

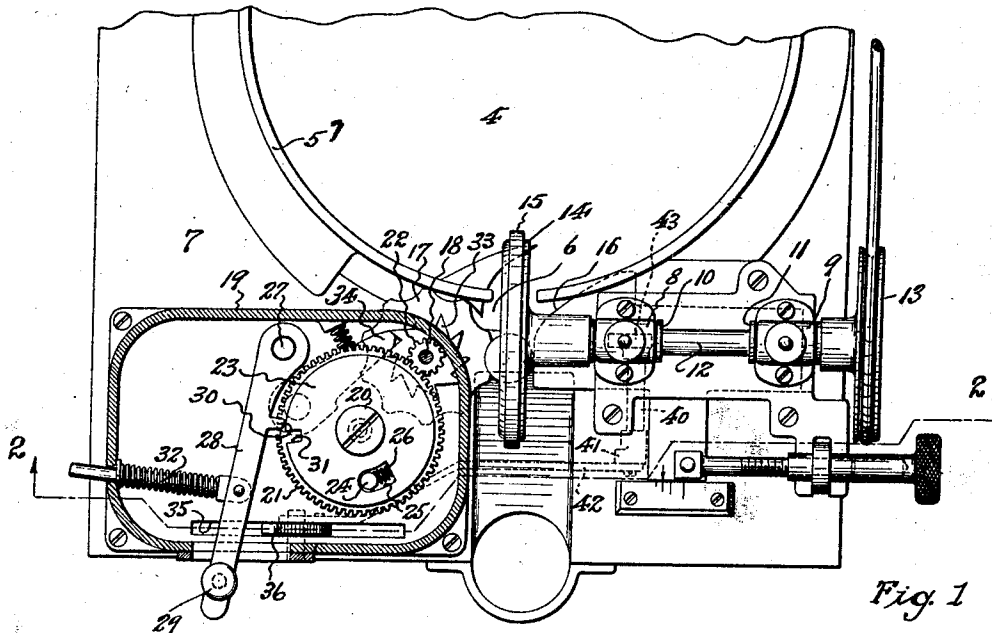
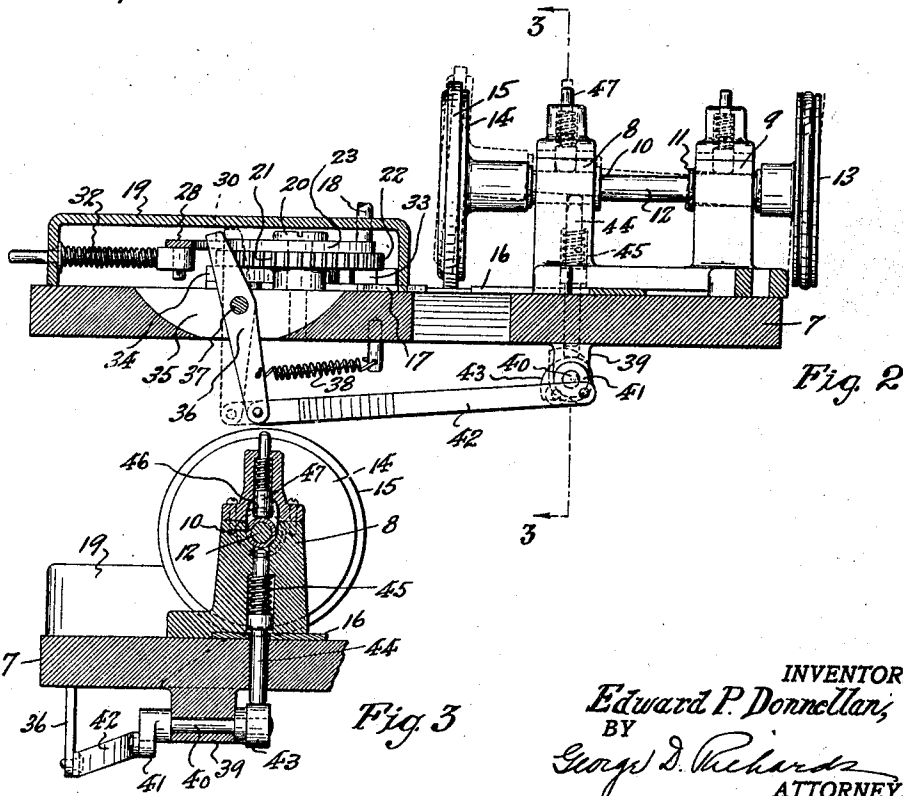
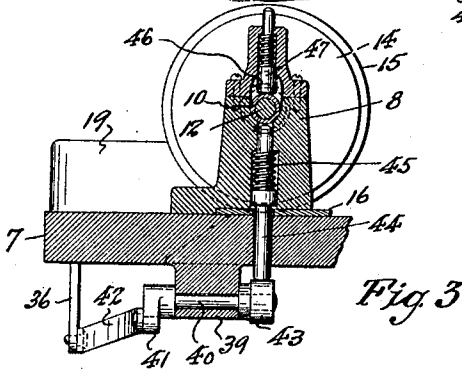
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COIN COUNTING MACHINE

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COIN COUNTING MACHINE

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This invention relates, generally, to improvements in coin counting machines of the general type shown and described in Bock Patent #1,160,830, dated Nov. 16, 1915 and in Donnellan Patent #1,389,634, dated Sept. 6, 1921.

This invention has for its principal object to provide in combination with the locking devices of counting mechanism, a novel means for automatically moving the coin propelling wheel to an inactive position when the counting mechanism locks upon completion of the count of a predetermined number of coins, and whereby said coin propelling wheel resumes active position when the counting mechanism is released for further counting.

Heretofore, in coin counting machines of the kind here involved, the rotating coin propelling wheel, which operates to force coins successively in actuating engagement with the star wheel of the counting mechanism, when the counting mechanism locked against further passage of coins, remained in contact with a following coin restrained against movement by the locked counting mechanism. Since the propelling wheel is urged into frictional engagement with the coins, its continued rotation in contact with a blocked coin was both detrimental to the coin and to the surface of the propelling wheel, since the resultant rubbing friction tended to quickly wear down the wheel surface, requiring frequent replacement of the wheel, while the coin faces would be more or less abraded. By the novel means provided by the present invention such wear and abrasion is avoided, since immediately the counting mechanism is locked, the rotating propelling wheel is lifted away from the blocked coin, and is permitted to rotate freely out of contact therewith until such time as the counting mechanism is released for further counting by coin movement past the star wheel thereof.

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 of mechanism for the purposes above set forth made accord-

ing to the principles of this invention is shown in the accompanying drawings, in which:—

Fig. 1 is a top plan view of portions of a coin counting machine, with parts in section, the same showing the coin propelling control mechanism of this invention; Fig. 2 is a longitudinal vertical section, taken on line 2—2 in said Fig. 1; and Fig. 3 is a fragmentary transverse vertical section, taken on line 3—3 in Fig. 2.

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

Referring now to said drawings, the reference character 4 indicates the centrifugal rotatable feed table which is bounded by the coin guiding wall 5 in connection with which there is a coin escape passageway 6 leading away from said feed table. The feed table 4 is mounted with its upper surface flush with the bed-plate 7 of the machine.

Mounted on said bed-plate 7 is an inner bearing member 8 and an outer bearing member 9 in which are respectively arranged bearing sleeves 10 and 11. Journaled in said bearing sleeves 10 and 11 is a shaft 12, upon the outer end of which is fixed a belt driven pulley 13 by which the shaft is rotated from the power transmission of the machine. Fixed on the inner end of said shaft 12 is a propelling wheel 14, having a peripheral face of suitable frictional material 15. Said propelling wheel 14 is disposed opposite the coin escape passageway 6, so as to engage coins thrown outwardly therethrough from the rotatable feed table 4, and thereupon urge the same forward in actuating engagement with a coin counting mechanism. A coin backing plate 16 is provided outwardly of the propelling wheel to hold the coins moved outwardly by the latter in engagement with the counter disk or star wheel of the coin counting mechanism.

The reference character 17 indicates a counter disk or star-wheel provided at its periphery with a series of marginal depressions adapted to be engaged by the perimeter of a coin propelled in contact therewith by said propelling wheel 14. Preferably said

marginal depressions are ten in number since in counting coins or the like it is customary to count in multiples of ten. Said counter disk or star-wheel is secured to a vertical spindle 18 which is journaled at its lower end in the bed-plate 7, and at its upper end in the top wall of a housing 19 which encloses counting lock mechanism. Said spindle 18 is utilized to transmit actuating impulses to a total adder or register (not shown) which is exteriorly mounted on the housing 19. The counter disk or star-wheel lies flat upon the bed-plate 7 so that it projects into the path of movement of coins delivered to and propelled by the propelling wheel. Rotatably mounted on a journal stud 20 is a gear wheel 21 which meshes with a spur gear 22 fixed upon said spindle 18. Said gear wheel 21 has a preferable ratio of revolution to said spur gear 22 of one to five. Also rotatable on said journal stud 20 is a lock disk 23. Said lock disk 23 is coupled with said gear wheel 21, so as to rotate therewith, by means of a driving stud 24 carried by the latter which enters a slot 25 of the former. Between the forward end of said slot 25 and the driving stud 24 is a compression spring 26 which permits at proper times a relative rotative movement of lock disk 23 and gear wheel 21. Pivoted on a fulcrum stud 27 is a lock lever 28, which extends along one side of said lock-disk 23, with its free end 29 exteriorly projecting from the front of the housing 19. Said lock lever 28 is provided with a laterally projecting lock-tongue 30, which at proper times enters a lock notch 31 formed in the periphery of said lock-disk 23. A spring actuated thrust means 32 is connected with said lock lever 28 to normally urge the same toward the lock-disk 23.

Fixed upon said spindle 18 is a ratchet wheel 33 which is yieldably engaged by a spring-pressed pawl 34, these parts serving to prevent both over-throw and backward movement of the counter-disk or star-wheel and the above-described lock devices.

Extending downwardly through a slot 35 in the bed-plate 7 at a point adjacent to said lock lever 28 is a lever-member 36, which is pivoted on a fulcrum pin 37. Said lever-member 36 is biased by a spring 38 to swing its upper end toward the lock lever 28. Journaled in a bearing 39 on the under side of the bed-plate 7 is a rock-shaft 40. Fixed on the outer end of said rock-shaft 40 is a crank-arm 41. The lower end of said lever-member 36 is connected with said crank-arm 41 by a connecting rod or link 42. Fixed on the inner end of said rock-shaft 40 is a lift-cam 43 which is disposed beneath the location of the inner bearing member 8 of the propelling wheel shaft 12. Vertically slidable through said bearing member 8 is a lift-pin or jack-rod 44, the same being biased toward the lift cam 43 by a spring 45. The

upper end of said lift pin or jack-rod 44 bears against the under side of the bearing sleeve 10. Said bearing member 8 possesses a vertical bearing slot 46 through which said bearing sleeve 10 extends, whereby a limited degree of vertical or up and down movement of said bearing sleeve 10 and the forward end of shaft 12 is permitted. Said bearing sleeve 10 and forward end of shaft 12 are yieldably urged to normal seated relation in the lower end of said bearing slot 46 by a spring pressed plunger 47 carried by the cap of said bearing member 8, all whereby said shaft 12 is normally held in level position wherein it disposes the propelling wheel 14 in operative coin propelling position.

In the operation of the mechanism, the lock lever 28 is swung to the left against the tension of the spring thrust means 32, whereby its lock-tongue 30 is withdrawn from the lock-notch 31 of the lock-disk 23. When said lock-tongue 30 is disengaged from said lock-notch 31, the spring 26 will cause a limited forward rotative movement of the lock-disk 23 independent of the gear-wheel 21, whereby the periphery of said lock-disk 23 is opposed to the lock-tongue 30 so as to ride thereon. When the parts are in this position, the upper arm of the lever member 36 is swung to the left to lie in the path of trip movement of said lock lever 28, while the lower arm of the lever member 36 is swung to the right, whereby said rock-shaft 40 is turned to inactive position in which the jack-rod 44 is lowered and the propelling wheel 14 and its shaft 12 is in turn lowered to operating position. Now as coins or the like are fed outwardly by the centrifugal feed plate 4, the same will pass through the escape passageway 6 so as to be frictionally engaged by the propelling wheel 14, and thus forcibly moved past the counter-disk or star-wheel 17 with actuating effect thereupon. As coins are successively moved into actuating engagement with said counter-disk or star-wheel 17, the rotation thereof will be transmitted through the spindle 18 and spur gear 22 to the gear wheel 21, thus rotating the latter. The rotation of said gear wheel causes the coupling stud 24 to compress the spring 26 and thereupon transmit rotative movement to the lock-disk 23. In the illustrative arrangement shown in the accompanying drawings, the passing of fifty coins or the like in actuating engagement with the star-wheel 17 will produce one complete revolution of the gear-wheel 21 and lock disk 23 driven thereby. On the passing of the fiftieth coin, the lock-notch 31 will be brought opposite the lock-tongue 30 of the lock lever 28, so that the spring thrust means 32 serving the latter will swing the same to the right as said lock tongue enters said lock-notch. The resultant interlocking engagement of lock lever and lock-disk immediately obstructs further

movement of the parts and holds the counter-disk or star-wheel 17 unyieldingly against the thrust of the fifty-first coin or the like.

As the lock lever 28 swings to the described interlocked relation to the lock-disk 23, it presses back the upper arm of the lever member 36, thereby swinging, the lower arm of said lever member to the left. Such movement of the lever member 36 draws the connecting rod or link 42 to the left thus turning the crank-arm 41 and rocking the rock-shaft 40 to thereby rotate the lift-cam 43 in lifting relation to the jack-rod 44. The upward movement of the jack-rod thus caused, produces an up-lifting movement of the bearing sleeve 10 in the bearing slot 46, whereby the inner end of the propelling wheel shaft 12 is swung upward so as to lift the periphery of the propelling wheel away from the blocked coin, without stopping the driven rotation of said propelling wheel.

From the above it will be obvious, that immediately on locking of coin counting mechanism and consequent blocking of following coins against movement, the propelling wheel is raised clear of the blocked coin, and consequently is not allowed to rub thereon in the interval of time during which the counting mechanism remains locked. As a consequence of the lifting clear of the propelling wheel, wear of the same is substantially reduced, so that its effective life is greatly prolonged, while at the same time undesired abrasion of coins or other devices being counted is avoided.

Immediately the operator swings the trip-lever to the left to release the lock-disk, the spring 38 returns lever-member 36 to normal position, which in turn reverses the rotation of the rock-shaft 40 and lift-cam 43, so that the jack-rod 44 is lowered, whereupon the shaft 12 and propelling wheel 14 are returned to normal operative positions, being aided in such return movement by the tension of the spring pressed plunger 47.

I am aware that many changes could be made in the above-described mechanisms 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 counting mechanism including an actuating star-wheel and lock means for said counting mechanism including a spring biased lock lever; a coin propelling wheel to engage and move coins in actuating relation to said star-wheel, a rotated shaft for driving said propelling wheel, bearings for said shaft, the inner of said bearings being adapted to support the wheel carrying end portion of said

shaft subject to vertical play whereby the same may be lifted to raise said propelling wheel out of coin engagement, means to so lift said shaft, and means actuated by a locking movement of said lock lever for operating said lift means.

2. In a coin-counting machine having a counting mechanism including an actuating star-wheel and lock means for said counting mechanism including a spring biased lock lever, a coin propelling wheel to engage and move coins in actuating relation to said star-wheel, a rotated shaft for driving said propelling wheel, bearings for said shaft, the inner of said bearings being adapted to support the wheel carrying end portion of said shaft subject to vertical play whereby the same may be lifted to raise said propelling wheel out of coin engagement, means to so lift said shaft, means to yieldably hold said shaft and propelling wheel in normal operative position, and means actuated by a locking movement of said lock lever for operating said lift means.

3. In a coin-counting machine having a counting mechanism including an actuating star-wheel and lock means for said counting mechanism including a spring biased lock lever, a coin propelling wheel to engage and move coins in actuating relation to said star-wheel, a rotated shaft for driving said propelling wheel, bearings for said shaft, the inner of said bearings being adapted to support the wheel carrying end portion of said shaft subject to vertical play whereby the same may be lifted to raise said propelling wheel out of coin engagement, means to yieldably hold said shaft and propelling wheel in normal operative position, a shaft lifting jack-rod, a lift cam for actuating said jack-rod, and means actuated by a locking movement of said lock lever for operating said lock-lever for operating said lift cam.

4. In a coin-counting machine having a counting mechanism including an actuating star-wheel and lock means for said counting mechanism including a spring biased lock lever, a coin propelling wheel to engage and move coins in actuating relation to said star-wheel, a rotated shaft for driving said propelling wheel, bearings for said shaft, the inner of said bearings being adapted to support the wheel carrying end portion of said shaft subject to vertical play whereby the same may be lifted to raise said propelling wheel out of coin engagement, means to yieldably hold said shaft and propelling wheel in normal operative position, a shaft lifting jack-rod, a lift cam for actuating said jack-rod, a rock-shaft for mounting said lift cam, a crank-arm connected with said rock-shaft, a pivoted lever member, and a connecting rod coupling said lever member and crank-arm, said lever member being operatively en-

gaged by said lock lever on locking movement of the latter.

5 5. In a coin-counting machine having a star-wheel actuated counting mechanism including lock means therefor and a rotated propelling wheel for moving coins in operating engagement with said star-wheel; means actuated by said lock means for moving said propelling wheel out of normal coin propelling position when said counting mechanism is locked.

10 6. In a coin-counting machine having a star-wheel actuated counting mechanism with a rotated propelling wheel for moving coins in operating engagement with said star-wheel together with lock means for said counting mechanism including a spring biased lock-lever; means for moving said propelling wheel out of normal coin propelling position, and means actuated by the locking movement of said lock lever for operating said latter means.

15 7. In a coin-counting machine having a coin operated counting mechanism with a rotatable coin propelling wheel to engage and move coins in actuating relation to said counting mechanism and means to lock said counting mechanism on completion of the count of a predetermined number of coins; means to lift said coin propelling wheel out of coin engagement, and means cooperative with and actuated by said lock means to operate said lift means when said counting mechanism is locked.

20 8. In a coin counting machine having a coin operated counting mechanism with a coin propelling wheel to engage and move coins in actuating relation to said counting mechanism and means to lock said counting mechanism on completion of the count of a predetermined number of coins; a rotated shaft for driving said wheel, bearings for said shaft, the inner of said bearings being adapted to support the wheel carrying end of said shaft subject to vertical play whereby the same may be lifted to raise said wheel out of coin engagement, means to lift said shaft, and means cooperative with and actuated by said lock means to operate said lift means when said counting mechanism is locked.

25 9. In a coin counting machine having a coin operated counting mechanism with a coin propelling wheel to engage and move coins in actuating relation to said counting mechanism and means to lock said counting mechanism on completion of the count of a predetermined number of coins; a rotated shaft for driving said wheel, bearings for said shaft, the inner of said bearings being adapted to support the wheel carrying end of said shaft subject to vertical play whereby the same may be lifted to raise said wheel out of coin engagement, means to yieldably hold said shaft and wheel in normal operative position,

a shaft lifting jack-rod, a lift cam for actuating said jack-rod, and means cooperative with and actuated by said lock means to operate said lift cam when said counting mechanism is locked.

70 10. In a coin counting machine having a coin operated counting mechanism with a coin propelling wheel to engage and move coins in actuating relation to said counting mechanism and means to lock said counting mechanism on completion of the count of a predetermined number of coins; a rotated shaft for driving said wheel, bearings for said shaft, the inner of said bearings being adapted to support the wheel carrying end of said shaft subject to vertical play whereby the same may be lifted to raise said wheel out of coin engagement, means to yieldably hold said shaft and wheel in normal operative position, a shaft lifting jack-rod, a lift cam for actuating said jack-rod, a rock-shaft for mounting said lift-cam, a crank-arm connected with said rock-shaft, a lever member, a connecting rod coupling said lever member and crank-arm, and a spring biased lock-lever cooperative with the counting mechanism lock means, said lock-lever being adapted to actuate said lever-member when moved to locking position.

95 In testimony, that I claim the invention set forth above I have hereunto set my hand this 11th day of April, 1930.

EDWARD P. DONNELLAN.

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