April 25, 1939. B. E. SEEMEL 2,155,982

COIN MACHINERY

Filed July 2, 1934 2 Sheets-Sheet 1

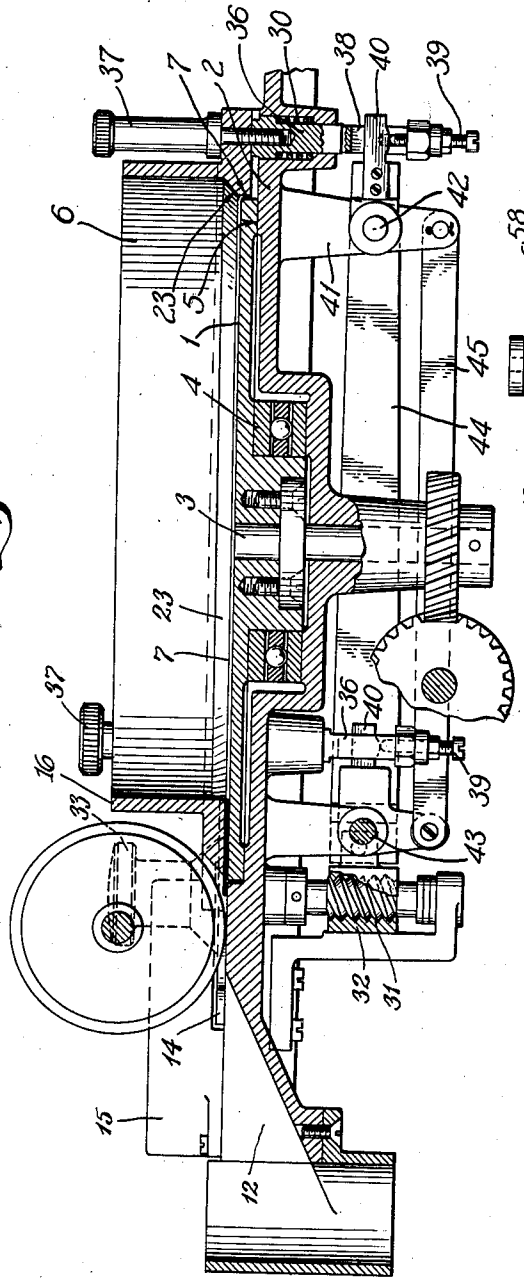


Fig. 1.

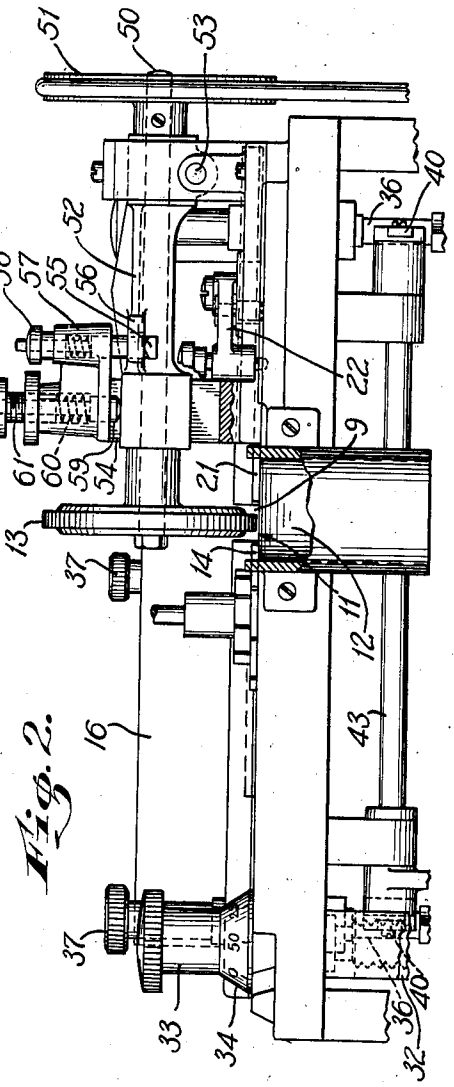


Fig. 2.

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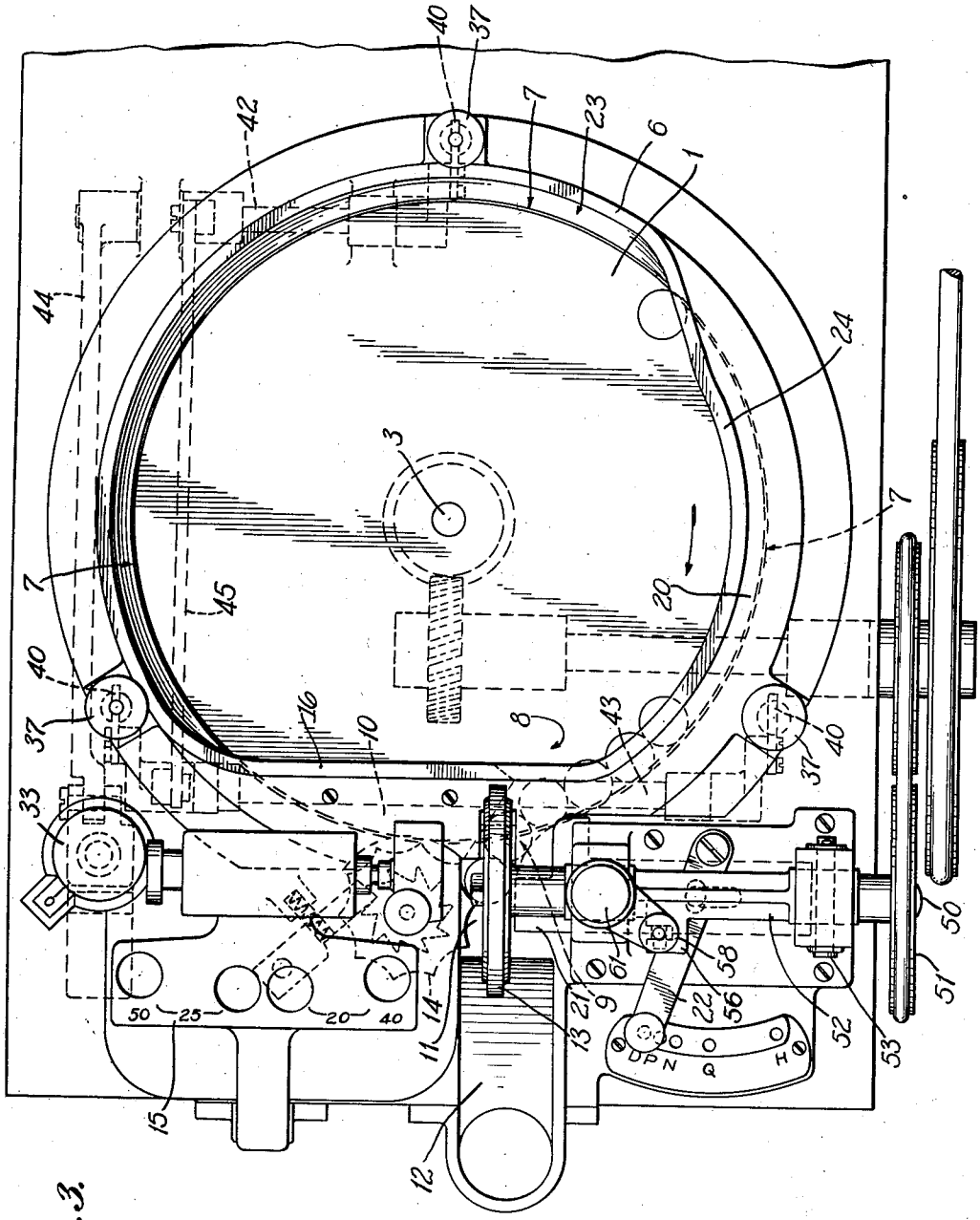


Fig. 3.

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COIN MACHINERY

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7 Claims. (Cl. 133—8)

My invention relates to coin handling machinery, and especially to coin counters of the centrifugal disc type of which it provides an improved form. It can be explained best by reference to the accompanying drawings.

It is not entirely limited to this type of machine however, in all its respects, as will be apparent. Also it is applicable to coin-like tokens and other articles coin like in shape, as well as to coins, and all these are included in the term "coin" as that term is used hereinafter.

The accompanying drawings illustrate a centrifugal coin counter with the best form of my invention of which I am now aware applied thereto. Fig. 1 is a vertical section of the counter, substantially on its center line. Fig. 2 is an elevation of the discharge end of the machine. Fig. 3 is a plan view.

The rotary table or centrifugal disc 1 is supported substantially horizontally by the machine frame 2; conveniently it is rotated by a vertical center shaft 3, for example, through suitable gearing, and is carried by a thrust bearing 4 surrounding the shaft; the outer edge 5 of the disc or table may, say, rest lightly on the machine frame 2 for steadying purposes. A vertical retaining wall 6 and extensions of it later mentioned prevent the escape of coins by upward and outward movement. At a lower level an outer substantially vertical wall 7, outside of but close to the edge of the table or disc, encircles the table or disc completely except at a point 8 (Fig. 3) where a passage 9 is provided for the escape of the coins seriatim from the table to the counting mechanism. A plate or guide 10, placed inwardly of the wall 7, has a forward edge to help direct coins from the disc into the passage 9 and a supplementing retaining wall 16, joining retaining wall 6, is placed above the inner edge of plate 10, all as will be apparent from Fig. 3. From the passageway 9 the coins slide on the frame for a short distance at 11 and thence into the receptacle provided to receive them, or a chute 12 in the present instance. At 11 the coins pass seriatim underneath a driven wheel 13 and across the edge of a notched wheel 14 which forms a part of the counting mechanism 15; under the driving force of the wheel 13, or the force with which the coins are thrown from the rotary table supplemented by the driving force of this wheel, each coin is forced to turn the notched wheel 14 one notch and thereby actuate the counting mechanism 15. Counting mechanism suitable for the purpose and likewise the action of a driving wheel such as that at 13 and the action of the coins on a notched wheel like 14 are well known so that no further description of these parts is necessary. Also, in advance of the passageway 9, an overlying wall 20 extends inwardly from the outer wall 7 for some distance, above and substantially parallel to the face of the disc or table, and in operation this overlying wall is spaced from the table a distance approximately equal to the thickness of the coin to be handled. In cooperation with the disc face and the outer wall 7 the overlying wall 20 provides a runway as it were leading to the exit passage 9 and thence from the table. Means are provided for adjusting the wall 20 closer to or farther from the face of the rotary table 1, so the coins of one size can be handled at one time and coins of another size at another time. Also a directing plate 21 is provided to cause each coin to enter a notch in the notched wheel 14, and this plate is slidingly mounted so that it can be moved toward and from the notched wheel 14, by means of the hand lever 22, to provide for the handling of coins of different sizes. Machines of the type thus described are well known. In operation, in brief, coins are cast on to the rotary table or disc 1, and by the rotary action of this table the coins which lie flat on the table are worked toward the outer edge of the table against the wall 7 and into the runway underneath the wall 20, so that ultimately they are cast through the exit slot 9, whence they are counted and cast down the chute 12 by the counting mechanism 14, 15 and the driven wheel 13.

As these machines have been built heretofore however, there is considerable tendency for the coins to assume vertical positions against the retaining wall which prevents their escape from above the disc, and in this position they not only cannot enter the runway underneath the overlying wall 20 but prevent other coins from entering the runway. My invention tends to materially prevent this action and, generally speaking, to provide an improved action. To this end, I carry the overlying wall 20 only part way around the vertical axis of the table, for example through an arc of about one hundred degrees as appears in Fig. 3; a further supplementing retaining wall 24, joining retaining wall 6 and also joining retaining wall 16, is placed above the inner edge of this overlying wall. Immediately adjacent the periphery of the rotary table 1 I extend the outer wall 7 upwardly at substantially right angles to the face of the table

for a distance substantially equal to the thickness of a coin. Above the coin thickness the retaining wall 6 is then extended outwardly for a little distance, at an angle to the horizontal as indicated at 23 in Fig. 1, forming there what may be termed an inclined wall; externally of this inclined surface 23, the retaining wall 6 may rise vertically as is also shown in Fig. 1. As a result of the surface inclination at 23, no coin finds a vertical surface against which it may lean indefinitely as it rolls around with the rotation of the table resting on its edge on the rotary table, but any coin rising on its edge as it bears against the vertical surface 7, must topple over, either inwardly or outwardly, and if it topples outwardly the inclination at 23 serves to cause the coin to work itself face downwardly on to the top of the rotary table, i. e. into the position the coin must occupy in order to enter the runway underneath the overlying wall 20. This wall arrangement, including the incline at 23, extends around, preferably, so much of the disc as is not covered by an overlying wall 20, or a dividing plate 10. Also as may be understood from the foregoing, the under surface of the overlying wall 20 is placed at about the same height as the juncture between the inclined surface 23 and the vertical surface 7 and the supplementing retaining wall 24 extends along substantially the end of the incline 23, so that the overlying wall 20 and the retaining wall tend to sweep flat down onto the table any coin that may come to the overlying wall resting on the incline. By making the height of the vertical portion 7 of the encircling wall at least equal to the thickness of the thickest coin to be handled (it may be greater than this), and by providing for the raising and lowering of this outer wall 7, the incline 23 and the overlying wall 20, the machine is adapted to handle coins of different thicknesses at different times, but all in the same manner. Thus for dimes, for example, these parts would be lowered to such a point that the vertical distance between the top of the rotary table 1 and the juncture between the vertical surface 7 and the incline 23 is just about equal to the thickness of a dime; if quarters are to be handled, these parts will be raised to such higher position that this vertical distance is about equal to the thickness of a quarter. To this end and also for convenience of construction the retaining walls, including the incline 23, the overlying wall 20 and the outer wall 7 are formed preferably into a single unit and preferably as an integral unit as illustrated.

It will be observed of course that the substantial parallelism between the face of the rotary table and the under surface of the overlying wall 20 should be maintained as this wall is raised and lowered; also it is desirable that the substantial parallelism be maintained between the surface of the rotary table and the line forming the juncture between the vertical surface 7 and the incline 23. Any mechanism capable of raising and lowering these parts (either as portions of a single unit or otherwise) meanwhile maintaining this parallelism, and which otherwise is suitable, can be employed. I have found however that a lever system operable as a whole from one point and engaging the unit member at a plurality of points is preferable; engagement at three substantially equally spaced points is sufficient. Preferably too this unit member is carried on springs 30, say one at each of these three points and the lever system acts to depress the unit member against the springs; this arrangement positively locks the overlying wall 20 against upward movement, thus positively preventing the entrance of a bent coin into the runway. Preferably also the lever system is actuated by a thread 31 and nut 32 mechanism, the thread being, say, drivable by the machine operator through a suitable hand hold 33 which may be indexed as at 34 to indicate its proper settings for various coins. The preferred form of lever mechanism is illustrated. In brief, the unit rests on three evenly spaced posts 36 which are slidable in machine frame 2 and supported each by one of the springs 30 (Fig. 1); a threaded bolt 37 serves to tie the member to each of these posts 36 and at the same time permits its ready release from the posts. At their lower ends, each post is recessed to form a yoke 38 into which a vertical bolt 39 extends for adjusting purposes; one end 40 of an arm or lever extends into engagement with the bolt 39 at each of these posts. Each of these arms or levers is pivoted to a bracket 41 mounted on the machine frame, by means of rock shafts 42 and 43 to which, in the present instance, these levers are keyed. To the rock shaft 42 which is more remote from the thread-and-nut mechanism 31—32, is keyed an arm 44, the opposite end of which is suitably connected to the nut 32 so that the raising and lowering of the nut 32 by its threaded member 31 serves to swing the arm 44 and thereby swing the shaft 42; a link 45 serves to connect the two shafts 42 and 43, so that one swings the other to an equal degree. By connecting the thread-and-nut mechanism to the more remote shaft 42, a finer and more accurate adjustment is obtainable than where the connection is made to the nearer shaft 43. From the foregoing it will be observed that by raising the nut 32 by turning the hand hold 33, all the lever arms 40 are depressed, and thereby the three posts 36 are depressed equal distances and the unit member including the outer wall 7 and overlying wall 20 is carried down in parallelism; turning of the thread 31 in the opposite direction permits them to rise.

Usually the periphery of the driving wheel 13 is faced with rubber or other material suitable for gripping the coins to slide them along, and heretofore difficulty has been experienced in the abrading and flattening out of the face of the wheel. This is due, I have found, to the fact that the face of the wheel frequently comes into engagement with the cooperating surface against which it presses the coins (surface 11 in the present instance); perhaps too it is due in part to the fact that the wheel is called on to handle thick coins as well as thin ones. In any event, I find that this difficulty can be avoided by so mounting the wheel that the wheel is permitted to move rather freely toward and from its cooperating surface, and at the same time by limiting the movement of the wheel toward this cooperating surface to such an extent that the wheel can never engage this surface. To these ends preferably, I mount the wheel on a shaft 50 provided at its outer end with a driving connection, say a pulley 51, quite as before. The bearing 52 for this shaft, I hinge however adjacent the pulley 51, i. e. at 53, on a horizontal axis transverse to the shaft. The bracket 54 nearer the wheel 13 permits this end of the bearing to rise and fall but at the same time keeps the shaft in the desired line. As a consequence, the wheel 13 can rise as a coin comes

underneath it, rising more for a thick coin than for a thin coin, and, by reason of the hinge mounting described, it has this motion without unduly disturbing its driving. A hook **55** engaging a projection **56** from the bearing, and carried say in a small bracket **57** extending from the main bracket **54**, serves to prevent the wheel **33** swinging down so low as to strike the cooperating surface **11**; for accurate placement, the hook **55** may be positioned by a bolt and nut **58**. Also if desired a spring can be used to press the wheel **13** into contact with the coins; for example, a sliding plunger **59** engaging with the bearing **52**, can be provided in the bracket **54** and surrounded by a spring **60** for the purpose. The upper end of this spring may rest against a threaded bolt **61**, so that its tension is adjustable. It will be observed that this arrangement provides for the wheel **13** bearing against each and every coin with adequate pressure to drive the coin along the surface **11**, without at the same time the thicker coins calling on the wheel **13** to exert undue pressure.

It will be understood that my invention is not limited to the details of construction and operation illustrated and described above, except as appears hereinafter in the claims.

I claim:

1. In a coin machine having a rotating table to feed the coins centrifugally from its upper face and the periphery of which is substantially circular, an outer wall to prevent the escape of the coins from the upper face of the table except at the passage hereinafter mentioned, said outer wall being located adjacent the periphery of the table and substantially encircling the table externally of the table and extending substantially vertically higher than the table a distance corresponding substantially to the thickness of a coin being handled, a passage being provided for the escape of coins through said outer wall, and an inclined wall, inclined outwardly at an angle to the vertical from adjacent the upper edge of said outer wall and extending at least part way around the periphery of the table.

2. The subject matter of claim 1, characterized by the fact that said outer wall and said inclined wall are adjustable vertically with respect to the table to adapt the machine to handle coins of different sizes.

3. In a coin machine having a rotatable table, means to support said table substantially horizontally when in operation, and means to rotate said table at a sufficiently high rate of speed to feed coins from the upper face of the table by centrifugal force, means providing a passage leading from the edge of the table for the escape of coins from the table and elsewhere preventing the escape of coins from the table, the last mentioned means including a wall inclined upwardly from substantially adjacent the edge of the table and above the top of the table and extending at least part way around the table, and an overlying wall, above and substantially parallel to the face of the table, extending in the direction of rotation of said table from substantially one end of said inclined wall toward said passage for the escape of coins from the table.

4. In a coin machine having a rotating table to feed the coins centrifugally from its upper face and the periphery of which is substantially circular, an outer wall to prevent the escape of the coins from the upper face of the table except at the passage hereinafter mentioned, said outer wall being located adjacent the periphery of the table and substantially encircling the table externally of the table and extending higher than the table a distance less than the diameter of a coin being handled, a passage being provided for the escape of coins through said outer wall, an inclined wall, inclined outwardly at an angle to the horizontal from adjacent the upper edge of said outer wall and extending at least part way around the periphery of the table, and an overlying wall, above and substantially parallel to the face of the table, extending in the direction of rotation of said table from substantially one end of said inclined wall toward said passage for the escape of coins from the table.

5. The subject matter of claim 4, characterized by the fact that said outer wall, said inclined wall and said overlying wall are adjustable vertically with respect to the table to adapt the machine to handle coins of different sizes.

6. A coin machine having a rotating table, an outer wall substantially encircling the table externally, a passage being provided for the escape of coins through said outer wall, an inclined wall, inclined outwardly and upwardly from the upper edge of said outer wall, extending part way around said table, and an overlying wall extending inwardly above and substantially parallel to the face of the peripheral portion of the table and extending in the direction of rotation of said table from substantially one end of said inclined wall toward said passage, characterized by the fact that said walls are adjustable vertically, the lower edge of said inclined wall being adjustable to distances above the face of said table proportionate to the thicknesses of coins of different sizes.

7. A centrifugal coin machine having a rotating table to feed the coins centrifugally from its upper face, an outer member to prevent the escape of the coins from the table except at the passage hereinafter mentioned, said member having a substantially vertical wall located adjacent the periphery of the table and substantially encircling the table externally of the table and adapted to stand higher than the table a distance less than the diameter of a coin being handled, a passage being provided for the escape of coins through said wall, another wall extending above the level of the upper end of the first mentioned wall and extending around the vertical center line of the rotating table and for at least a part of the circumference of the table being spaced outwardly from the first mentioned wall, a third wall extending outwardly from the top of the first mentioned wall to the second mentioned wall where the latter is spaced outwardly from the first mentioned wall, and an overlying wall, above and substantially parallel to the face of the table and located substantially at said escape passage for coins and the third mentioned wall extending, in the direction of rotation of said table, substantially to said overlying wall, and means to adjust said outer member vertically with respect to the table to adapt the machine to handle coins of different sizes.

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