Mar. 5, 1929. C. C. JOHNSON 1,703,938

SHEET DISPENSING APPARATUS

Filed Nov. 13, 1923 3 Sheets-Sheet 1

Fig. 1.

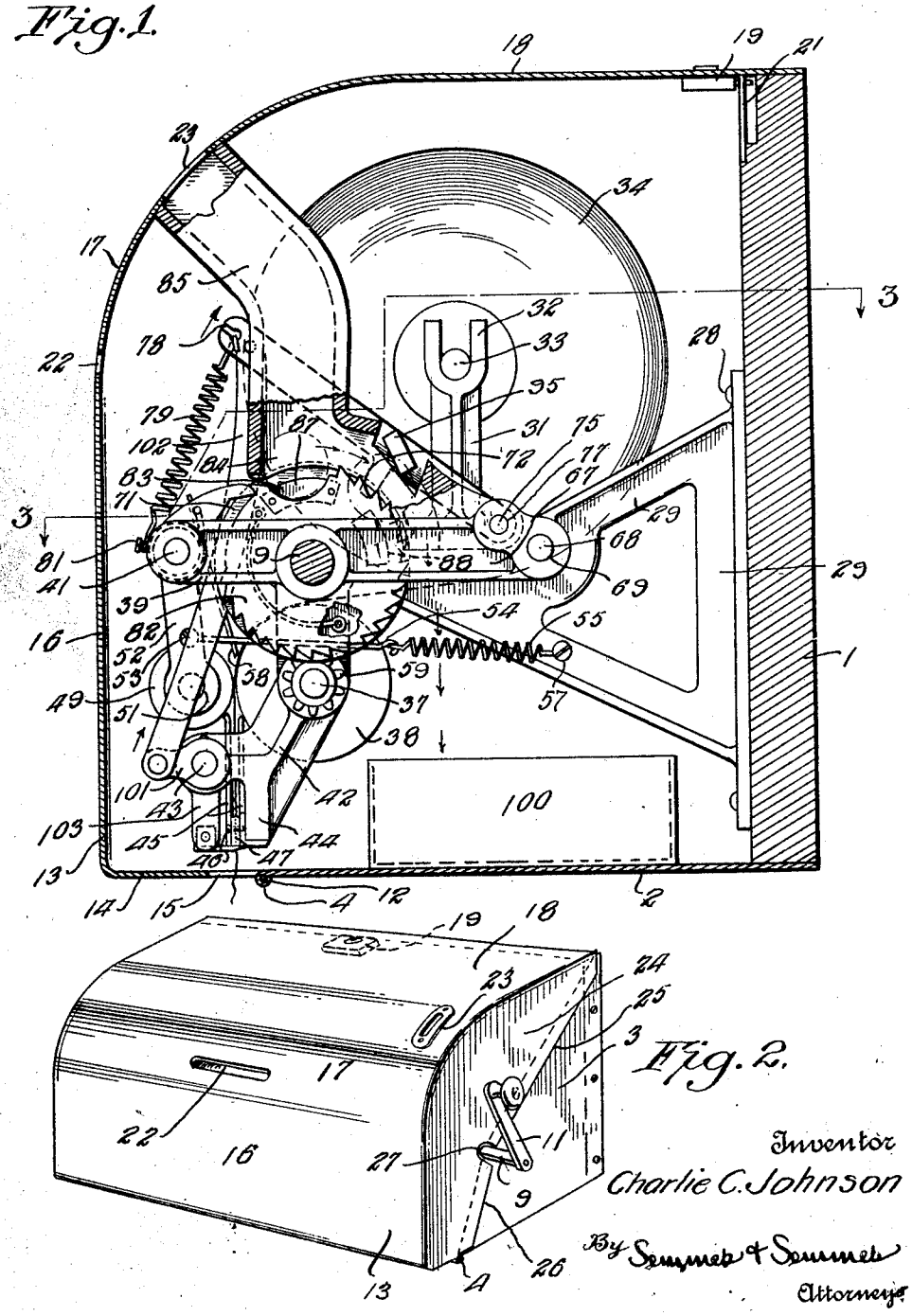


Fig. 2.

Inventor
Charlie C. Johnson
By Sommers & Sommers
Attorneys

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SHEET DISPENSING APPARATUS

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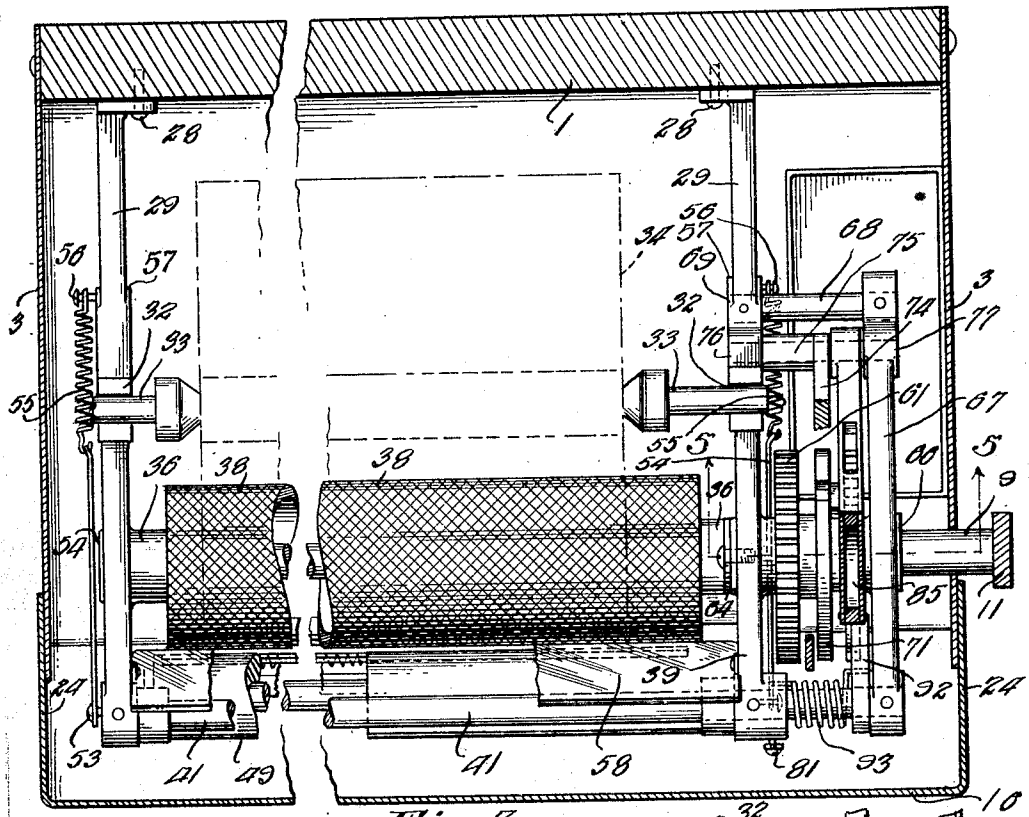


Fig. 3.

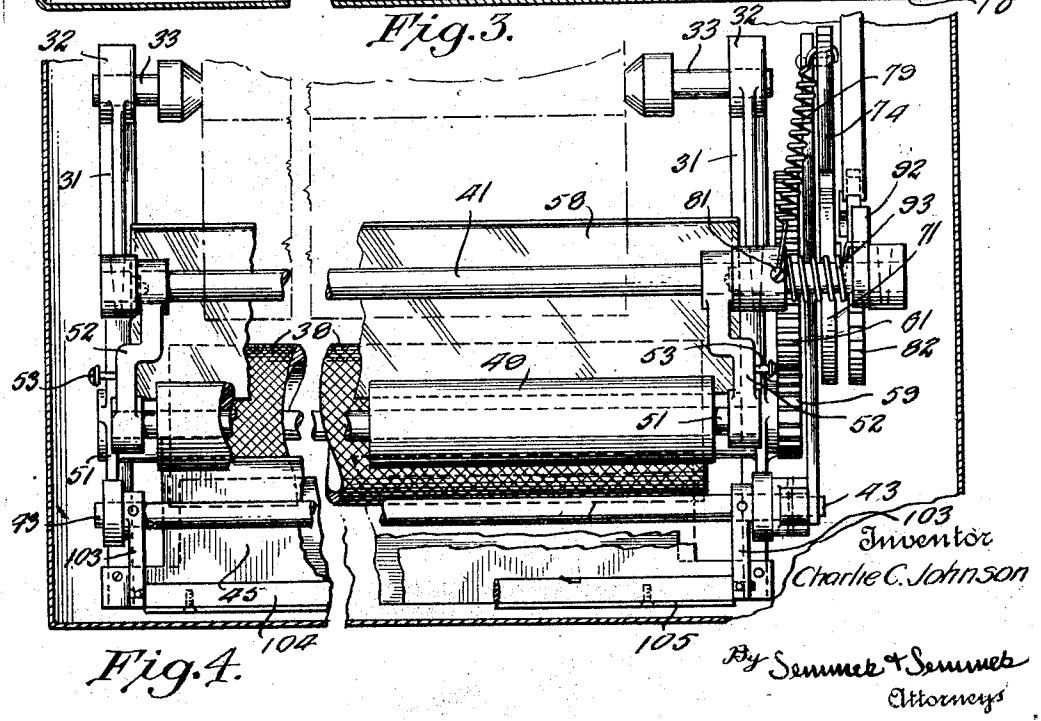


Fig. 4.

Inventor
Charlie C. Johnson
By Semmes & Semmes
Attorneys

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SHEET DISPENSING APPARATUS

Filed Nov. 13, 1923 3 Sheets-Sheet 3

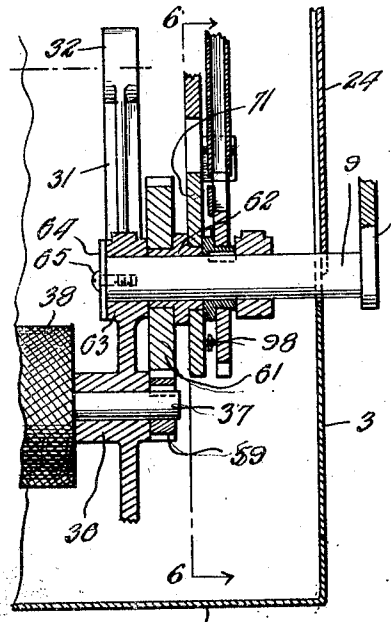


Fig. 5.

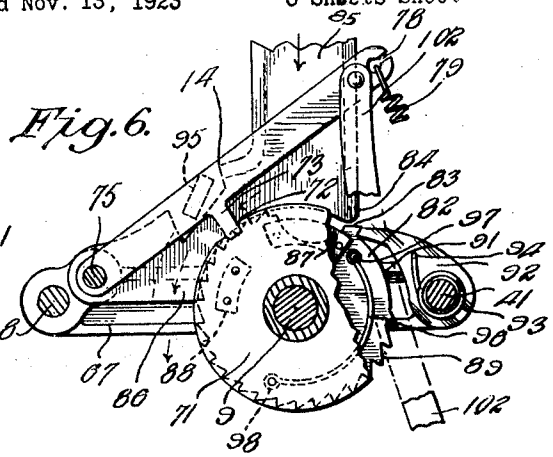


Fig. 6.

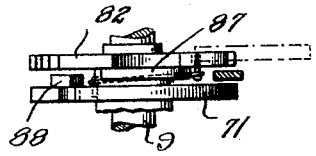


Fig. 7.

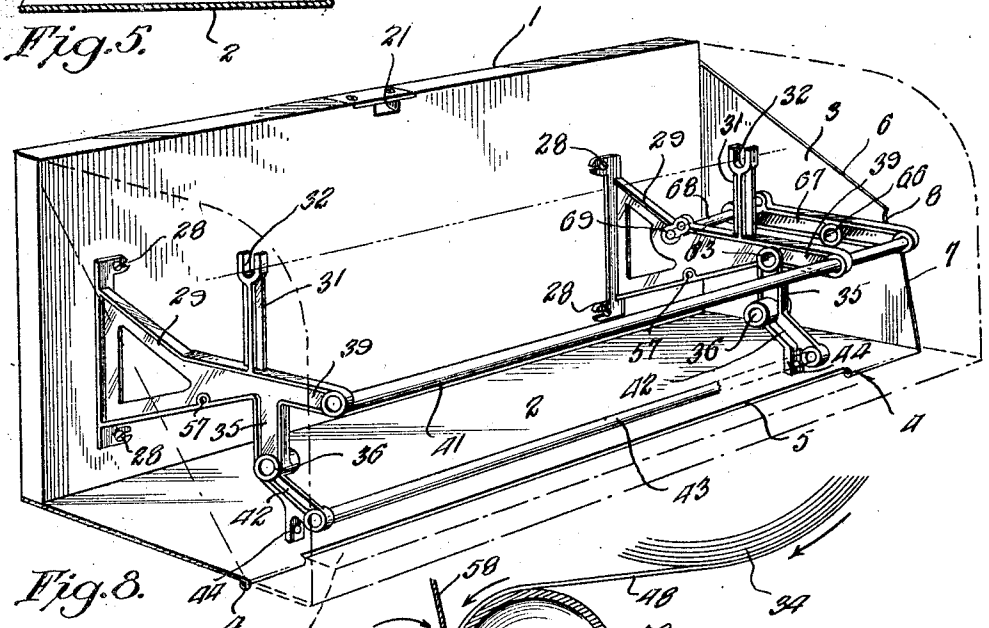


Fig. 8.

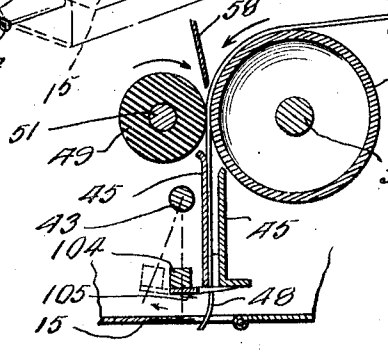


Fig. 9.

Inventor
Charlie C. Johnson

By Semmes & Semmes
Attorneys

Patented Mar. 5, 1929. 1,703,938

UNITED STATES PATENT OFFICE.

CHARLIE CICERO JOHNSON, OF WINSTON-SALEM, NORTH CAROLINA.

SHEET-DISPENSING APPARATUS.

Application filed November 13, 1923. Serial No. 674,513.

This invention relates to sheet dispensing apparatus, and more particularly to coin controlled sheet dispensing apparatus.

An object of my invention is to provide a coin controlled dispensing apparatus which is housed in a simple and convenient enclosure, that is easily and cheaply made, and is of sanitary and sturdy construction.

Another object of my invention is to provide a strong supporting framework for sheet dispensing coin controlled apparatus, in which the assembly of the operating parts on the framework is easily and quickly effected, to form a compact mechanism occupying small space.

A further object of my invention is to provide guides within the mechanism for properly directing a sheet of paper in its course from a supply roll to the exterior of the enclosure, thereby preventing possible bunching of the sheet material and clogging of the machine.

Another object of my invention is to provide a mechanism which is simple and cheaply constructed, and in which the operating parts are few in number and easily accessible for repair and replacement.

With these and other objects in view which may be incident to my improvements, the 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 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 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.

In the drawings:

Figure 1 is a cross sectional view taken through the enclosing box of my device exposing the mechanism within, in which part of the coin chute is broken away to more clearly show the parts;

Fig. 2 is a perspective view of the enclosing box;

Fig. 3 is a view taken on the line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a front elevation of the mechanism with a portion of the casing broken away to show the construction of the mechanism;

Fig. 5 is a detail view taken on the line 5—5 of Fig. 3, looking in the direction of the arrows;

Fig. 6 is a detail view taken on the line 6—6 of Fig. 5, looking in the direction of the arrows.

Fig. 7 is a detail view of the coin feeding disk and locking disk;

Fig. 8 is a perspective view of the supporting framework for the mechanism, the outline of the container being indicated by dotted lines;

Fig. 9 is a sectional view in detail showing the operation of the feed and pressure rollers and the cut-off mechanism.

In the drawings I have shown a container or box for my mechanism having a supporting base 1 which may be of wood. The supporting base is adapted to be hung against, or otherwise fastened to, the wall in a lavatory. Attached to the supporting base 1 is a lower side 2 of sheet metal, having integrally formed therewith upstanding end pieces 3. The lower side terminates at either end in beadings 4 which project slightly beyond a cut-out portion 5 at the front edge. The upstanding end pieces are formed with downwardly and forwardly sloping edges 6, and upwardly and rearwardly sloping edges 7, which terminate in cut-out portions 8, through which an operating shaft 9 to which an operating handle 11 is attached extends.

Hinged to the lower side on a hinge pin 12 is an enclosing member 13. The enclosing member 13 has a forwardly extending portion 14, which is in effect a continuation of the lower side 2. At the point of juncture of the forwardly extending portion 14 and the lower side 2, in other words at the point of pivoting, the forwardly extending portion has a slot 15 cut through the sheet material to provide a place for the egress of the sheet from the machine.

Integrally formed with the forwardly extending portion 14, and of the same sheet metal, is an upwardly extending side 16, whose upper portion is rounded, as indicated at 17. Above the rounded portion 17 there is a horizontally extending portion 18 which is suitably locked to the supporting

base 1 by means of a lock 19, that engages with a locking member 21 at the upper inner portion of the supporting base 1. At the point where the curved portion 17 of the enclosing member commences, there is provided a sight opening 22, through which the consumer can view the interior of the machine to see if there is any paper to dispense. On the side of the curved portion 17 is provided a coin slot 23.

Integrally formed with the enclosing member are end pieces 24 which have downwardly and forwardly extending edges 25 adapted in the closed position to normally overlap, and extend parallel to, the edges 6 of the end pieces 3, and downwardly and rearwardly sloping edges 26 adapted in the closed position to lie parallel to, and to overlap, the edges 7 of the end pieces 3. At the point of meeting of the edge 26 with the edge 25, there is a cut out portion 27 through which the operating shaft 9 extends.

Mounted within the box and attached to the supporting base by means of suitable screws 28, are horizontally extending brackets 29 of angle iron to provide lightness with great strength. The brackets are integrally formed with upwardly extending support arms 31 having U-shaped bearings 32 adapted to receive a shaft 33 of a supply roll 34.

Integrally formed with the brackets 29 are downwardly extending support arms 35 having bearings 36 formed therein, in which is journaled a shaft 37 of a feed roller 38. The supporting brackets 29 are formed with horizontally extending arms 39, whose extremities are joined together by a joining bar 41 which holds the two brackets together, and which acts as a pivot for the pressure roller support, to be later described. The downwardly extending support arms 35 are formed with forwardly and downwardly extending portions 42, in whose extremities are pivoted a bar 43 to which is attached the cut-off mechanism, to be later described. Vertically downwardly extending off set portions 44 serve as supports to which are fastened parallel sheet guides 45 by means of a screw 46. Spacing inserts 47 at either end of the parallel guides 45 serve to space these guides apart. The guides are so located that the paper easily passes between them without much friction. A plane tangent to the feed and pressure rollers at their points of contact with each other would ordinarily pass between the guides without touching them.

A sheet 48 from the supply roll 34 is adapted to be fed over the feed roller 38, and between the feed roller 38 and a pressure roller 49 mounted on a shaft 51 journaled in supporting arms 52, whose other ends are pivoted on the joining bar 41, thus permitting the pressure roller to be swung on the joining bar 41 as a pivot. Attached to the supporting arms 52 are pins 53, to which are attached links 54, which are in turn attached to helical springs 55. The other ends of the helical springs 55 are attached to pins 56 fastened to the supporting brackets at 57. The springs 55 pull the pressure roller 49 against the feed roller 38.

The feed roller 38 may be of roughened exterior or of rubber, and the pressure roller may be of rubber or any other suitable material. The paper 48 is pressed tight against the feed roller and its rotation feeds the paper between the guides 45, and out through the dispensing slot 15. A plate guide 58 is located above and adjacent the point of contact of the pressure roller with the feed roller. The guide is inclined so that its lower end tends to press the paper 48 against the surface of the feed roller, and prevents crumpling of the paper between the rollers, since it will tend to smooth out folds in the paper sheet at this point.

To cause the feed roller to revolve, the shaft 37 has keyed to its end a pinion 59, which meshes with a larger pinion 61. The pinion 61 is keyed to a collar 62 journaled on the operating shaft 9. The operating shaft 9 is journaled at one end at 63 in one of the brackets 29, and a washer 64, held to the shaft 9 by means of a screw 65, tends to hold the shaft in position. The shaft 9 passes through a bearing 66 formed in a support member 67, which is fastened to the joining bar 41 at one end, and at the other end to a small joining bar 68 fastened to the bracket 29 at 69.

Mounted on the collar 62 is a locking disk 71 having a locking aperture 72 therein for engagement with a projection 73 of a latch member 74. The latch member 74 is pivoted on a joining bar 75 connected to the bracket 29 at 76 and to the support member 67 at 77. The latch 74 is formed with a recess 78 in its end through which passes the end of a helical tension spring 79 that is attached at its other end to a pin 81 fastened to an end of the horizontally extending arm 39. The projection 73 of the latch 74 is thus kept pressed within the aperture 72 on the locking disk.

Keyed to the shaft 9 is a coin feeding disk 82. The coin feeding disk 82 is provided with a kerf 83 therein which normally lies adjacent the lower end 84 of a coin chute 85 connecting with the coin slot 23 in the casing. The kerf 83 receives the coins which are prevented from falling out of the kerf by contact with a guide plate 86, formed by the continuation of the coin chute 85, and by a retaining plate 87, which is riveted to one side of the coin feeding disk adjacent the kerf. This retaining plate extends laterally from the face of the coin feeding disk and is adapted to co-operate

with a lug 88, on the locking disk 71, to move the locking disk when it has been unlocked.

The coin feeding disk 82 is formed with ratchet teeth 89 thereon, and with a smooth space 91. A pawl 92 mounted on the bar 41 is held pressed against the ratchet teeth by means of a helical spring 93, mounted on the bar 41. One end of the spring 93 engages the support arm 39 and its other end passes through an aperture 94 in the pawl 92. The latch 74 is provided with a sloping cam 95 adapted to engage with a coin in the kerf 83 of the coin feeding disk. A spring 96 is connected at 97 with the coin feeding disk and at 98 with the locking disk.

When a coin is fed into the coin slot 23, it passes through the coin chute 85 and into the kerf 83 of the coin feeding disk 82. The handle 11 is rotated in a clockwise direction and the rotation of the shaft 9 causes the coin feeding disk to rotate to a position at which the coin engages with the sloping surface of the cam 95. This causes the latch 74 to rise against the tension of the spring 79, thereby removing the projection 73 on the latch from the locking aperture 72 on the locking disk 71. At this time the projecting retaining plate 87 on the coin feeding disk comes in contact with the lug 88 on the locking disk, and the locking disk rotates with the coin feeding disk. The coin passes onward and drops into a coin box 100, as indicated by dotted lines in Figures 1 and 6. The locking disk continues its rotation with the coin feeding disk, and the rotation of the locking disk causes the pinion 61 to revolve, which in turn revolves the pinion 59 and turns the feed roller 38 to feed forward the paper.

The pawl 92 prevents the return of the coin feeding disk until a revolution has been completed, at which time the spring 79 pulls the latch 74 downward, fitting projection 73 into the aperture 72 of the locking disk. This position is not reached, however, until the coin feeding disk has completed slightly more than one turn. Once the locking disk is again engaged by the latch, it can rotate no further and the spring 96 connecting the locking disk to the coin feeding disk causes the coin feeding disk to rotate backward, the pawl 92 sliding over the smooth surface 91 on the coin feeding disk. The apparatus is then in position for another action.

In the meantime, however, the cut-off mechanism for cutting off the sheet has been in operation, as will now be described.

Attached to the shaft 43 is a lever arm 101. The lever arm 101 is adapted to be operated by means of a link 102 that is pivoted to the end of the latch 74. When the latch is in the down position, as shown in Fig. 1, the lever arm 101 is in the position shown. The lever arm 101 operates to control the rotation of the shaft 43. Keyed to the shaft 43 are downwardly projecting arms 103 to which is fastened a cutter bar 104 carrying a cutter 105. In the position of the parts as shown in Fig. 1, before the coin has operated on the latch 74, the cutter 105 is in position closing the passageway between the base of the guides 45. However, when the coin passes through the machine and the latch 74 is raised through link 102, lever 101 is also raised and this causes the shaft 43 to rotate, removing the cutter 105 from across the opening at the base of the guides 45.

By reason of the fact that there is but one locking aperture on the locking disk, the projection 73 on the latch 74 rides on the periphery of the disk until one rotation has been completed. To ride on the periphery of the locking disk 71, the latch must necessarily be in the up position and hence the cutter during the rotation of the feed roller permits the passage of the paper. When the projection 73 on the latch 74 slips into the locking aperture on the periphery of the locking disk 71, the spring 79 forcibly pulls the link 102 downwardly, and through lever 101 and arms 103, the cutter 105 is made to cut off the sheet of paper 48.

The operation of the coin feeding disk and paper feeding mechanism and the cut-off mechanism is, of course, simultaneous, that is to say, insertion of a coin and movement of the handle 11 in a clockwise direction, raises the latch 74, unlocking the locking disk, and simultaneously removes the cutter 105 from its position across the opening at the base of the guides 45. The parts of the cut-off mechanism are held in this position during the entire rotation of the locking disk until simultaneously with the locking of the locking disk, the cutter 105 cuts off the sheet. The resilient connecting means, comprising the spring 96 which is connected at one end to the coin feeding disk 82 and at the other end to the locking disk 71, causes the coin feeding disk to return to operative position with the kerf 83 directly adjacent the lower end 84 of the coin chute 85.

Suppose that the previous user has torn off only a portion of the sheet to which he is entitled. The coin feeding disk will be held by the pawl 92 in some position other than its starting position. When another coin is deposited, this will not prevent the 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 15. Not until the operation started by the previous user has been completed will the new coin fall into place, and then a

complete revolution of the feeding mechanism can be made and an entire new sheet fed out.

The framework for the machine which I have devised is exceedingly strong and simple, and provides a very compact mechanism which I have housed in a container especially adapted to my machine. The disposition of the paper guides and their functioning, together with the generally compact and efficient assembly render this machine very sturdy and simple in construction.

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:

1. In a sheet dispensing apparatus, a rotatable coin feeding disk having means for receiving a coin, a stop and ratchet teeth on the periphery of the coin feeding disk, a pawl adapted to engage the stop and ratchet, a separately rotatable locking disk, locking means therefor adapted to be unlocked by the coin in the coin feeding disk, means for causing the locking disk to rotate with the coin feeding disk, means operated by the locking disk for feeding a sheet of paper.

2. In a sheet dispensing apparatus, a guide chute through which the coin is fed, a rotatable coin feeding disk having a kerf therein adapted to receive a coin, a lug and ratchet teeth on the periphery of the coin feeding disk, a pawl, adapted to engage the stop and ratchet, a rotatable locking disk, a latch for the locking disk, said latch being released by a coin in said feeding disk, means causing the locking disk to rotate with the coin feeding disk, a flexible linkage between the feeding disk and the locking disk, means operated by the locking disk for feeding a sheet of paper.

3. In a sheet dispensing apparatus comprising a separately rotatable locking disk, a detent, means for engaging the detent to lock the locking disk, a rotatable coin feeding disk operatively connected with the locking disk, ratchet teeth on the coin feeding disk cooperating with a pawl to permit the disk to be turned in one direction, a smooth space on the disk permitting it to rotate in the opposite direction without impedance for a short distance, and means operated by the locking disk for feeding a sheet of paper.

4. In a sheet dispensing apparatus of the character described comprising a rotatable coin feeding disk, ratchet teeth on the coin feeding disk cooperating with a pawl permitting the disk to turn in one direction, a smooth space on the disk to allow rotation in the opposite direction, a separately rotatable locking disk operatively connected with the coin feeding disk and having a locking aperture on its periphery, a spring pressed latch adapted normally to lie within the aperture on the locking disk, a cam plate integrally formed on said latch adapted to cooperate with the coin in the coin feeding disk, a plurality of coin guiding members, and means operated by the locking disk for feeding a sheet of paper.

5. In a sheet dispensing apparatus comprising a rotatable coin feeding disk having a kerf for the reception of a coin, ratchet teeth upon the periphery of the feeding disk cooperating with a pawl which will allow of rotation in one direction, a smooth space on the periphery of the feeding disk which will allow of rotation in the opposite direction for a short distance, a separately rotatable locking disk operatively connected with the coin feeding disk and having a locking aperture on its periphery, a spring pressed latch adapted normally to lie within the aperture on the locking disk, a cam plate integrally formed on said latch adapted to provide a guide for the coin, and means operated by the locking disk for feeding a sheet of paper.

6. In a sheet dispensing apparatus of the character described comprising a rotatable coin feeding disk having a kerf for the reception of a coin, ratchet teeth upon the periphery of the feeding disk cooperating with a pawl to allow rotation of the disk in one direction, a smooth space upon the periphery of the feeding disk to allow rotation of the disk in the opposite direction for a short distance, a separately rotatable locking disk operatively connected with the coin feeding disk and having a locking aperture on its periphery, a spring pressed latch adapted normally to lie within the aperture on the locking disk, a cam plate integrally formed on said latch adapted to provide a guide for the coin, a coin guiding member partially enclosing the periphery of the coin feeding disk, and means operated by the locking disk for feeding a sheet of paper.

7. In a sheet dispensing apparatus comprising a rotatable coin feeding disk, a separately rotatable locking disk, operatively connected with the coin feeding disk, a spring pressed latch adapted normally to lie within an aperture on the locking disk, a cam plate integrally formed on said latch, a coin guiding member partially enclosing a portion of the periphery of the coin feeding disk, ratchet teeth on the periphery of the feeding disk cooperating with a pawl which allows rotation of the disk in one direction, a portion of the ratchet teeth being cut away

to permit the disk to rotate in the opposite direction without impedance, and means operated by the locking disk for feeding a sheet of paper.

8. In a dispensing machine for sheet paper, a coin feeding disk, ratchet teeth on the periphery of the coin feeding disk cooperating with a pawl to allow the feeding disk to rotate in one direction, the periphery of the coin feeding disk being non-serrated for a small portion of its circumference to allow a slight rotation of the feeding disk in the opposite direction, a locking disk operatively connected to the feeding disk, means for locking the locking disk adapted to be unlocked by the coin, and means for dispensing a sheet of paper.

9. In a dispensing machine for sheet paper, a coin feeding disk having ratchet teeth on its periphery adapted to cooperate with a pawl which permits of the rotation of the feeding disk in one direction, the periphery of the feeding disk being non-serrated for a small portion of its circumference to permit slight rotation of the feeding disk in the opposite direction, a locking disk operatively connected to the feeding disk, means for locking the locking disk adapted to be unlocked by the coin, and means for dispensing a sheet of paper.

10. In a dispensing machine for sheet paper, a feeding disk having a kerf in its periphery for the reception of a coin, ratchet teeth upon the periphery of the feeding disk cooperating with a pawl which permits rotation of the feeding disk in one direction, the periphery of the feeding disk being non-serrated for a small portion of its circumference to permit slight rotation of the feeding disk in the opposite direction, a locking disk operatively connected to the feeding disk, means for locking the locking disk adapted to be unlocked by a coin in the kerf, and means for dispensing a sheet of paper.

11. In a sheet dispensing apparatus, a guide chute through which a coin is fed, a rotatable coin feeding disk having a kerf therein adapted to receive the coin, a retaining plate adjacent said kerf extending laterally from the surface of the coin feeding disk, ratchet teeth on the coin feeding disk, a spring pressed pawl co-operating with the ratchet teeth to permit the disk to be turned in one direction, a separately rotating locking disk having locking means for said locking disk adapted to be released by a coin in the coin feeding disk, a lug on the locking disk co-operating with the retaining plate on the coin feeding disk for rotating the locking disk, and means operated by the locking disk for feeding a sheet of paper.

12. In a sheet dispensing apparatus, a spring pressed pawl, a rotatable coin feeding disk having a kerf therein adapted to receive a coin, a retaining plate adjacent said kerf extending laterally from the surface of the coin feeding disk, ratchet teeth on the coin feeding disk co-operating with the pawl to permit the disk to be turned in one direction, a smooth space on the disk permitting it to rotate in the opposite direction without impedance for a short distance, a separately rotatable locking disk having a locking means for said locking disk adapted to be released by a coin in the coin feeding disk for one revolution only, a lug on the locking disk co-operating with the retaining plate on the coin feeding disk for rotating the locking disk, resilient connecting means between the coin feeding disk and the locking disk for returning the coin feeding disk to operative position when it is rotated past that position, and means operated by the locking disk for feeding a sheet of paper.

13. In a sheet dispensing apparatus, a guide chute through which the coin is fed, a rotatable coin feeding disk having a kerf therein adapted to receive the coin, a retaining plate adjacent said kerf extending laterally from the surface of the coin feeding disk, a rotatable locking disk, means for locking the locking disk operable by a coin in the feeding disk, a lug on the locking disk co-operating with the retaining plate of the coin feeding disk for rotating the locking disk, and means operated by the locking disk for feeding a sheet of paper.

14. In a sheet dispensing apparatus, a guide chute through which a coin is fed, a rotatable coin feeding disk having a kerf therein adapted to receive the coin, retaining plates adjacent the kerf, one of which is on the coin feeding disk, ratchet teeth on a portion of the periphery of the coin feeding disk, a stop on the periphery of the feeding disk adjacent to the kerf, a spring pressed pawl co-operating with the ratchet teeth and stop to permit the disk to be turned in one direction, a separately rotatable locking disk having a locking aperture on its periphery, a latch pivoted at one end normally adapted to lie within the aperture on the locking disk, a tension spring operating on the free end of the latch pressing it against the locking disk, a cam plate on said latch adapted to co-operate with the coin on the coin feeding disk to release the latch, a lug upon the locking disk to be engaged by the retaining plate on the coin feeding disk when the coin feeding disk is rotated and means operated by the locking disk for feeding a sheet of paper.

15. In a sheet dispensing apparatus, a rotatable coin feeding disk having a kerf therein adapted to receive a coin, retaining plates on one side of the feeding disk adjacent the kerf one of which is on the coin feeding disk, ratchet teeth on a portion of the periphery

of the coin feeding disk, a stop upon the periphery of the feeding disk adjacent the kerf; a spring pressed pawl co-operating with the ratchet teeth and stop to permit the disk to be turned in one direction, a separately rotatable locking disk having a locking aperture on its periphery, a pivoted latch adapted to normally lie within the aperture on the locking disk, a tension spring operating on the free end of the latch, a cam plate on said latch adapted to cooperate with the coin on the coin feeding disk, a projection on the locking disk co-operating with the retaining plate on the coin feeding disk for rotating the locking disk, resilient linkage between the coin feeding disk and the locking disk for returning the coin feeding disk to its operative position and means operated by the locking disk for feeding a sheet of paper.

In testimony whereof I affix my signature.

CHARLIE CICERO JOHNSON.