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MACHINE FOR SORTING, COUNTING, AND PACKING COINS

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Fig. 1.

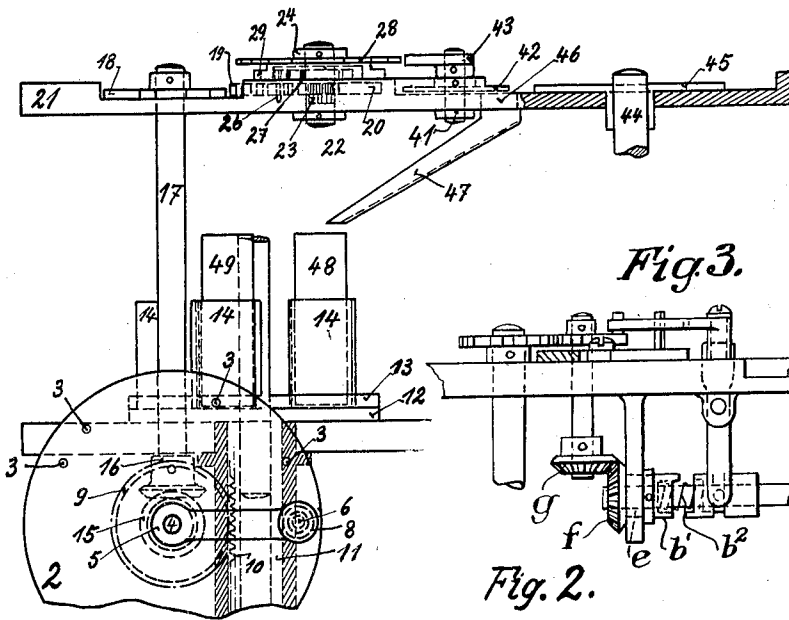


Fig. 3.

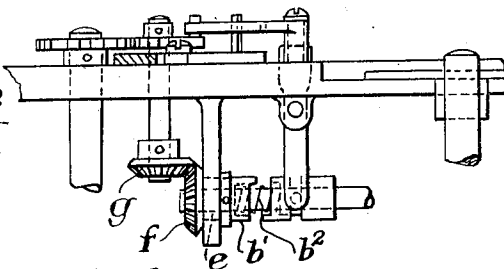
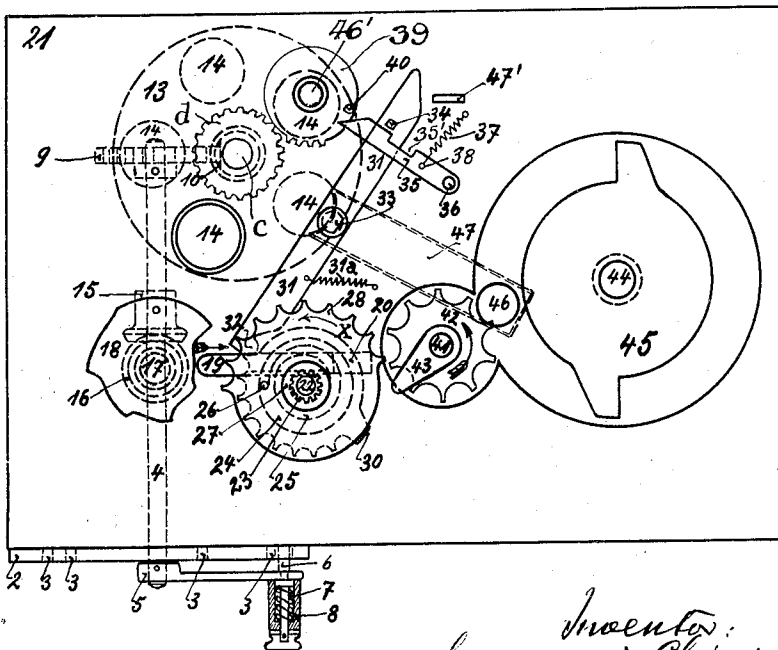


Fig. 2.



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MACHINE FOR SORTING, COUNTING, AND
PACKING COINSSiegmond Chiger, Berlin, Germany, assignor to
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2 Claims. (Cl. 133—8)

This invention relates to apparatus for the counting and packaging of coins, and has generally in view to provide an improved apparatus for this purpose.

5 In the packaging of coins it is usual to provide packages containing different numbers of coins of totaling different predetermined amounts.

10 Different types of apparatus for the counting and packaging of coins of different denominations and in different amounts are known. However, in the use of known types of such apparatus and when it is desired to change from the counting and packaging of any given number of coins of any given denomination to the counting and packaging of a different number of coins of the same or another denomination, the operator generally is required to effect separate manual adjustments of different parts of the apparatus. This frequently results in errors and irregularities which it is extremely desirable to avoid. Accordingly, the general object of the invention is to provide a coin counting and packaging apparatus embodying means whereby a single manual adjustment of the apparatus adapts it for counting and packaging a predetermined number of coins of any given denomination whereby any chance of error or irregularity in respect to this phase of the operation of the apparatus is entirely avoided.

25 Various other objects as well as the nature and the advantages of the present apparatus will become more fully apparent from a perusal of the following detailed description of the same considered in connection with the accompanying drawing, wherein:

30 Figure 1 is a side elevation, partly in section, of one practicable form of apparatus embodying the novel features of the invention.

40 Figure 2 is a top plan view; and

Figure 3 is a detail vertical section illustrating a clutch element of the apparatus and the control means therefor.

45 Referring to the drawing in detail, 1 designates a horizontally disposed base plate having suitably fixed thereto a vertically disposed disk or plate 2 in which is formed a plurality of holes 3. Journalled in suitable bearings carried by the base plate 1 is a shaft 4 which extends horizontally below said base plate and at its outer end carries a crank 5. The holes 3 in the disk or plate 2 are spaced equidistantly radially from the shaft 4 and different distances apart circumferentially, and are adapted to be selectively engaged by a pin 6 slidably engaged in the handle 8 of the

crank 5, said pin being constantly urged inward by a spring 7 so as to be projected into any one of the holes 3 in the disk or plate 2 with which it may become alined by reason of rotation of the crank 5, and a button being provided on the outer end of said pin whereby the same may be retracted to permit rotation of the crank 5 and the shaft 4.

60 On the shaft 4 is fixed a pinion 9 which meshes with a rack 10 carried by a vertically disposed sleeve 11 which is suitably mounted for vertical sliding movement relative to the base plate 1 and which carries at its upper end, above said base plate, a table 12 on which is supported a horizontally disposed disk 13 carrying an annular series of vertically disposed tubes 14 for the reception of coin wrapper tubes designated as 48.

70 Also fixed on the shaft 4 is a bevel gear 15 which meshes with a companion bevel gear 16 fixed to a vertical shaft 17 which extends at its upper end through a horizontally disposed plate 21 and above said plate has fixed thereto a horizontally disposed cam disk 18 adapted for actuating a rack bar 19.

80 The rack bar 19 is horizontally disposed and suitably mounted in the plate 21 for longitudinal sliding movement, the same meshing with a pinion 23 formed either directly as a part of a vertical stub shaft 22 or separately from said shaft and suitably fixed thereto.

85 The stub shaft 22 is rotatably mounted in the plate 21 and has fixed thereto a hollow drum 24 within which is housed a helical spring 25 one end of which is secured as at 27 to the drum or the shaft and the other end of which is anchored as at 26 to the plate 21, whereby, whenever the shaft 22 is rotated against the force of said spring and subsequently released, the spring operates to return said shaft to a normal position.

90 Fixed to the drum 24 at the top thereof is a horizontally disposed disk or segment 28 having a series of peripheral notches or recesses, preferably totaling ten in number, formed therein, while fixed to said drum at the bottom thereof is a horizontally disposed disk or segment 29 likewise provided with a series of peripheral notches or recesses preferably totaling ten in number and also provided with a tooth or projection 30 at one end of said series of recesses.

100 Pivoted intermediately, as at 33, to the plate 21 is a lever 31 one end of which is formed, as at 32, for engagement with the peripheral notches of the disk 29 and to be engaged by the tooth 30, and the other end of which is formed and disposed for cooperation with the upper end of

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a vertically disposed clutch control lever 47' intermediately pivoted to the plate 21 and extending at its lower end below said plate.

The clutch control lever 47' is operatively engaged at its lower end with a clutch element *b* slidably and non-rotatably mounted on a suitably driven horizontally disposed shaft *a* and a companion clutch element *b'* is formed as part of or is fixed to a sleeve *e* in which said shaft *a* is mounted for rotation, the clutch element *b* being normally urged away from or maintained disengaged from said clutch element *b'* by means of a coil spring *b2* interposed between said clutch elements.

Fixed to the sleeve *e* is a bevel gear *f* which meshes with a bevel gear *g* fixed to the lower end of a short vertical shaft 46' suitably journaled in the plate 21, said shaft 46' having fixed thereto, above said plate, a segmental gear 39 for co-operation with a gear *d* fixed to the upper end of a vertical shaft *c* which, at its lower end, is keyed to the sleeve 11.

On the segmental gear 39 is a pin or lug 40 which is adapted for cooperation with the free end of a latch arm 35, said arm extending horizontally across the lever 31 and at its other end being pivoted, as at 36, to the plate 21.

On the lever 31 is a pin or lug 34 against which the arm 35 is urged by a coil spring 37 fastened at one end to said arm and at its other end to the plate 21, and in the side of said latch arm nearest the lug 34 is formed a notch 35' to receive the lug 34 when the adjacent end of the lever 31 is swung towards the pivoted end of said latch arm.

The top of the plate 21 is recessed to receive a counting wheel 42 and a coin feed disk 45, the disk 45 being fixed to a shaft 44 suitably driven in timed relation to the driven shaft *a*, and the counting wheel 42 being secured to a stub shaft 41 journaled in the plate 21.

The coins to be counted and packaged are adapted to be fed between the periphery of the disk 45 and the side wall of the recess in which said disk is disposed, and are adapted to be pushed one by one by one or more fingers 45' on said disk into register with a hole 46 formed through the plate 21, through which hole they are adapted to fall and to be guided by a chute 47 into a wrapper tube 48 which is disposed in coin receiving relation to the discharge end of said tube.

The counting wheel 42 is provided with a series of peripheral recesses preferably totaling ten in number, and said wheel is disposed as shown relatively to the coin feed disk 45 and the hole 46 so that as each coin is advanced towards said opening it engages a recess of said counting wheel and rotates the same through an angle equivalent to the circumferential spacing of each adjacent pair of said recesses.

Fixed to the shaft 41 is an arm 43 which, by rotation of said shaft as effected by the coins engaging with the recesses of the counting wheel 42, is adapted, once during each complete rotation of said shaft, to engage one of the recesses of the disk 28 and to advance or rotate the same through an angle equivalent to the spacing of any adjacent pair of the recesses in said disk.

Rotation of the shaft 4 is adapted, through the cam 18, to push the rack bar 19 to a position to set or adjust the recessed disks 28 and 29 to a normal position in readiness to begin the counting and packaging of coins of any particular denomination; also, rotation of the shaft 4 is

adapted, through the gear 9 and rack 10, to elevate or lower the sleeve 11 to dispose the wrappers 48 at a proper elevation to receive coins from the chute 47 depending upon the height of said wrappers as determined by the denomination of the coins to be counted and packaged. In this connection it is pointed out that the holes 3 in the plate or disk 2 are so located, and that the gear 9 is of such diameter, and the different portions of the cam 18 of such design, that when the shaft 4 is rotated to bring the pin 6 into alignment with any particular hole 3 in the plate 2 the rack bar 9 is moved an amount to place the recessed disks 28, 29 in a correct position for the beginning of counting of a predetermined number of coins and the sleeve 11 is raised or lowered an amount to correctly position the upper ends of the wrappers 48 relative to the discharge end of the chute 47 to receive the said predetermined number of coins.

Since the counting wheel has preferably ten peripheral recesses it is apparent that the passing of ten coins into the hole 46 effects one complete revolution of the shaft 41 and the advancement or rotation of the disks 28, 29 one notch or recess in the direction of the arrow *x*. Assuming now that the number of coins to be placed in each package to total a certain amount is fifty, it is apparent that five complete rotations of the counting wheel 42 is necessary to permit this number of coins to be fed to and through the hole 46. And when fifty coins have been fed to one of the wrappers 48 it obviously is necessary that this wrapper be moved away from the delivery end of the chute 47 and a new wrapper brought into coin receiving relation to said chute, this being one of the important functions of the present apparatus. If, as stated, the number of coins to be placed in each package is fifty, the adjustment of the shaft 4 to the proper rotated position will result in movement of the rack bar 19 by the cam 18 to advance or rotate the recessed disk 28 until only five of the recesses thereof remain to be engaged by the arm 43. As aforesaid, each revolution of the counting wheel 42 advances the disk 28 one notch, and as said wheel is thus advanced it is held against return movement under the influence of the spring 25 by the end 32 of the lever 31 engaging a notch or recess of the wheel 29, said lever being constantly urged to a position to accomplish this function by a spring 31a. As the disk 28 is advanced the spring 25 is energized, and after said disk has been advanced the five notches remaining after its initial adjustment by the cam 18, the tooth 30 comes into operation to engage the end 32 of the lever 31 and to swing said end of said lever away from the disk 29, thereby releasing said disk and permitting the same to be returned by the spring 25 to its normal starting position as determined by the adjustment of the cam 18. When the end 32 of the lever 31 is swung outward by the tooth 30 its other end is swung towards and into contact with the upper end of the clutch control lever 47', thereby swinging said lever and causing its lower end to shift the clutch element *b* along the shaft *a* into engagement with the clutch element *b'*. When this occurs, rotation of the shaft *a* imparts rotation to the shaft 46' and to the segmental gear 39, causing said gear to engage the gear *d* and to rotate the shaft *c* an amount to bring a new wrapper 48 into coin receiving relation to the chute 47. This occurs immediately following release of the disk 29 and during only fractional

rotation of the feed disk 45, so that a new wrapper 48 is brought into coin receiving relation to the chute 47 after the last coin has been delivered to one wrapper and before the first coin is delivered to the new wrapper. When the end 32 of the lever 31 is swung outward by the tooth 30 and its opposite end thus is swung to engage and actuate the clutch control lever 47', the pin or lug 34 is moved into alinement with the notch 35' in the latch arm 35 and said arm is pulled by the spring 37 to cause said notch to receive said pin or lug, thereby locking the lever 31 in a position holding the clutch element *b* temporarily engaged with the clutch element *b'*. The pin or lug 40 on the gear 39 normally is disposed so that said gear may make substantially a complete rotation before said pin or lug engages the free end of the latch arm 35. Consequently, following pivotal movement of the lever 31 to engage and actuate the clutch lever 47' the gear 39 makes a substantially complete revolution and at the termination thereof the pin or lug 40 engages the free end of the latch arm 35 and swings the same to release the pin or lug 34 from the notch 35'. Thereupon the lever 31 is released and returned to its normal position by the spring 31*a* and the clutch element *b* automatically becomes disengaged from the clutch element *b'*, stopping rotation of the shafts 46' and *c* immediately after the lug 40 has passed by the end of the arm 35. Thus the apparatus is reset to begin the counting and delivery of another fifty coins to the new wrapper 48 brought into coin receiving position. The apparatus operates in the same manner for coins of any denomination, and as the wrappers 48 are successively filled with the proper number of coins they are folded and sealed in any suitable or desired manner.

40 I claim:

1. Mechanism of the class described compris-

ing coin counting means having a zero position, delivery means for the counted coins, a table for supporting containers into which the counted coins are adapted to be delivered, automatic means for returning said coin counting means to zero position following each successive counting of a predetermined number of coins by said means, a device adjustable to a plurality of different positions, and means whereby adjustment of said device to any one of said positions effects adjustments of said mechanism to predetermine the number of coins counted during each cycle of operation of said counting means and simultaneously adjusts the spacing of said table relative to said coin delivery means.

2. Mechanism of the character described comprising coin feed means, a wheel having peripheral recesses adapted to be engaged by the coins to effect intermittent rotation of said wheel, a second peripherally recessed wheel, a cam on the first wheel adapted during each complete rotation of said first mentioned wheel to engage successive recesses of the second wheel and correspondingly rotate said second mentioned wheel, said wheels having zero positions, means constantly tending to return said second mentioned wheel to its zero position, a device adjustable to a plurality of different positions, trip means normally holding said second mentioned wheel against return to its zero position, means whereby rotation of said second mentioned wheel effects release of said trip means, and means whereby adjustment of said device to any one of its aforesaid positions effects adjustments of said mechanism to predetermine the amount of rotation of said second mentioned wheel necessary to effect release of said trip device, thereby to predetermine the number of coins counted during each cycle of operation of the counting mechanism.

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