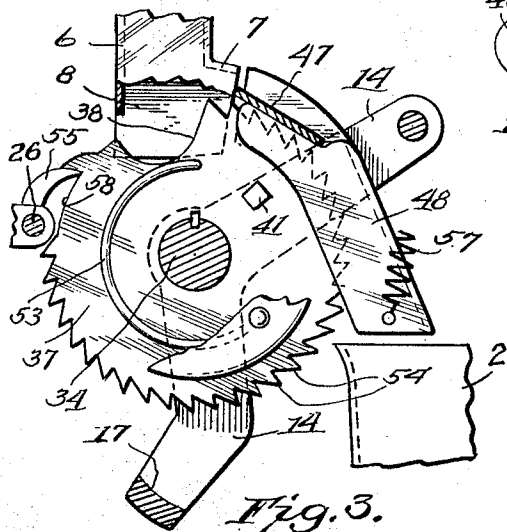
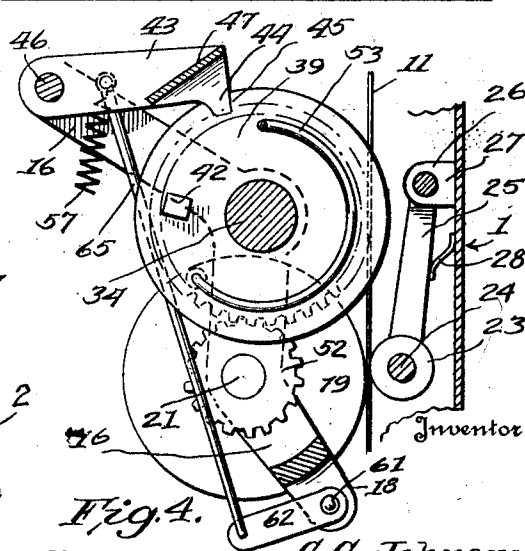
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SHEET FEEDING DEVICE

Filed March 31, 1923

3 Sheets-Sheet 2

Fig. 2.



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SHEET FEEDING DEVICE

1,703,937

Filed March 31, 1923

3 Sheets-Sheet 3

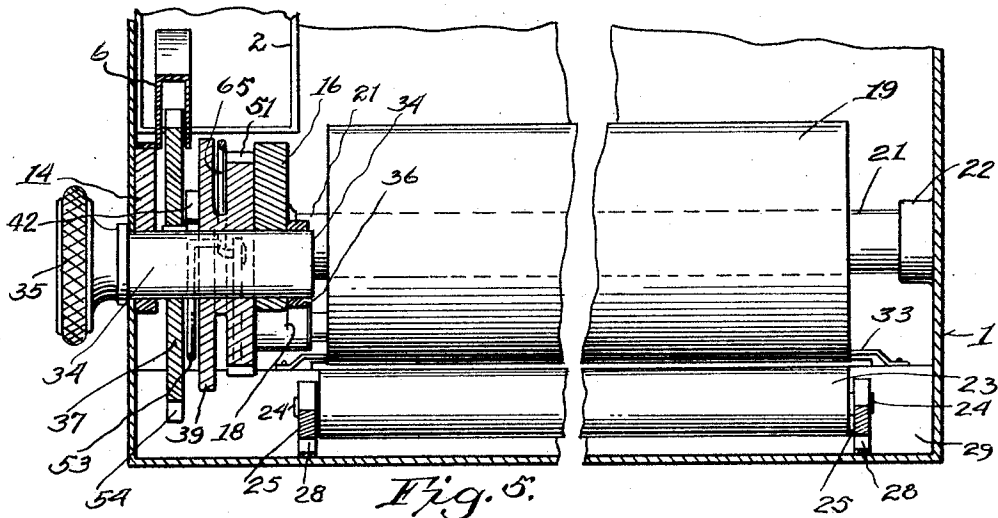


Fig. 5.

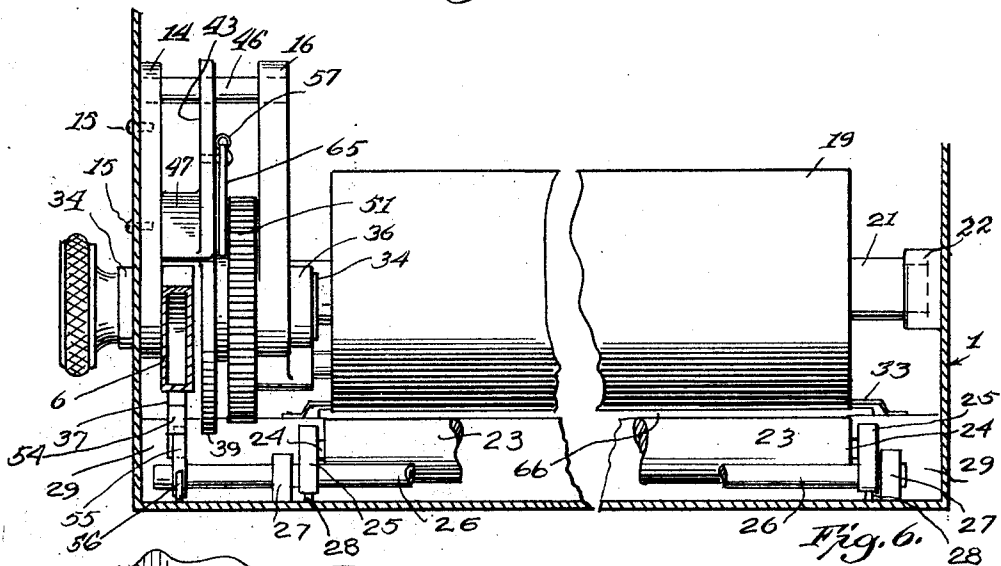


Fig. 6.

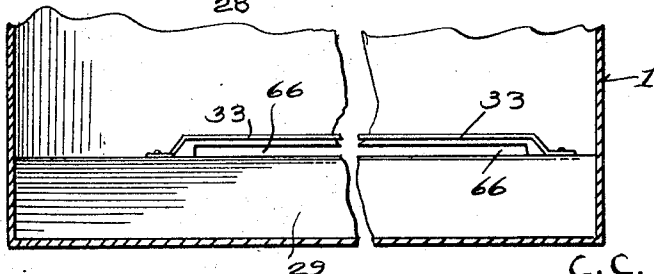


Fig. 7.

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UNITED STATES PATENT OFFICE.

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SHEET-FEEDING DEVICE.

Application filed March 31, 1923. Serial No. 628,975.

This invention relates to coin controlled vending machines, and more particularly to vending machines adapted to vend sheets of paper.

5 An object of my invention is to provide positive operating and locking means whereby one sheet of paper at a time, and one sheet only, is permitted to pass from the machine upon the insertion therein of a
10 single coin.

Another object of my invention is to provide means whereby the user will be guaranteed at least one full sheet of paper for his coin deposited, regardless of whether or
15 not a full sheet was taken by the previous user of the machine.

An additional object of my invention is to provide locking means for the feeding mechanism in co-operation with positive
20 locking means for gripping the paper, thereby giving a double element of safety in the operation of the machine.

A further object of my invention is to provide a machine in which it will be readily
25 apparent whether there is a supply of paper, thus warning users against depositing a coin when the machine is empty.

A still further object of my invention is to provide a machine which may be easily and
30 cheaply manufactured, whose parts are easy to repair and replace, and which may be operated at small cost.

With these and other objects in view which may be incident to my improvements, the
35 invention consists in the parts and combinations to be hereinafter set forth and claimed, with the understanding that the several necessary elements comprising my invention, may be varied in construction, proportions
40 and arrangement, without departing from the spirit and scope of the appended claims.

In order to make my invention more clearly understood, I have shown in the accompanying drawings means for carrying the same
45 into practical effect without limiting the improvements in their useful applications to the particular constructions, which for the purpose of explanation, have been made the subject of illustration.

50 In the drawings:

Figure 1 is a side elevation of my device with portions of the casing broken away to more clearly show the relation of the parts;

55 Fig. 2 is a front elevation of my device with the parts broken away on the line 2—2

of Fig. 1, and looking in the direction of the arrows;

Fig. 3 is a detail view of the coin feeding disk taken on the line 3—3 of Fig. 2, looking
60 in the direction of the arrows;

Fig. 4 is a detail view of the locking disk taken on the line 3—3 of Fig. 2, looking in the
65 opposite direction to which the arrows point;

Fig. 5 is a view partly in cross section of the mechanism, taken on the line 5—5 of Fig.
1 looking in the direction of the arrows;

Fig. 6 is a view partly in section taken on the line 6—6 of Fig. 1, looking in the direction
70 of the arrows;

Fig. 7 is a detail view of the sheet feeding slot taken on the line 7—7 of Fig. 1, looking
75 in the direction of the arrows;

Fig. 8 is a perspective view in detail of the pressure roll and locking pawl for the coin
80 feeding disk;

Fig. 9 is a detail view partly broken away, showing the sheet feeding slot, the gripping
85 member and the sight openings.

Referring to the drawings for a detailed description, I have shown a sheet dispensing
80 mechanism adapted to be operated by a coin and which is mounted within a housing 1. The housing 1 has a coin receiving receptacle 2 which is fastened by a suitable lock 3 and is
85 slidably removable from the housing 1. The housing 1 is provided with a removable lid 4 fastened by a suitable lock 5. The removable lid permits the parts to be inspected and
90 replacements and repairs made as necessary. Within the housing 1 is mounted a coin chute 6, whose upper end lies flush with the upper wall of the housing 1.

The coin chute 6 is provided at its lower extremity with an angular extending wall 7
95 forming a continuation of the chute at substantially right angles thereto. Downwardly extending side walls 8 are also provided. The coin feeding mechanism to be later described, is adapted to rotate between these
100 side walls 8 and the extension 7.

Mounted within the container 1 is a paper carrying core 9 upon which is mounted a roll
of paper 11. The core 9 is affixed to a shaft 12 which is adapted to rotate in journals 13
105 fastened to the walls of the container 1 on either side thereof.

The paper 11 is adapted to be fed by a suitable mechanism downwardly in the direction
of the arrow and out of the machine. Mounted on one of the side walls is a casting
110

14 affixed to the wall by means of bolts 15 which hold it firmly in place. The casting 14 is formed with a parallel yoke 16 integrally formed with the casting 14 and connected therewith by an integral bridge 17. Formed as a continuation of the parallel yoke 16 is an extension 18. The coin controlled mechanism is adapted to be supported between the yoke 16 and casting 14, as will be later described.

A feed roller 19, which may be rubber covered to make its surface adhesive and resilient to the desired degree, is mounted upon a shaft 21 that is journaled at one end in the yoke 16 and at the other end in a bearing member 22 affixed to the wall of the container 1. The sheet of paper 11 is adapted to be fed across the surface of the feed roller 19. Bearing against the feed roller 19 is a pressure roller 23 which exerts pressure on the paper 11 and holds it in contact with the feed roller 19. The pressure roller 23 is mounted on a shaft 24 journaled in support arms 25. The other ends of the support arms 25 are keyed to a shaft 26 which is journaled in suitable supports 27. Spring members 28 attached to the wall of the container 1 and in resilient engagement with the support arms 25 operate to keep the pressure roller 23 in spring pressed engagement with the feed roller 19.

The container 1 is provided with an inwardly sloping portion 29 at whose lower extremity is a downwardly extending portion 31. The downwardly extending portion 31 is adapted to lie parallel with and in close relation to the vertically extending sheet 11 after it has passed through the feed roller 19 and the pressure roller 23. This downwardly extending portion 31 is provided with sight openings 32 through which the sheet of paper 11 may be seen. If no paper is to be seen through the sight openings 32, the purchaser of paper will immediately know that the machine is empty and will not waste his coin. A sheet guiding member comprising a band of sheet metal 33, disposed parallel to the downwardly extending portion 31 of the container, is secured to the downwardly extending portion 31 at either end and on the inside thereof, and the sheet 11 is adapted to pass down between the guide 33 and the downwardly extending portion 31.

Passing through the container 1 and journaled in the casting 14 is a stub shaft 34 provided on its end exterior of the container 1 with a knurled knob 35 adapted to be grasped between the fingers of the operator to rotate the shaft 34. The other end of the shaft 34 is provided with a locking nut 36 to hold it in place.

Mounted upon the stub shaft 34 and keyed thereto is a coin feeding disk 37. The coin feeding disk 37 is provided with a kerf 38 therein which normally lies adjacent the

lower end of the coin chute 6 and is adapted to receive the coins fed into the chute. The walls 8 of the coin chute 6 extend downwardly, partially enclosing one edge of the coin feeding disk 37, and prevent a coin from becoming dislodged from the kerf 38.

Mounted on the stub shaft 34 adjacent the coin feeding disk 37 is a locking disk 39 which is adapted to rotate freely independently of the stub shaft 34. The coin feeding disk 37 is provided with a lug 41 which, when the coin feeding disk 37 is rotated, is adapted to contact with a lug 42 on the locking disk 39.

The locking disk 39 is normally held against rotation by means of a latch 43 whose engaging end 44 is adapted to normally lie within the aperture 45 on the periphery of the locking disk 39. The latch 43 is pivoted on a shaft 46, one end of which is journaled in the casting 14 and the other end of which is journaled in the integrally formed and parallel yoke 16. The latch 43 is provided with a sloping cam surface 47. A coin guiding member 48 lies adjacent to the latch member 43 and partially encloses a portion of the periphery of the coin feeding disk 37. This coin guide 48 is adapted to deliver the coin to the coin receiving receptacle 2.

When a coin is dropped into the coin chute it falls within the kerf 38 of the coin feeding disk 37. A rotation of the knob 35 causes the coin feeding disk 37 to rotate and the coin slides along the cam surface 47 raising the latch 43 and releasing the locking disk 39. At this time the lug 41 on the coin feeding disk 37 engages the lug 42 on the locking disk 39 to rotate the locking disk. This rotation of the locking disk operates to feed the sheet, as will now be described.

Integrally formed with the locking disk and journaled on the stub shaft 34 is a gear 51 which meshes with a gear 52 attached to the shaft 21 of the feed roller 19 (see Fig. 2). Rotation of the locking disk, therefore, through gear 51 and gear 52 rotates the feed roller 19 and causes the paper to be fed downwardly in the direction of the arrow.

The coin feeding disk 37 and locking disk 39 are resiliently connected by means of a curved spring member 53. To prevent the coin feeding disk 37 from returning to its original position until after the completion of a complete revolution, the coin feeding disk is provided with ratchet teeth 54 (see Figs. 3 and 1). To engage the ratchet teeth, I have mounted a pawl 55 which is rotatably mounted on the shaft 26 (see Figs. 1, 8 and 3). A spring member 56 attached to the wall of the container 1 holds the pawl in spring pressed engagement with the periphery of the coin feeding disk 37.

After the coin feeding disk has started its rotation and the coin has been dropped into the coin receptacle 2, the coin feeding disk, together with the locking disk, continues its

rotation. The latch 43 is held in spring pressed engagement with the periphery of the locking disk 39 by means of a spring 57 attached at one end to the latch 43 and at the other end to the coin guiding member 48. When the locking disk has completed one revolution, the end 44 of the latch 43 enters the aperture 45 in the periphery of the locking disk 39 and locks it against further movement. A smooth space 58 without ratchet teeth is provided on the coin feeding disk 37 in proximity to the kerf 38.

In operation, the coin feeding disk may perform slightly more than one revolution for each coin dropped for the reason that the lug 41 on the coin feeding disk has to move a certain distance to encounter the lug 42 on the locking disk, and to cause the locking disk to make one complete revolution, the coin feeding disk must necessarily perform slightly more than one revolution. If this were not compensated for, the kerf 38 of the coin feeding disk would lie beyond the lower end of the coin chute 6. However, the resilient spring connection 53 between the coin feeding disk and the locking disk acts to return the coin feeding disk in a clockwise direction until the pawl 55 engages the ratchet tooth 54 which lies directly adjacent the kerf 38 of the coin feeding disk 37. The smooth space 58 on the coin feeding disk 37 allows this return movement to be made, since the pawl 55 will easily slide over this smooth surface. The mechanism is then in condition for receiving another coin and repeating the operation.

Simultaneously with this feeding operation there is a positive locking operation against the sheet itself which will now be described. Journaled in the bearing member 22 on one side of the casing and in the extension 18 of the casting 14 on the other side of the casing is a shaft 61. Mounted on the shaft is a bell crank lever formed by an arm 62 integrally fastened to the shaft 61, and a plate 63 forms the other arm of the bell crank lever and is fastened to the shaft 61. The lower end of the plate 63 carries a gripping edge 64 which may be serrated, as can be seen in Fig. 9. To the free end of the arm 62 of the bell crank structure is pivoted a link 65 whose other end is pivoted to the latch 43.

Because of the spring 57, the latch 43 is normally held in the down position, which operates through the link 65 to depress the free end of the arm 62 of the bell crank lever, which in turn operates to press the gripping edge 64 mounted on the arm 63 of the bell crank lever firmly against the sheet of paper 11 to hold it tightly gripped between the gripping edge and the downwardly depending portion 31 of the casing 1 and prevent its movement through an outlet slot 66 formed in the lower edge of the casing 1. As will be apparent, however, when the latch 43 is

raised, the gripping edge 64 will no longer engage the sheet 11.

In operation, a coin is fed into the coin chute 6 and lodges in the kerf 38 of the coin feeding disk. The coin feeding disk is rotated and the coin contacts with the cam surface 47 of the latch 43, raising the latch. At the same time lug 41 on the coin feeding disk engages the lug 42 on the locking disk and gear 52 rotates the feed roller 19, whereby a predetermined length of paper 11 is fed downwardly. Simultaneously with the raising of the latch 43, the gripping edge 64, through the bell crank lever and the link 65, is removed from contact with the paper and the paper passes out through the outlet slot 66 in the lower edge of the container 1.

Upon completion of rotation of the locking disk, the gripping edge 64 again clamps the paper against the side of the container, when the end 44 of the latch 43 falls within the aperture on the periphery of the locking disk 39. The resilient connecting means comprising the spring 53, which is connected at one end to the coin feeding disk 37 and at the other end to the locking disk 39, causes the coin feeding disk to return to operative position with the kerf 38 directly adjacent the lower end of the coin chute 6.

Should the previous user have only torn off a portion of the sheet of paper, the coin feeding disk 37 will be locked by the pawl 55 in some position other than its starting or operative position. When another coin is dropped in, this will not prevent proper functioning of the device, nor will the user lose his coin, since the coin feeding disk can be rotated to complete its partially completed rotation and the remainder of the sheet will be fed through the feeding slot 66 at the base of the casing. The new coin will then fall in place and a complete revolution of the feeding mechanism can then be made and an entire new sheet fed out.

I have devised a machine which will always positively return to the operative position in case an entire sheet has been fed in a previous operation. However, if an entire sheet has not been fed in a previous operation, the new coin is not admitted to its function of releasing the mechanism until the remainder of the old sheet has been expelled from the machine. When this has occurred, then the new coin may fall into place and a complete new sheet may be obtained.

By reason of the fact that I have devised a machine which comprises a feeding mechanism which automatically locks, in combination with a positive gripping means for the sheet which operates simultaneously with the feeding mechanism, I have devised a machine which is practically fool proof and positive in its operation.

While I have shown and described the preferred embodiment of my invention, I wish it

to be understood that I do not confine myself to the precise details of construction herein set forth, by way of illustration, as it is apparent that many changes and variations may be made therein, by those skilled in the art, without departing from the spirit of the invention, or exceeding the scope of the appended claims.

I claim:—

- 10 1. In a sheet dispensing apparatus, means for feeding a certain predetermined length of sheet, a locking mechanism therefor adapted to be released by a coin, a sheet gripping member, and means connecting the sheet gripping member and locking mechanism where-
15 by a positive force is transmitted from the locking mechanism to the sheet gripping member to arrest the movement of the sheet.
- 20 2. In a coin controlled apparatus for dispensing a sheet of paper, a supply roller, a feed roller, a locking member controlled by a coin for controlling the rotation of the feed roller, a rotatively mounted gripping edge for positively gripping the paper, and means connect-
25 ing the locking member with the gripping edge, whereby a positive force is transmitted from the locking member to the gripping edge so that locking and gripping are effected simultaneously.
- 30 3. In a sheet dispensing apparatus, means for feeding a certain predetermined length of sheet, a locking mechanism therefor adapted to be released by a coin, a gripping edge, and means operatively connecting the grip-
35 ping edge and the locking mechanism whereby a positive force is transmitted from the locking mechanism to the gripping edge so that the gripping edge and locking mechanism cooperate together to arrest the move-
40 ment of the sheet.
- 45 4. In a sheet dispensing apparatus, means for feeding a certain predetermined length of sheet, locking mechanism therefor, a latch adapted to be released by a coin, a gripping edge, a bell crank lever one arm of which carries the gripping edge, and a link connecting the latch and the other arm of the bell crank

lever whereby the gripping edge and the locking mechanism co-operate together to arrest the movement of the sheet.

5 5. In a sheet dispensing machine, a guide chute through which a coin is fed, a movable member adapted to receive the coin, a locking member cooperating with the movable member, means for locking the locking member
10 adapted to be released by said coin, means operated by the locking member to feed the sheet, an auxiliary gripping member opera-
15 tively connected with the locking member for positively gripping the sheet after the feed-
20 ing operation, and means co-operating with the locking member to return the movable member to operative position after each feed-
25 ing operation.

6. In a coin controlled sheet dispensing machine, a supply roll, a feed roller, means for operating the feed roller and a coin oper-
30 ated locking mechanism for same, a pressure roller adapted to bear on the feed roller to cause the sheet to be fed upon rotation of the
35 feed roller, and a sheet gripping mechanism directly actuated by said locking mechanism.

7. In a coin controlled sheet dispensing machine, a supply roll, a feed roller and a coin operated locking mechanism for same,
40 means for operating the feed roller to cause the sheet to be fed upon rotation of the feed roller, and a sheet gripping mechanism posi-
45 tively actuated by said locking mechanism whereby locking and gripping are effected
50 simultaneously.

8. In a coin controlled sheet dispensing machine, a supply roll, a feed roller, means for operating the feed roller and a coin oper-
55 ated locking mechanism for same, a pressure roller adapted to bear on the feed roller to cause the sheet to be fed upon rotation of the feed roller, and a guide to hold the sheet
60 in alignment with a sheet gripping mechanism directly and positively actuated by said
65 locking mechanism.

In testimony whereof I affix my signature.

CHARLIE C. JOHNSON.