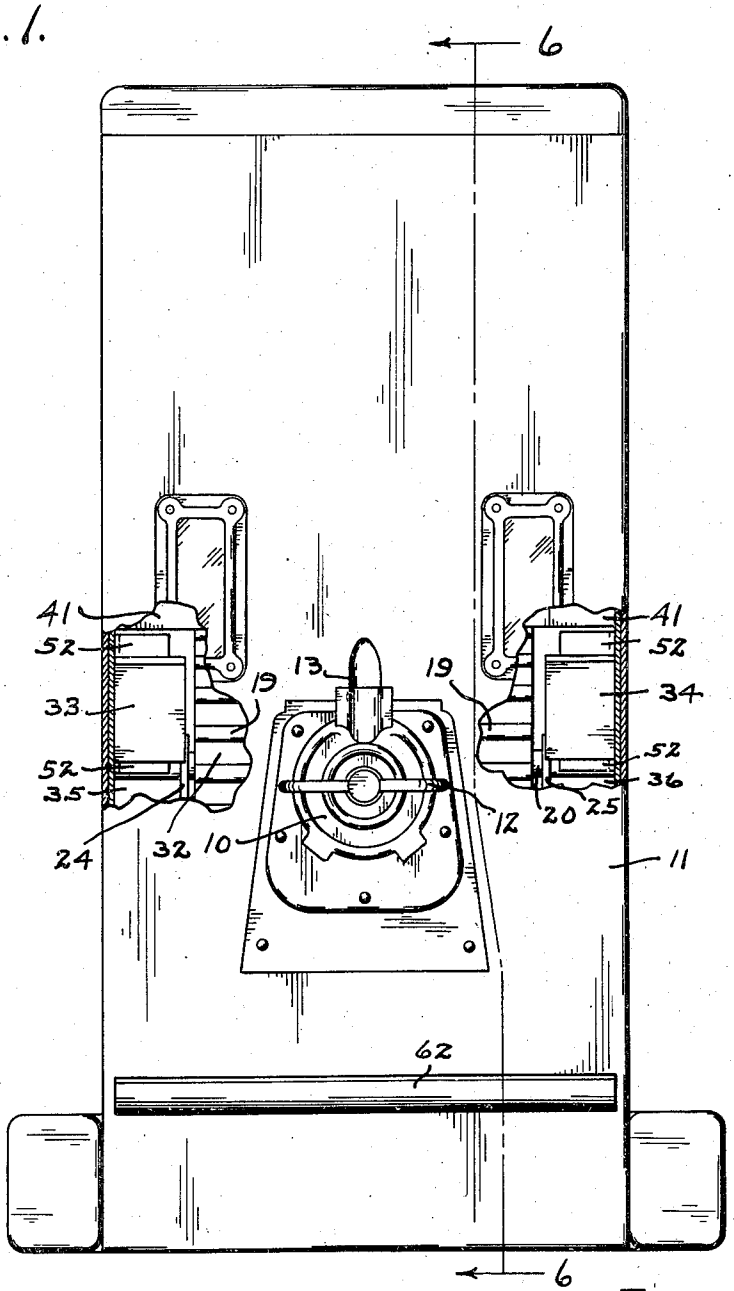
Feb. 22, 1949. C. B. ALEXANDER 2,462,298

PENCIL VENDING MACHINE

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Fig. 1.



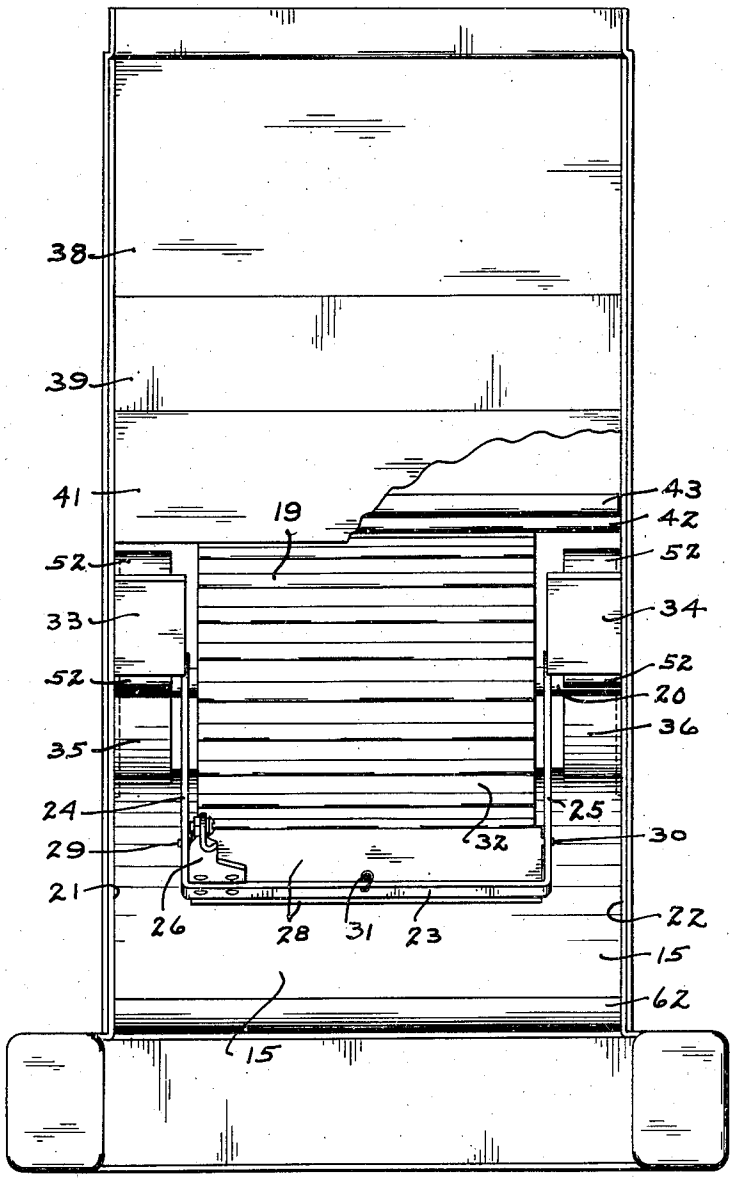
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PENCIL VENDING MACHINE

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Fig. 2.



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PENCIL VENDING MACHINE

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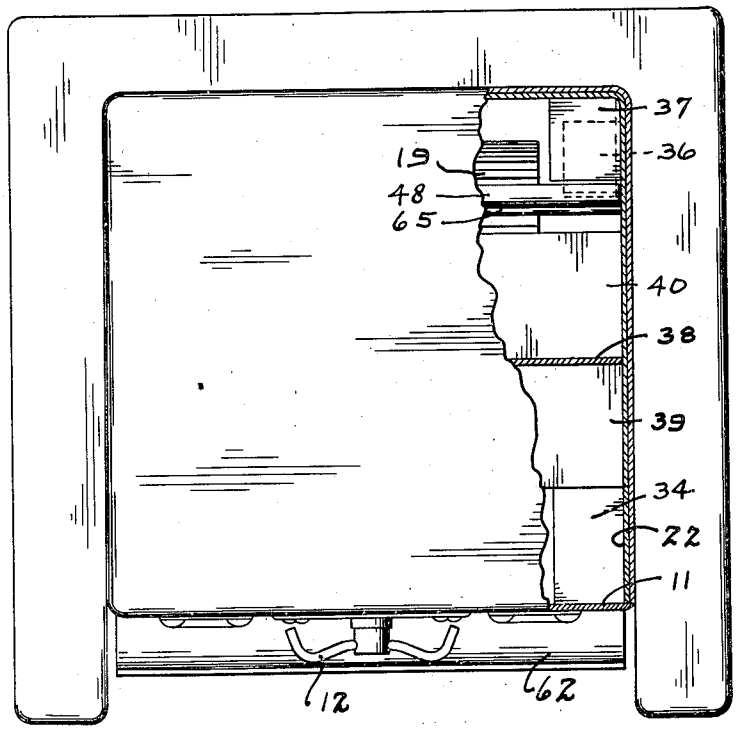


Fig. 3.

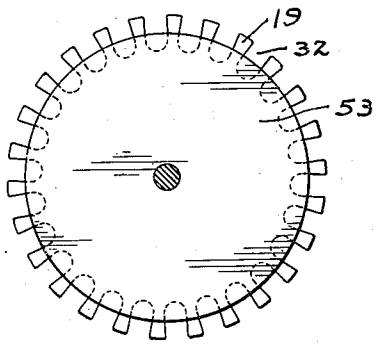


Fig. 7.

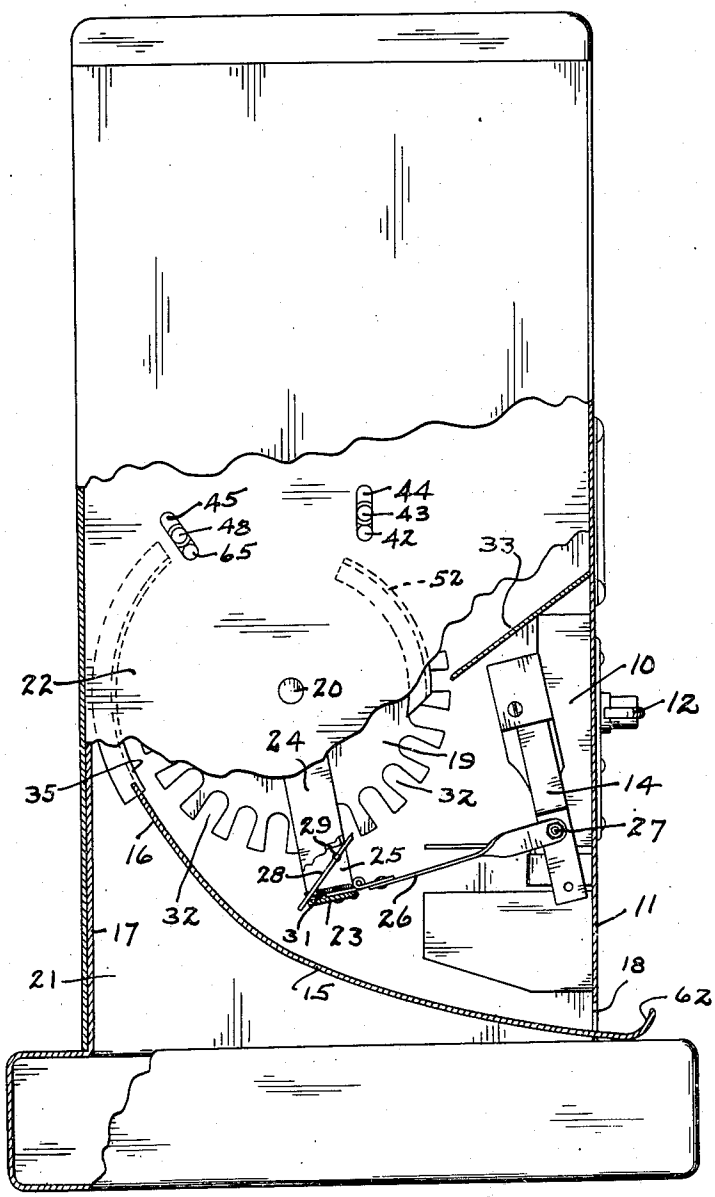
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PENCIL VENDING MACHINE

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Fig. 4.



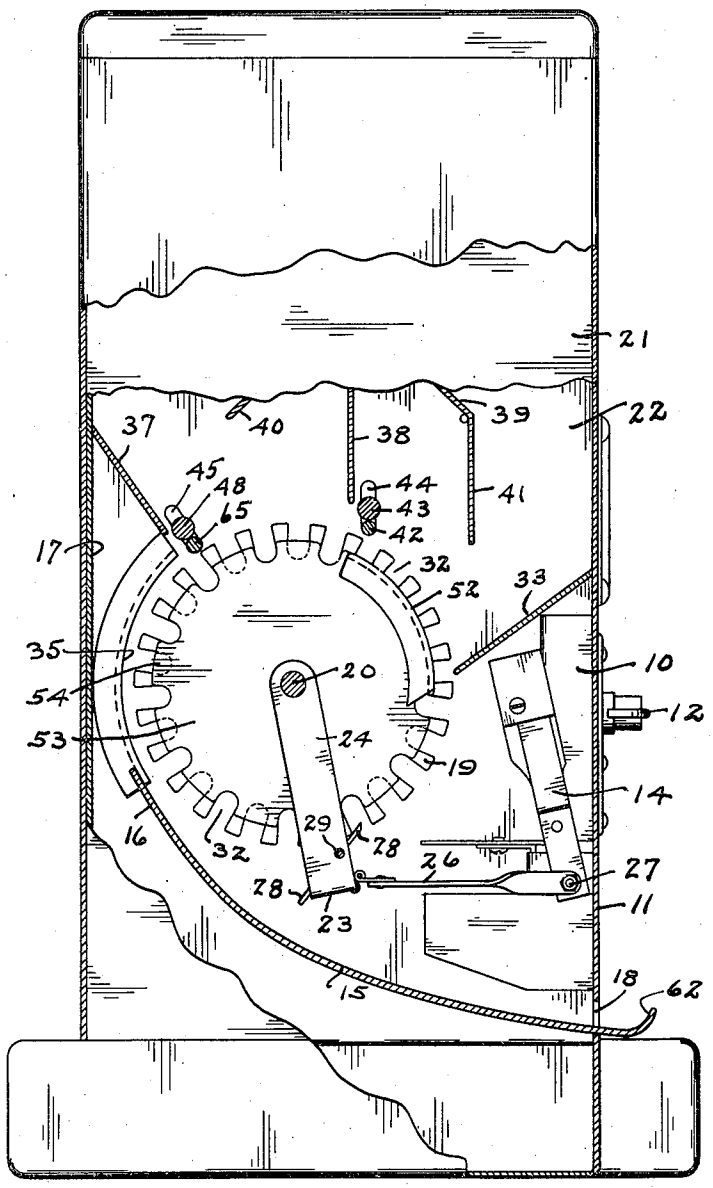
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Feb. 22, 1949. C. B. ALEXANDER 2,462,298

PENCIL VENDING MACHINE

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Fig. 5.



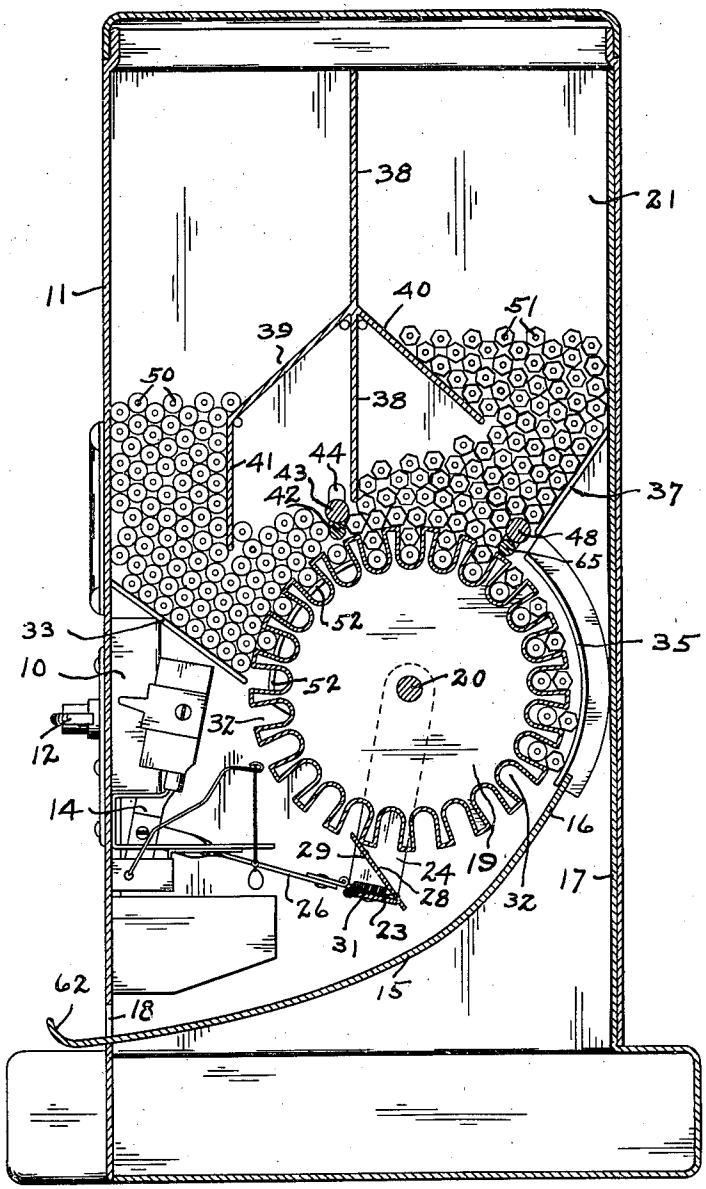
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Fig. 6.



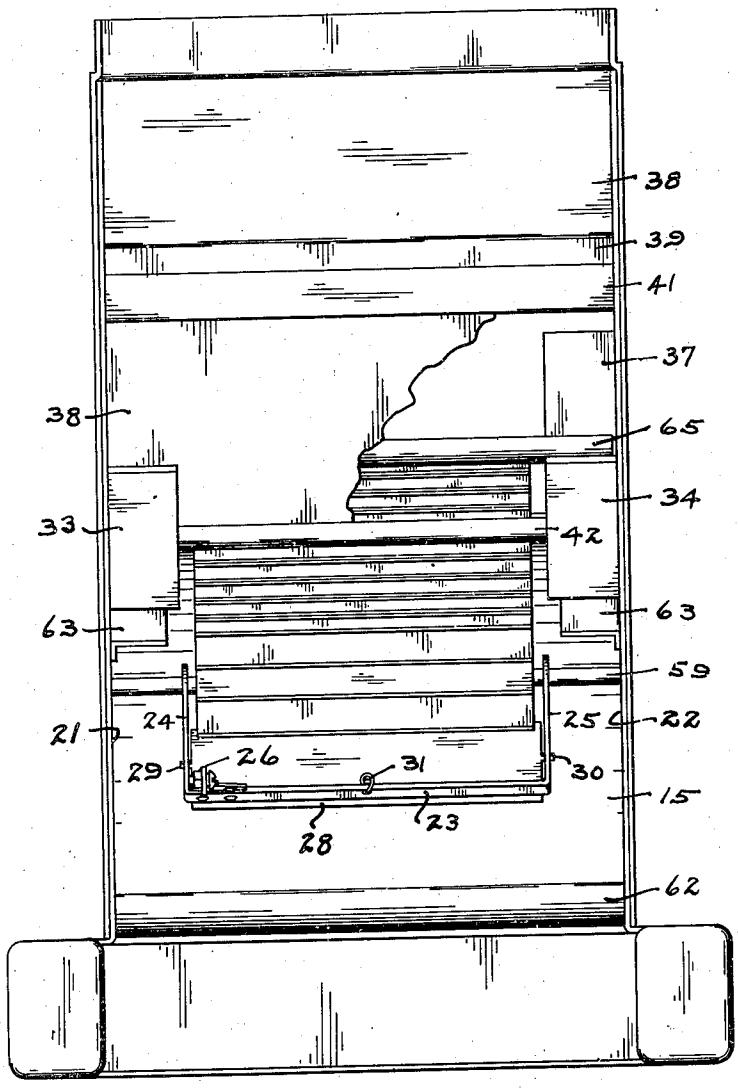
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PENCIL VENDING MACHINE

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Fig. 8.



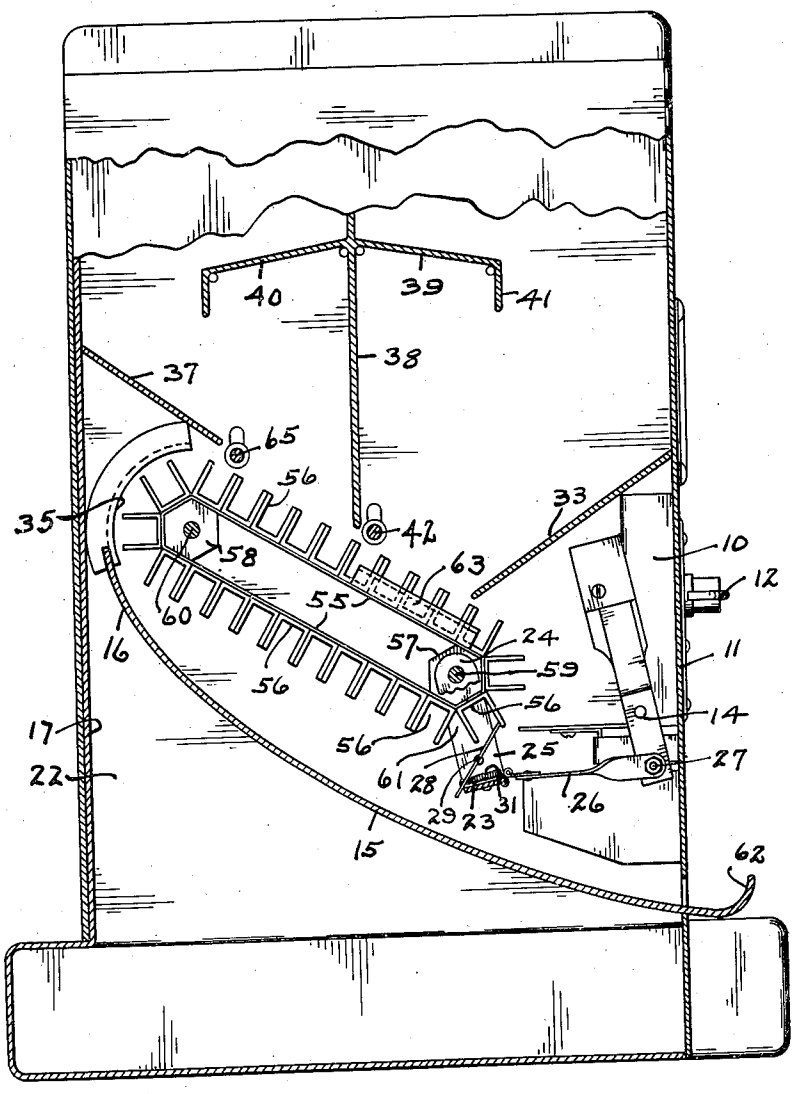
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PENCIL VENDING MACHINE

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Fig. 9.



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Patented Feb. 22, 1949 2,462,298

UNITED STATES PATENT OFFICE

2,462,298

PENCIL VENDING MACHINE

Cletus B. Alexander, Newcastle, Ind.

Application May 23, 1946, Serial No. 671,758

10 Claims. (Cl. 312—84)

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This invention relates to a vending machine designed to vend lead pencils. A primary object of the invention is to provide a structure which will be positive in feeding only that number of pencils intended to be vended for the coin inserted in the control mechanism. A still further primary object of the invention is to provide such a structure which will be durable and not prone to break down or jam under long periods of usage or under rapid and continuous usage.

The invention permits embodiment in a structure which may be adjusted to vend a single pencil, two pencils, three pencils, or four pencils, all for a single coin as may be predetermined. Furthermore, the invention permits the vending of at least two different types of pencils such as differences in degree of hardness of lead, shapes of pencil, or differences in colors of the leads.

These and many other objects and advantages of the invention will become apparent to those versed in the art in the following description of the two best forms now known to me, as illustrated in the accompanying drawings, in which

Fig. 1 is a view in front elevation and partial section of a machine embodying the invention;

Fig. 2, a view in front elevation of the machine with the front cover plate carrying the coin control mechanism removed;

Fig. 3, a view in top plan and partial section of the machine;

Fig. 4, a view in left-hand side elevation and partial section of the machine;

Fig. 5, a similar view with a portion of the inner side wall broken away and a modified cylinder end;

Fig. 6, a vertical section on the line 6—6 in Fig. 1;

Fig. 7, a view in end elevation of the feed cylinder modified to feed one pencil at a time;

Fig. 8, a view in front elevation of the machine with the front cover removed showing a modified form of pencil feeding mechanism; and

Fig. 9, a vertical section on the line 9—9 in Fig. 8.

Like characters of reference indicate like parts in the several views in the drawings.

Since the present invention does not reside in the particular coin control mechanism, details of such mechanism are not herein shown nor described. It is desirable, as is done in most instances, to have the coin control mechanism mounted and confined to a removable plate. Such mechanism herein designated by the numeral 10 is mounted on the front cover 11. In

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this respect, it is sufficient to note that in the present showing, there is an operating handle 12 that is released for turning only by the insertion of a coin downwardly into the pocket 13. Rotation of the handle 12 rocks the operating lever 14 inwardly of the machine away from the front cover plate 11. However, this rocking of the lever 14 does not occur until immediately at the end of the rocking travel of the handle 12. Immediately the handle 12 reaches its end of travel, the lever 14 is released, and a spring quickly returns it to the forward position as indicated in the several views in the drawings. All of this mechanism so far described in relation to the movement of the lever 14 is commercially obtainable, and constitutes one of the well-known coin control mechanisms.

Toward the lower end of the machine is fixed an inclined floor 15, sloping downwardly from an upper end portion 16 near the rear wall 17 to extend through a slot 18 through the front plate 11 and terminates forwardly of the plate 11 by an upturned end 62. The elevation of the slot 18 above the floor 15 extending therethrough is sufficient to permit a lead pencil to roll or slide freely therethrough. Above the floor 15 and back of the lever 14 is mounted a feed cylinder 19. This cylinder 19 is mounted upon a shaft 20 carried by the side walls 21 and 22 of the machine. A transverse bar 23 is held below the cylinder 19 by means of end arms 24 and 25 which rockably engage the shaft 20, one at each end of the cylinder 19.

A link 26 is rockably secured to the bar 23 to extend forwardly to be rockably attached to the lever 14. The degree of sinking of the bar 23 is determined by the point of engagement of the link 26 along the lever 14. For example, in Fig. 4, the forward end of the link 26 is engaged by the bolt 27 carried by the lever 14 at a distance removed from the lower end of the lever 14. Then in Fig. 5, the bolt 27 is shown as being carried by the lever 14 at its lower end. Therefore, the travel of the bar 23 in Fig. 5 is greater than the travel as may be had with the connection shown in Fig. 4. The reason for this difference in travel so provided will become apparent later in the description of the operation of the device.

A pawl 28 is rockably mounted between the arms 24 and 25 to extend entirely across and above the bar 23. In fact, the pawl 28 constitutes a bar of sufficient width to permit its rear edge to extend downwardly and over the rear edge of the bar 23 and to have its forward edge extend above and forwardly of the front edge of

the bar 23. The pawl 28 is mounted to have its major portion rearwardly of its pivot trunnions 29 and 30 whereby the rear end of the pawl 28 will normally drop downwardly to that position indicated in the various views in the drawings. To insure that the pawl 28 normally remains in that position, a spring 31 is provided to reconnect the forward edge of the bar 23 with the lower rear position of the pawl 28.

The cylinder 19 is provided with a plurality of transverse slots 32. Each slot 32 in the present form of the invention has a depth equal substantially to twice the diameter of the pencils to be vended. The cylinder 19 may be made out of any suitable material desired, the primary requirement being that the material does not wear appreciably over long periods of use. The widths of the slots 32 exceed slightly the diameter of a single pencil to be vended, these widths being limited to provide for easy insertion of pencils therein and removal therefrom under the influence of gravity.

The transverse width of the machine within the side walls 21 and 22 is made to be slightly greater than the length of the pencils to be vended. On each of the side walls 21 and 22 are mounted respectively downwardly and inwardly inclined shelves 33 and 34. The lower inner edge of each shelf terminates substantially at the circumferential line of the cylinder 19, if the cylinder 19 be extended. As indicated, Figs. 1 and 2, the shelves 33 and 34 are confined to the respective spaces between the ends of the cylinder 19 and the side walls 21 and 22 without overlapping the cylinder. Arcuate flanges 35 and 36 are carried respectively by the side walls 21 and 22 adjacent the rear wall 17 as continuations of opposite edge portions of the floor 15. These flanges 35 curve around upwardly and forwardly from the floor position end 16 to terminate below the lower edge of a deflector board 37 carried by and across between the end walls 21 and 22. These flanges 35 and 36 are spaced rearwardly from projected surfaces of the cylinder 19, a distance less than the diameter of a pencil to be vended, as best illustrated in Fig. 6.

A central vertical partition 38 is mounted between the side walls 21 and 22, and from this partition 38, extend outwardly and downwardly deflectors 39 and 40 respectively. The forward deflector 39 continues downwardly by a vertically disposed length 41. At the lower end of the partition 38, there is provided one or more rollers 42 to extend entirely across the space between the side walls 21 and 22 and to be vertically shiftable. In the present showing, there is a lower roller 42 of less diameter than that of the pencil to be vended. There is a second roller 43 of larger diameter, primarily to supply weight to yieldingly retain the roller 42 at its lower position. As indicated, Figs. 4 and 6, these rollers 42 and 43 may travel vertically within the confines of the slots 44 within which ends of the rollers engage. The roller 42, in any event, has its lower position to be such that it is substantially tangent to the periphery of the cylinder 19. Either one or two rollers may be employed, such rollers are spaced to the forward side of the lower end of the partition 38 as an effective gate to prevent passage of pencils from one side of the partition to the other.

Adjacent the lower end of the rear deflector board 37 is another roller 65 similar to the roller 42. If not of sufficient weight of itself, it may be yieldingly held at its lowermost position in respect to the end slots 45 by any suitable means, herein shown as by an additional roller 48 resting

thereon. The roller or rollers, as the case may be, serve as a closing gate between the lower end of the deflector board 37 and the periphery of the cylinder 19.

Referring primarily to Fig. 6 in describing the operation of the mechanism, two shapes of pencils 50 and 51 are illustrated, the pencils designated by the numeral 50 being cylindrical whereas those designated by the numeral 51 have a hexagon shape. The two shapes are shown primarily to illustrate the possibility of vending of either shape. A number of the pencils 50 are, in the present showing, placed down within the machine forwardly of the partition 38 and back of the front plate 11. The pencils roll down the deflector 39 to drop between the extension 41 and the front plate 11, and roll downwardly and rearwardly by end positions on the two shelves 33 and 34 against the cylinder 19. By reason of the spacing of the lower end of the deflector extension 41 forwardly of the cylinder 19, some of the pencils 50 will feed up past that lower edge and around rearwardly of the cylinder 19. However, the number of pencils so feeding will be limited so that there will be considerable space above those pencils whereby they may lift freely as the cylinder may rotate. Referring to Fig. 6, the cylinder 19 will, in that view, rotate clockwise.

The other group of pencils 51, are dropped down behind the partition 38 and forwardly of the wall 17 to be deflected rearwardly by the deflector 40 toward the rear deflector board 37 from which the pencils are deflected downwardly and forwardly to rest on the top side of the cylinder 19 back of the partition 38.

In that form of the invention as illustrated, Fig. 6, the mechanism is designed to feed two pencils, one pencil 50 and one pencil 51 on each vending operation. The pencils 50 will feed by gravity into the successive slots 32 appearing above the deflector shelves 33 and 34 and the roller 43. Only one pencil 50, however, is permitted to enter each of those slots 32 by reason of the fact that there is an arcuate flange 52 mounted on each of the side walls 21 and 22 to extend outwardly respectively from those walls a sufficient distance to have end positions of the pencils 50 rest thereon. The radius of curvature of each of these flanges 52 from the center of the shaft 20 is made to be such that the pencils 50, entering the slots 32, can drop thereon only that distance which will have the circumference of each pencil substantially tangential to the circumference of the cylinder 19. Under successive vending operations, the cylinder 19 is rotated clockwise one slot in each operation. The pencil 50, in the last slot 32, appearing under the roller 42, may pass thereunder but other pencils 50 thereabove and therebehind are held back by coming into contact with that roller 42. The upper and rear end of each of the flanges 52 terminates substantially in the plane of the partition 38 so that as the pencil 50, appearing in that last slot 32, passes to the right of the roller 42, that pencil may drop down to the bottom of the slot to leave room thereabove for a pencil 51 to fall therein. As the cylinder 19 continues to be rotated step by step, each of the slots 32, appearing between the rollers 42 and 65, receive the second pencil therein. The roller 65 serves to prevent passage of pencils 51 outside of the slots 32 therepast. The two pencils 50 and 51 remain in their slots 32 until the cylinder 19 is revolved around far enough to provide clearance between its circumference and the upper end portion 16

of the inclined floor 15 to permit first the pencil 51 and then the pencil 50 to drop out of the slot first appearing after that clearance is had. The two pencils will then roll or slide down the floor 15 to strike the outer abutment 12 and thus be free to be picked up.

As above indicated, the cylinder 19 is rotated a distance of one slot 32 on the deposit of a single coin and the turning of the handle 12 to carry the link 26 rearwardly that distance required for the pawl 28 to slide back and drop into the next adjacent slot 32 from that slot in which the forward upper end of the pawl 28 is shown as entering in Fig. 6. The rollers 42 and 65 are mounted in their floating positions in order to accommodate themselves to the pencils 50 and 51 coming thereagainst at slightly different elevations as they may roll one over the other in the piled up condition.

Referring to Fig. 5, each end of the cylinder 19 may be provided with an end plate 53 secured thereagainst to have a peripheral edge portion which may be varied in contour to extend across the ends of the slots 32 to allow but one pencil to enter each slot, or as in the showing in Fig. 5, to permit one pencil to enter each alternate slot 32. In this showing, there is an extended edge portion 54 covering half of the depth of each alternate slot 32, and the other slots 32 therebetween have their ends left uncovered to receive two pencils therein. With the end plates 53 thus attached to the cylinder 19, and with the link 26 connected to the lower end of the lever 14 to provide a greater travel of the pawl 28, the cylinder 19 may be rotated a distance of two slots 32 which will cause a vending of three lead pencils at each operation. With the plates 53 left off, and with this same travel of the pawl 28, four lead pencils may be vended at each operation. Thus the machine is adapted to be adjusted for a different number of pencils to be vended for each coin deposited, depending upon the value placed upon the pencils.

A slightly modified form of the invention is illustrated in Figs. 8 and 9 wherein a conveyor belt 55 is employed in place of the cylinder 19. The belt 55, has secured thereto, a plurality of U-shape channels 56, each having a length substantially equal to that of the cylinder 19, and in any event, being less than the lengths of the pencils to be vended so that the end portions of the pencils may rest upon the inclined shelves 33 and 34, the side walls 21 and 22 being spaced apart as above indicated, a distance slightly exceeding the lengths of the pencils.

The belt 55 is mounted to travel around two spaced apart hexagonal rollers 57 and 58 carried on shafts 59 and 60 carried transversely between the side walls 21 and 22. The roller 58 is mounted to the rear end at a higher elevation than that of the roller 57 to incline the belt 55 as indicated in Fig. 9. Below the roller 57 is the transverse bar 23 carried by the upturned arms 24 and 25 rockably mounted on the shaft 59, one at each end of the roller 57. The bar 23 carries the pawl 28 which is normally rocked to have an upper end enter successive channels 56, one after the other, upon rocking of the lever 14, as above indicated. In this case, the bar 23 is caused to travel sufficiently to the rear to bring the pawl 28 back into the channel 56 behind the gap 61 appearing as the lowermost channel starts upwardly around the roller 57.

Pencils are placed on both sides of the center partition to drop down on either side thereof

against and into the channels 56, to have the rollers 42 and 65 hold back the pencils that have not entered the channels 56. A flange 63 is fixed to each end wall 21 and 22 between the front deflector board 33 and the roller 42 to permit one pencil only to enter each channel 56, that single pencil dropping downwardly to the floor of the channel after it leaves the upper rear ends of the flanges 63 so that pencils on the rear side of partition 38 can feed one at a time over that first entering pencil to have the channels 56 carry two pencils under the roller 65 and around to be dropped onto the floor 15. As viewed in Fig. 9, the upper flight of the conveyor 55 is traveling upwardly and rearwardly.

While I have herein shown my invention in the best forms as now known to me, it is obvious that structural changes may be employed without departing from the spirit of the invention, and I therefore do not desire to be limited to those precise forms beyond the limitations as may be imposed by the following claims.

I claim:

1. In a pencil vending machine, a shiftably mounted member transversely grooved in respect to its travel; a pair of hoppers above the member, each hopper opening from its under side directly over the member to permit the member to be shifted across the openings; a roller mounted over said member at the end of each of said openings toward which the member is shifted the maximum spacing of the rollers from the member being approximately less than the radius of the pencils to be vended, and the rollers further being biased toward that spacing; and means for shifting said member groove by groove.

2. In a pencil vending machine, a shiftably mounted member transversely grooved in respect to its travel; a pair of hoppers above the member, each hopper opening from its under side directly over the member to permit the member to be shifted across the openings; a roller mounted over said member at the end of each of said openings toward which the member is shifted the maximum spacing of the rollers from the member being approximately less than the radius of the pencils to be vended, and the rollers further being biased toward that spacing; and means for shifting said member groove by groove; each of said grooves having a circumferential width which will permit pencils to drop freely into the grooves, one pencil radially over the other only and not side by side, and the depth being such that at least two pencils may be carried in each groove to have the outer pencil be below and tangential to the outer surfaces of said member between grooves.

3. In a pencil vending machine, a shiftably mounted member transversely grooved in respect to its travel; a pair of hoppers above the member, each hopper opening from its under side directly over the member to permit the member to be shifted across the openings; a roller mounted over said member at the end of each of said openings toward which the member is shifted the maximum spacing of the rollers from the member being approximately less than the radius of the pencils to be vended, and the rollers further being biased toward that spacing; and means for shifting said member groove by groove; each of said grooves having a circumferential width which will permit pencils to drop freely into the grooves, one pencil radially over the other only and not side by side, and the depth being such that at least two pencils may be carried in each groove

to have the outer pencil be below and tangential to the outer surfaces of said member between grooves; said member having a length less than that of said pencils; and a pencil supporting member at each end of said member and fixed in relation thereto, mounted to receive opposite pencil ends, extending beyond said grooved member respectively thereon, said supporting member extending only across said hopper opening first appearing as said grooved member travels thereacross, the supporting member being mounted in relation to the bottoms of said grooves at a distance thereabove at least equal to the diameter of one pencil; whereby the pencils received by said member under the first hopper drop down after leaving said supporting members to receive in said grooves over the first pencils, pencils in the next hopper.

4. In a pencil vending machine, a shiftably mounted member grooved transversely in respect to its direction of travel; a pencil hopper having an underside opening over a limited length of said member; a roller mounted transversely across said member at the edge of said opeing, toward which edge said member may be shifted, the roller being spaced adjacent said member sufficiently close to withhold pencils passing therebetween; and means for shifting said member one or more grooves in a single operation; the diameter of said roller being less than the diameter of the pencils, and the diameter of the roller being spaced from said member a distance less than that of the pencils; a second hopper having an opening over said member to have said roller form a gate between openings; each of said grooves normally having a depth sufficient to receive two pencils therein and pass under said roller; and means limiting but one pencil in each groove under the first hopper.

5. In a pencil vending machine, a shiftably mounted member grooved transversely in respect to its direction of travel; a pencil hopper having an underside opening over a limited length of said member; a roller mounted transversely across said member at the edge of said opening, toward which edge said member may be shifted, the roller being spaced adjacent said member sufficiently close to withhold pencils passing therebetween; and means for shifting said member one or more grooves in a single operation; the diameter of said roller being less than the diameter of the pencils, and the diameter of the roller being spaced from said member a distance less than that of the pencils; a second hopper having an opening over said member to have said roller form a gate between openings; each of said grooves normally having a depth sufficient to receive two pencils therein and pass under said roller; and means limiting but one pencil in each groove under the first hopper; said member being of less length than that of said pencils; said limiting means comprising a fixed track at each side of said member mounted a pencil diameter distance above the bottoms of the grooves.

6. In a pencil vending machine, a shiftably mounted member grooved transversely in respect to its direction of travel; a pencil hopper having an underside opening over a limited length of said member; a roller mounted transversely across said member at the edge of said opening, toward which edge said member may be shifted, the roller being spaced adjacent said member sufficiently close to withhold pencils passing

therebetween; and means for shifting said member one or more grooves in a single operation; the diameter of said roller being less than the diameter of the pencils, and the diameter of the roller being spaced from said member a distance less than that of the pencils; a second hopper having an opening over said member to have said roller form a gate between openings; each of said grooves normally having a depth sufficient to receive two pencils therein and pass under said roller; and means limiting but one pencil in each groove under the first hopper; said limiting means comprising a detachable member along opposite sides of said member with an edge across said grooves located a pencil diameter distance below the outer surfaces of said member.

7. In a pencil vending machine, a shiftably mounted member grooved transversely in respect to its direction of travel; a pencil hopper having an underside opening over a limited length of said member; a roller mounted transversely across said member at the edge of said opening, toward which edge said member may be shifted, the roller being spaced adjacent said member sufficiently close to withhold pencils passing therebetween; and means for shifting said member one or more grooves in a single operation; the diameter of said roller being less than the diameter of the pencils, and the diameter of the roller being spaced from said member a distance less than that of the pencils; a second hopper having an opening over said member to have said roller form a gate between openings; each of said grooves normally having a depth sufficient to receive two pencils therein and pass under said roller; and means limiting but one pencil in each groove under the first hopper; said member being less in width than the length of said pencils; and a member traveling with said grooved member having an edge portion extending in part by a pencil diameter height above the floors of said grooves across a limited number of the outer groove ends and cut away across the other groove ends to the floors of the grooves.

8. In a pencil vending machine, a shiftably mounted member grooved transversely in respect to its direction of travel; a pencil hopper having an underside opening over a limited length of said member; a roller mounted transversely across said member at the edge of said opening, toward which edge said member may be shifted, the roller being spaced adjacent said member sufficiently close to withhold pencils passing therebetween; and means for shifting said member one or more grooves in a single operation; the diameter of said roller being less than the diameter of the pencils, and the diameter of the roller being spaced from said member a distance less than that of the pencils; a second hopper having an opening over said member to have said roller form a gate between openings; each of said grooves normally having a depth sufficient to receive two pencils therein and pass under said roller; and means limiting but one pencil in each groove under the first hopper; said member being of less length than that of said pencils; said limiting means comprising a fixed track at each side of said member mounted a pencil diameter distance above the bottoms of the grooves; and a withholding member on each end of said grooved member carried to travel therewith; said grooves opening by both ends their full depth at each side of said grooved member; each of said withold-

ing members extending across part, at least, of said groove end openings by a portion, the edge of which portion is a pencil diameter height above the floors of said grooves, and the remaining portion edge leaves said groove and openings unobstructed.

9. In a pencil vending machine, a shiftably mounted member transversely grooved in respect to its travel; a pair of hoppers above the member, each hopper opening from its under side directly over the member to permit the member to be shifted across the openings; a roller mounted over said member at the end of each of said openings toward which the member is shifted the maximum spacing of the rollers from the member being approximately less than the radius of the pencils to be vended, and the rollers further being biased toward that spacing; and means for shifting said member groove by groove; said member comprising an endless belt carried around spaced apart rollers, and a plurality of trough-like members fixed across the belt constituting pencil carrying grooves.

10. In a pencil vending machine, a shiftably mounted member grooved transversely in respect to its direction of shifting; a pencil holding hopper having an underside opening over a transverse length of said member, with one side of that opening terminating by an edge portion parallel to the grooves of and spaced from said member; a roller adjacent said portion; mounting means rotatably carrying said roller, permitting retraction of the roller outwardly from said member and restraining the roller against any substantial travel circumferentially of said member; said roller being biased toward said member, whereby the roller comprises in effect a yieldable extension of said edge portion; and stop means limiting travel of said roller away from said member to a spacing therebetween less than the diameter of the pencils to be vended.

CLETUS B. ALEXANDER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
573,358	Russell	Dec. 15, 1896
603,810	Bowling et al.	May 10, 1898
726,934	Jacobs	May 5, 1903
909,688	Schmidt	Jan. 12, 1909
1,996,472	Herman	Apr. 2, 1935