Aug. 8, 1933. E. P. DONNELLAN 1,921,155

COIN COUNTING MACHINE

Filed July 7, 1930 2 Sheets-Sheet 1

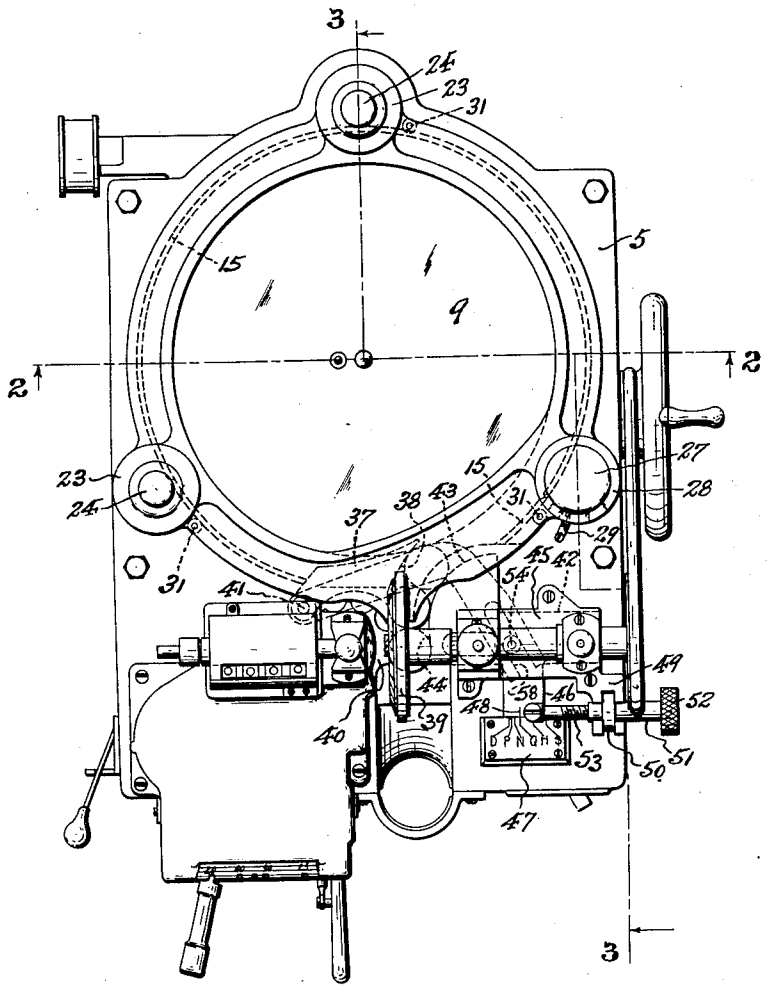


Fig. 1

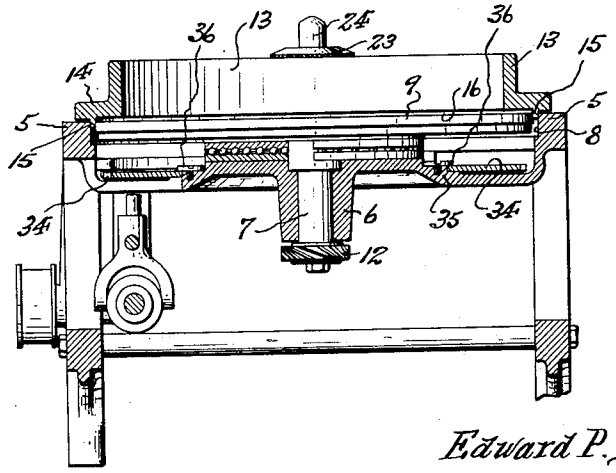


Fig. 2

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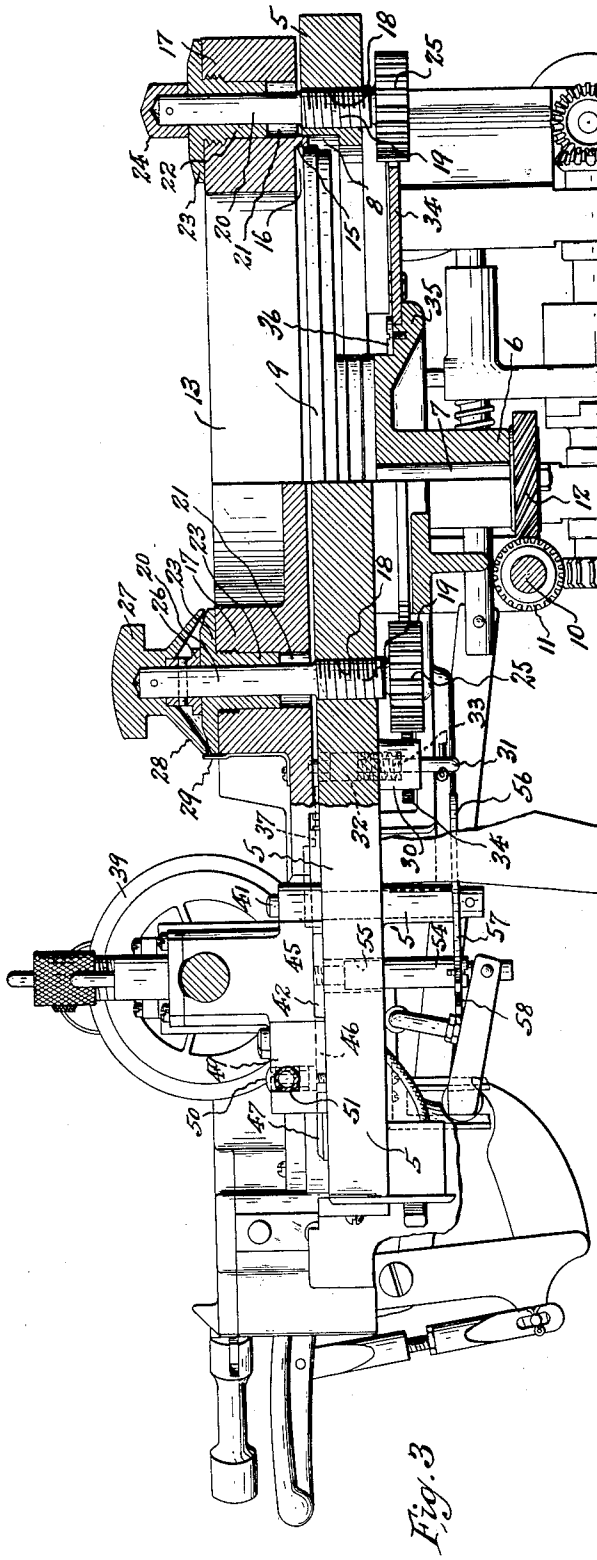


Fig. 3

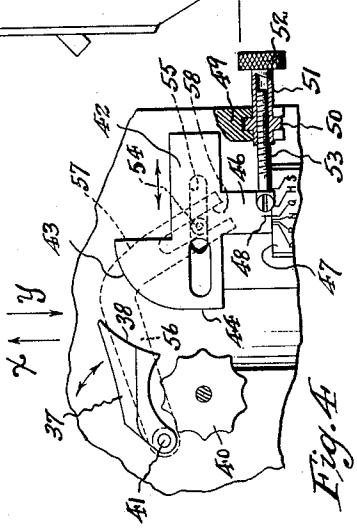


Fig. 4

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UNITED STATES PATENT OFFICE

1,921,155

COIN COUNTING MACHINE

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Application July 7, 1930. Serial No. 466,075

5 Claims. (Cl. 133—8)

This invention relates, generally, to improvements in coin counting machines of the type shown in my prior United States Letters Patent No. 1,389,634, dated September 6th, 1921; and this invention has reference, more particularly, to improvements for guiding and controlling the movement of the coins from the centrifugal feed table to the star-wheel of the counting and registering means.

This invention has for its principal object to provide a novel means for adjusting the coin guideway ring which surrounds the marginal portions of the centrifugal feed table, together with novel means for adjusting the position of the turn-out plate which guides the coins to the counting means star wheel, and also for adjusting the position of the thrust plate which backs the coins in operative engagement with said star-wheel.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

An illustrative embodiment disclosing the improvements made according to this invention is shown in the accompanying drawings, in which:—

Fig. 1 is a plan view of the improved coin counting machine; Fig. 2 is a vertical section of the same taken on line 2—2 in Fig. 1; Fig. 3 is an enlarged part elevation and part vertical sectional view, taken on line 3—3 in Fig. 1; and Fig. 4 is a detail plan view showing the arrangement of parts, whereby the turn-out plate and thrust plate are adjusted to accommodate coins of given diameter.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

In said drawings, the reference character 5 indicates the bed-plate of the machine, the same having a centrally disposed depending bearing 6 in which is journaled a vertical spindle 7. Countersunk in an opening 8 provided in said bed-plate 5, to freely turn therein, is a centrifugal feed table 9 which is affixed to and driven by said spindle 7. Said feed table 9 is driven from the drive shaft 10 upon which is fixed a worm or screw gear 11 adapted to mesh with and drive a worm or screw gear 12 on the spindle 7 which transmits motion to said feed table. Said drive shaft 10 may be itself driven by hand or power as is desired.

Mounted on said bed-plate 5, so as to be registered above said feed table 9, is a coin guiding and controlling means, comprising an annular vertical wall portion 13, from the lower end or bottom of which extends an outwardly projecting horizontally disposed flange portion 14. Said annular portion provides or incloses a coin receiving space or chamber above said feed table, in which the coins to be countered are deposited. Said flange portion 14 is provided at its underside with a depending annular stop flange 15 which projects downwardly into a space provided between the periphery of the feed table 9 and the margin of the opening 8 of said bed-plate 5 in which said feed plate is countersunk. By this formation an annular space or coin run-way 16 is provided intermediate said flange portion 14 and the marginal portions of the feed table 9, said space or coin run-way 16 being open toward the interior of said chamber. The said space or coin run-way 16 is closed at its outer side by the stop flange 15 which surrounds the periphery of the feed table. Said stop flange 15 is cut away at a point adjacent to the counting mechanism of the machine so that the coins may escape from the coin run-way 16 into operative engagement with said counting mechanism.

Said coin guiding and controlling means thus provided is arranged for adjustment toward and away from the feed table 9, whereby the flange portion 14, which is above the upper side of said coin run-way 16, may be raised or lowered, as the case may be, to increase or decrease the height of said coin run-way so as to accommodate the same to the thickness of the particular denomination of coin desired to be counted by the machine at a given time. One of the features of the present invention is to provide a novel and convenient means for adjusting said coin guiding and controlling means by a single operation. To this end there are provided, in circumferentially spaced arrangement in connection with the exterior side of the wall portion 13 and the outwardly extending flange portion 14, a plurality of bosses 17. At points in said bed-plate 5, which are axially aligned beneath said bosses 17, are screw threaded openings 18 in which are threaded jack screws 19. Each jack screw is provided at its upper end with an axial extension 20 arranged to extend upwardly through an opening 21 in the adjacent boss 17. Threaded into the upper end of the boss opening 21 is a bushing 22, the same preferably having an enlarged flange head 23 to engage the upper end of said boss. Secured to the upwardly projecting free end of all but one of said extensions 20, are collars or caps 24. In the arrangement of one of said jack screws 19, a collar 26 is pinned to the exterior projecting

end of its extension 20, and above this collar is secured a finger piece or knob 27, the same having at its lower end a skirt or flange 28 which overhangs and surrounds said collar 26. Secured to the adjacent boss 17 is a pointer finger 29. Inscribed upon the flange 28 of the knob 27, are indicating marks denoting different denominations of coins, whereby, when the knob is turned to bring a selected coin designating mark in registration with the indicating pointer 29, the connected jack screw will have been turned to adjust the coin guiding and controlling means to a height corresponding to the thickness of the coin indicated. Connected with the lower ends of the jack screws 19 are pinions 25. Connected with said bed-plate 5, to underlie the outer margins of the flange 15, are housings 30 in which are vertically slidable lift plungers 31, adapted to yieldably exert lifting or raising pressure upon said coin guiding and controlling means. To this end, the plungers 31 are provided with enlarged portions 32, and compression springs 33 are interposed between said enlarged portions 32 and the bottoms of said housings 30. The means for simultaneously actuating the jack screws 19 in corresponding direction and to corresponding extent, comprises a ring gear 34 which meshes with the several pinions 25. This ring gear is rotatively supported on an annular bearing flange 35 which extends around the bearing 6. Keeper screws 36 have their heads overlapping the inner margins of said ring gear 34 to thereby maintain the same against vertical displacement.

It will be obvious from an inspection of the drawings and from the above description that when the knob 27 is turned clockwise, the jack screw 19 and extension 20 thereof with which the knob 27 is connected, will be rotated to cause the jackscrew to rise in the threaded opening 18. The rotation of this jack screw 19 in turn rotates the pinion 25 connected therewith, which in turn transmits rotary motion to the ring gear 34, whereby the pinions 25 of the remaining jack screws 19 are likewise turned. The upward movement of the jack screws in turn moves upwardly the stop collars 24 and 26, whereby the springs 33 may thrust upwardly the coin guiding and control means, thus permitting the height of the run-way 16 to be increased to accommodate the thickness of the selected coin designated by the position to which the knob 27 has been turned. Conversely, by turning the knob 27 anti-clockwise, the jack screws 19 will be turned downwardly in the threaded openings 18 and the collars 24 and 26 will force the coin guiding and controlling means downwardly against the tension of said lift springs 33, thus diminishing the height of the run-way 16 to accommodate coins of thinner denomination according to the selected setting of the knob 27 relative to the indicating pointer 29.

From the above it will be apparent that by a simple, single manipulation or operation, the coin guiding and control means may be vertically adjusted as desired, thus eliminating the necessity of manipulating a plurality of adjusting means, as has heretofore been the practice, and by so doing assuring equal manipulation of the adjusting means to the end that all parts of the coin guiding and controlling means are equally spaced from the feed table 9 around the entire circumference thereof.

Arranged at one side of the coin escape opening provided by cutting away a portion of the annular stop flange 15 which surrounds the periphery of the feed table 9, is an adjustable turn-out plate or tongue 37 which has a curved guiding edge 38. This turn-out plate 37 intersects the coin run-way 16 so as to present its curved guiding edge 38 in the path of coins carried around by the feed table 9, whereby said coins will be turned and guided outwardly from the feed table and the coin guiding and controlling means, into engagement with a propeller wheel 39 which is rotatably mounted above the bed-plate 5 adjacent to the periphery of a coin engageable star-wheel 40, which is actuated by passing coins to in turn operate the coin counting and registering mechanism of the machine. Said propeller wheel is suitably driven from the drive shaft 10 in the manner usual in machines of this type.

Said turn-out plate is fixed on a vertical arbor 41 which is rotatable in the bed-plate 5 and bearing 5' connected therewith. In this manner said turn-out plate 37 is pivotally mounted to turn or swing in horizontal plane. Slidably mounted upon said bed-plate 5 is a coin thrust plate 42 having a curved portion 43 which lies adjacent to the opposite side of the opening provided by the interrupted annular stop flange 15 so as to be opposed to the curved surface 38 of said turn-out plate 37, and also having an inner end portion 44 which is opposed to the star wheel 40, so as to maintain a coin, propelled past the same by the propeller wheel 39, in operative engagement therewith. Said thrust plate is slidably adjustable toward and away from said star wheel 40 so as to space the same from the latter according to the diameter of the particular denomination of coin being counted. Said thrust plate is guided in its movements by an overlying housing 45. Connected with the outer edge of said thrust plate 42 is an extension 46, the free end of which slidably abuts a fixed gauge plate 47. Said extension 46 is provided with an indicator mark 48 which cooperates with scale marks inscribed upon said gauge plate to indicate the various adjusted positions of the thrust plate corresponding to diameters of different denominations of coins. The means for moving said thrust plate 42 comprises a bracket arm 49 having portions to embrace the flange 50 of an internally threaded adjusting nut 51, which is thereby mounted for rotation while being secured against axial movement. The rear end of said adjusting nut is provided with a finger piece or knob 52 for manipulating the same. Secured to said extension 46 is an adjusting screw 53 which is threaded into said nut 51. It will be obvious that by turning said adjusting nut 51, linear motion is transmitted to said screw 53 in a desired direction to in turn transmit adjusting motion to said thrust plate 43 toward or away from the star-wheel 40, as may be desired.

The means for adjusting the thrust plate 42 thus provided is very simple, easily operated and functions to retain said thrust plate against accidental displacement from its adjusted position in either direction.

In order to provide for better control of the coins as they move outwardly to the propeller wheel, it has been found desirable to also adjust the turn-out plate 37 toward or away from the curved portion 43 of the thrust plate, thus nicely determining the intervening escape space through which the coins pass away from the feed table 9. Such adjustment may be accomplished by swinging the turn-out plate 37 about its pivotal connection provided by the arbor 41.

In order to assure proper adjustment of the turn-out plate, while at the same time permitting the adjustment thereof to be made simultaneously with the adjustment of the thrust plate 42 through a single manipulation, I have provided means for transmitting adjusting movement to said turn-out plate 37 from said thrust plate 42. To this end a stud 54 is provided on the underside of said thrust plate, the same being movable through a slot 55 provided in the bed-plate 5. Secured to the lower end of said arbor 41 is a lever arm 56 having an angular extension 57 at its free end. Said extension 57 is bifurcated, as at 58, to straddle said stud 54 which depends from the thrust plate 42. This arrangement is best shown in Fig. 4 of the drawings, and it will be obvious from an inspection thereof, that when the thrust plate is retracted to a position to accommodate coins of larger diameters, the depending stud 54 will swing the lever arm 56 in the direction of the arrow *x*, thereby swinging the turn-out plate 37 in a corresponding direction. In this manner the intervening escape opening between the thrust plate and turn-out plate will be widened to receive the selected denomination of coin. By moving thrust plate 42 inwardly to accommodate coins of smaller diameter, the depending stud 54 will swing lever arm 56 in the direction of the arrow *y*, thereby swinging the turn-out plate in a corresponding direction and toward the thrust plate so as to reduce the intervening coin escape opening, thereby accommodating the same to the selected coin of smaller diameter.

From the above description it will be apparent that the coin feeding, guiding and controlling means serving to deliver coins to the coin counting and registering means, may, by the improved mechanism afforded by the present invention, be nicely adjusted to the particular size of coin to be counted by but two manipulations; one serving to adjust the height of the coin run-way 16 to accommodate the thickness of the coin, and the other to adjust the thrust plate and turn-out plate to accommodate the diameter of the coin, while at the same time assuring that the outwardly delivered coins will be thrust positively into actuating engagement with the star wheel of said coin counting and registering means.

I do not limit my invention, however, entirely to the simultaneous adjustment of the thrust plate and turn-out plate, since if desired these may be separately adjusted or in some cases the turn-out plate may be of fixed character. I do include within the scope of this invention, however, the positive and simple means for imparting adjusting movement to the thrust plate.

I am aware that many changes could be made in the above described mechanism as well as in the details of the construction thereof, without departing from the scope of this invention, and therefore it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:—

1. In a coin counting machine having a bed-plate, a rotatable feed table flush therewith, and an annular coin guiding means vertically movable relative to said bed-plate and feed table; a plurality of rotatable jack-screws threaded through said bed-plate and having means to connect their upper ends with said guiding means, a freely rotatable ring gear, said jack screws having pinions to engage said ring gear, and one of said jack-screws having manipulatable means for rotating the same.

2. In a coin counting machine having a bed-plate, a rotatable feed table and a coin guiding means movable relative to said bed-plate and feed-table; means for vertically adjusting said guiding means to accommodate the thickness of coin desired to be counted, said adjusting means comprising a plurality of jack-screws threaded through said bed-plate and having means to connect their upper ends with said guiding means, and means for simultaneously transmitting to all other jack-screws the adjusting movement imparted to one of said jack-screws.

3. In a coin counting machine having a bed-plate, a rotatable feed table and a coin guiding means yieldably biased toward raised positions; means for vertically adjusting said guiding means, said adjusting means comprising a plurality of jack-screws threaded through said bed-plate, said jack-screws having extensions engaged through said guiding means, collars on said extensions against which said guiding means is stopped, and means for simultaneously transmitting to all other jack-screws the adjusting movement imparted to one of said jack-screws.

4. In a coin counting machine having a bed-plate, a rotatable feed table and a coin guiding means yieldably biased toward raised positions; means for vertically adjusting said guiding means, said adjusting means comprising a plurality of jack-screws threaded through said bed-plate, said jack-screws having extensions engaged through said guiding means, collars on said extensions against which said guiding means is stopped, and means for simultaneously transmitting to all other jack-screws the adjusting movement imparted to one of said jack-screws, said latter means comprising a freely rotatable ring gear and pinions on said jack-screws to mesh with said ring gear.

5. In a coin counting machine having a counting register, and means for impelling coins into actuating relation to said counting register, a rotatable feed table, and a turn-out plate and a thrust plate movably spaced apart between and by which coins from said feed table are guided to said impelling means; means to simultaneously adjust said plates toward and away from each other according to the diameter of coin desired to be counted, said latter means comprising a rotatable adjusting nut, means for holding said nut against axial movement yet free to turn, an adjusting screw connected with said thrust plate and engaged by said nut, a rotatable arbor upon which said turn-out plate is fixed, a lever arm also fixed to said arbor, said lever-arm having an angularly off-set bifurcate portion at its free end underlying said thrust plate, and said thrust plate having a depending stud to operatively engage said bifurcate portion.

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