May 6, 1947. P. B. KELLER 2,420,246

COIN BANK

Filed June 17, 1946

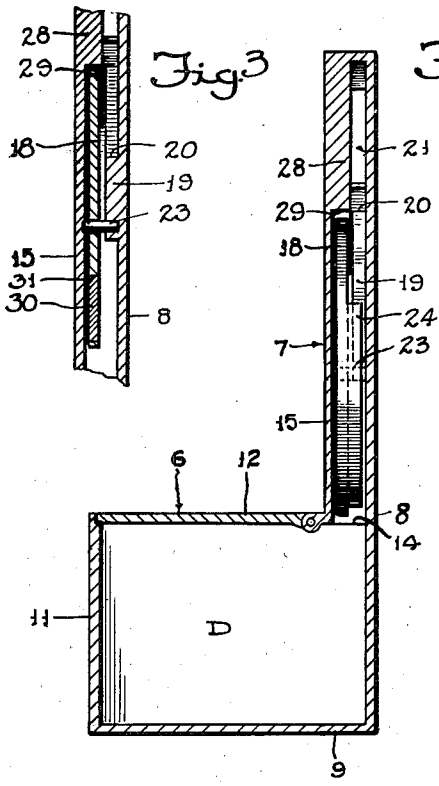


Fig. 3

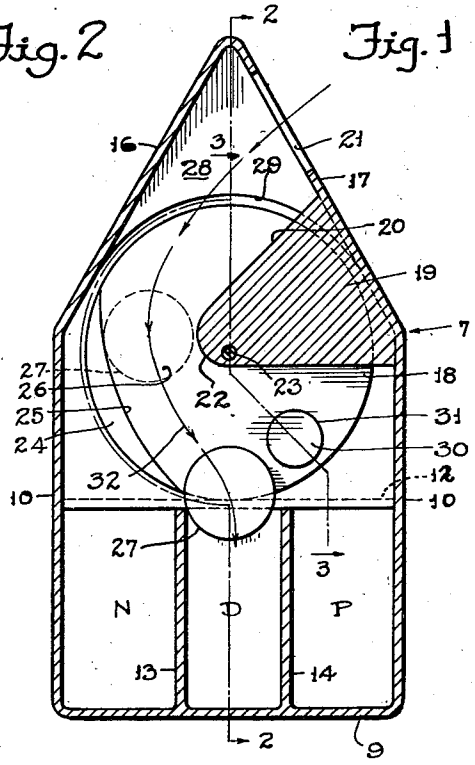


Fig. 2

Fig. 1

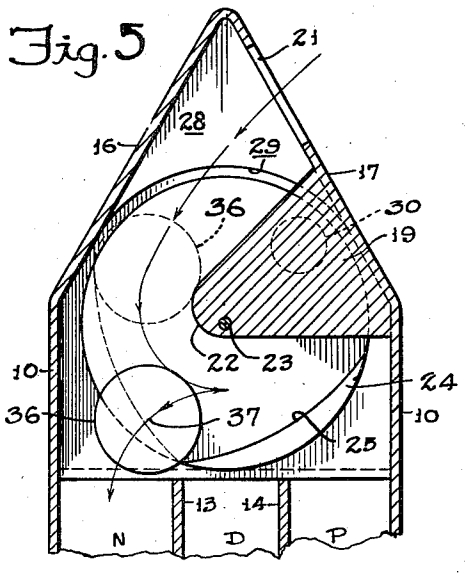


Fig. 5

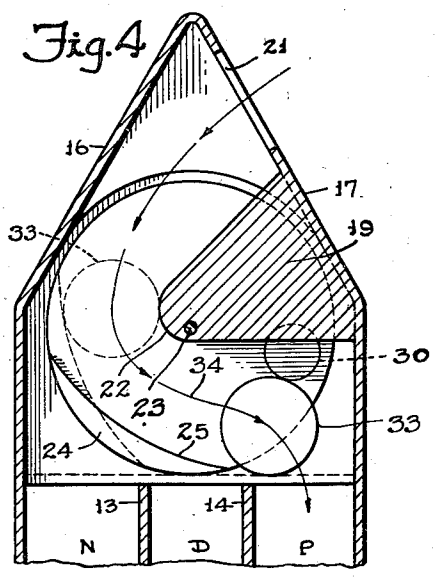


Fig. 4

INVENTOR
PHILIP B. KELLER
By Lyman Latta
ATTORNEY

Patented May 6, 1947

2,420,246

UNITED STATES PATENT OFFICE

2,420,246

COIN BANK

Philip B. Keller, Santa Monica, Calif.

Application June 17, 1946, Serial No. 677,140

16 Claims. (Cl. 232—5)

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This invention relates to coin banks and has as its general object to provide a coin bank that will accept and classify several different sizes of coins.

It is an object of the invention to provide a coin bank having a single receiving slot into which the coins of several sizes may be inserted, and having mechanism adapted to direct the several coins to separate receptacles, one for each size of coin.

Another object of the invention is to provide a coin bank in which the operation of the mechanism is fully visible. In this respect, the invention contemplates encouraging a child to save money. By providing for visibility of operating mechanism, the bank creates an interest in saving that would otherwise be absent.

A further object of the invention is to provide a bank in which the aforesaid objects are accomplished by mechanism that is relatively simple and inexpensive in construction.

Other objects of the invention will become apparent in the ensuing specification and appended drawings, in which:

Fig. 1 is a vertical sectional view of a coin bank embodying my invention;

Fig. 2 is a side view of the bank with the operating mechanism shown in section as indicated by the line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional view of the bank taken on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view similar to Fig. 1, with the operating parts shown in a different position; and

Fig. 5 is a sectional view similar to Fig. 1 with the operating parts shown in another position.

As an example of one form in which the invention may be embodied, I have shown in the drawings a coin bank which comprises generally a receptacle portion 6 and classifying mechanism 7 projecting upwardly from the receptacle portion 6. The bank has a forward wall 8 which forms one end of the receptacle portion 6 and also constitutes the forward or window portion of the classifying mechanism 7. The wall 8 is of transparent material such as for example "Plexiglas," in order that the operating mechanism may be fully visible therethrough.

In addition to the forward wall 8, the receptacle portion 6 is provided with a bottom wall 9, side walls 10, a rear wall 11, and a top wall 12. A pair of partition walls 13 and 14 divide the interior of the receptacle portion 6 into three receptacles N (for nickles) D (for dimes) and P (for pennies). The receptacles can of course be de-

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signed for any other series of three different sizes of coins for which the receptacle N is adapted to receive the largest coin, the receptacle D the smallest coin, and the receptacle P, an intermediate size coin.

The classifying mechanism 7 is provided with a casing which includes the forward wall 8, side walls 10, and a rear wall 15. At their upper ends, the side walls 10 are inclined toward each other at 16 and 17 and joined together at a peak.

The classifying operation is effected by a rotatable classifying disc 18 in cooperation with the receptacles N, D and P. The disc 18 is rotatably mounted between the wall 15 and a wedge-shaped raised section 19 on the wall 8. The upper edge 20 of the raised section 19 provides a ramp or rollway for a coin that has been passed through a receiving slot 21 in the upper region of the inclined wall portion 17. One side of the raised section 19 is attached to the wall portion 17, and the apex or nose 22 of the raised portion 19, opposite this attached side, is located approximately at the center of the disc 18. The nose 22 forms a continuation of the rollway 20. The disc is rotatably mounted at its center upon a pivot 23 which is mounted in the walls 8 and 15 respectively, passing through the lower region of the nose 22. The nose 22 is eccentric to the pivot 23 and located largely above said pivot.

The disc 18 is provided with a crescent-shaped barrier 24 having a concave edge 25 facing the surface of the nose portion 22. The edge surface 25 cooperates with the nose surface 22 to define a classifying pass 26 which, in the normal position of the disc 18 shown in Fig. 1 has a minimum width. This dimension is sufficient to permit the smallest coin 27 to pass, but is not sufficiently wide to pass either of the other two coins.

The wall 15 is provided with a raised section 28 which lies above the disc 18 and has a lower edge 29 following the contour of the disc 18 and spaced therefrom. The raised section 28 lies in the same plane with the disc 18 and its inner surface is substantially flush with the inner surface of the disc 18. The barrier 24 lies in the same plane with the raised section 19 of the wall 8. In the same plane is a winding passage which begins with the slot 21, extends between the wall portion 16 and rollway 20, includes the pass 26, and terminates in a space between the raised section 19 and the receptacles N, D and P. Consequently, a coin inserted through the slot 21 will follow this passage to the pass 26 and into contact with the barrier 24. From this point it will move through the lower region of the passage into one

of the several receptacles, depending upon its size.

A counterweight 30, of a heavier material than the material of the disc 18, is mounted in an opening 31 in the disc, as an insert. The counterweight 30 is so positioned as to always resist a tendency of the disc 18 to rotate counter-clockwise from its normal position shown in Fig. 1. In this normal position, the counterweight 30 just balances the weight of the barrier 24 so as to produce a state of equilibrium.

In the operation of my improved coin classifying bank, the smallest coin 27, after passing freely through the pass 26, will roll along the edge 25 of the barrier 24 along the path indicated by the arrow 32 and will thus be guided into the central receptacle. Referring now to Fig. 4, the intermediate size coin, indicated at 33, is too large to pass freely through the pass 26 and therefore will temporarily be arrested between the nose 22 and the edge 25 of the barrier 24, as indicated in dotted lines in Fig. 4. The weight of the coin 33 as thus arrested, exerted against the barrier 24, will push the barrier downwardly and thus cause the disc 18 to rotate until the barrier has reached a position approximately as shown in full lines in Fig. 4. In moving to this position, the barrier will have opened up the pass 26 so as to permit the coin 33 to pass therethrough, and will then provide, in its upper surface 25, a rollway down which the coin 33 will roll along the path indicated by the arrow 34, until the coin is delivered into the receptacle P. The rotation of the disc 18 to this position will carry the counterweight 30 to a higher level from which it exerts a greater torque against the disc 18, and after the coin has passed beyond the barrier 24, the counterweight will rotate the disc back to its normal position.

Referring now to Fig. 5, the largest coin, indicated at 36, will likewise be arrested at the pass 26, as indicated in dotted lines in Fig. 5, and will exert downward pressure against the barrier 24 such as to cause the disc 18 to rotate in a counterclockwise direction. Before this coin can negotiate the pass 26, however, the disc 18 will have rotated to such an extent that the coin 36 will continue to remain in contact with the end of the barrier 24 which it first contacted and will never pass the center of the barrier. Consequently, the barrier 24 will be pushed around to the extreme position shown in Fig. 5 in full lines, in which position the inclination of its surface 25 will have become reversed, causing the coin 36 to back-track as indicated by the arrow 37, and to roll back into the first receptacle N.

The inward divergence of the edge 25 from the periphery of the disc 18 tends to narrow the pass 26 from the upper end of the barrier 24 toward the intermediate region thereof. However, the eccentricity of the nose surface 22 permits the pass 26 to be widened by the counter-clockwise rotation of the barrier 24. Nevertheless, the pass does not, at any point in the rotation of the disc, become sufficiently widened to permit the coin 36 to roll past the wider intermediate region of the barrier 24, and consequently the coin 36 continues to rotate the disc until the space between the barrier 24 and the raised section 19 ceases to widen and commences to become more narrow, thereby blocking further movement of the coin in the counter-clockwise direction and causing it to back-track.

It will be obvious from the foregoing that construction of my improved coin bank is exceedingly simple for a coin classifying device. Consequently, the bank may be made in very large quantities and sold as a children's savings bank. In watching the various classifying actions described above, a child will be greatly stimulated to insert coins in the bank, and his savings instincts will thereby be promoted and developed.

The entire bank may be formed of transparent material, in order that the extent to which the receptacles have been filled may at all times be apparent. Alternatively, the walls of the bank may be of opaque material such as for example, colored plastic material, with only the wall 8 of transparent material.

I claim as my invention:

1. In a coin-classifying bank, means defining a coin passage, said means including a fixed rollway and a rotatable disc having a barrier spaced from an extremity of said rollway to define a restricted pass that is adapted to be widened by downward movement of said barrier, and a plurality of receptacles one of which is positioned to receive a coin passing freely through said pass in the normal position of said barrier, and another of which is positioned to receive a larger coin delivered from said barrier in a shifted position thereof resulting from said larger coin becoming arrested at said pass and exerting downward pressure against said barrier such as to rotate said disc.

2. In a coin-classifying bank, means defining a coin passage, said means including a fixed rollway and a rotatable disc having on one side thereof a barrier lying in the plane of said rollway and spaced from an extremity thereof to define a restricted pass that is adapted to be widened by downward movement of said barrier, and a plurality of receptacles one of which is positioned to receive a coin passing freely through said pass in the normal position of said barrier and another of which is positioned to receive a larger coin delivered from said barrier in a shifted position thereof resulting from said larger coin being arrested in said pass and exerting downward pressure against said barrier such as to rotate said disc.

3. In a coin-classifying bank, means defining a coin passageway, said means including a rollway inclined downwardly from the entrance of said passageway and a rotatable disc having a barrier lying in the plane of said rollway and spaced from the lower extremity thereof to define a restricted pass that is adapted to be widened by downward movement of said barrier, and a plurality of receptacles one of which is positioned to receive a coin passing through said pass freely in the normal position of said barrier and another of which is positioned to receive a larger coin delivered from said barrier in a downwardly and laterally shifted position of the latter resulting from said larger coin being arrested at said pass and thereby caused to exert downward pressure against said barrier such as to rotate said disc.

4. In a coin-classifying bank, means defining a coin passageway, said means including a rollway inclined downwardly from the entrance of said passageway, and a rotatable disc having a barrier spaced from the lower extremity of said rollway to define a restricted pass, said barrier having a normal position extending generally vertically and being adapted, under the weight of a coin arrested at said pass, to shift downwardly to a position inclined more toward the horizontal, and being so related to said rollway extremity as to widen said pass as it thus shifts downwardly, and a plurality of receptacles one of which is

positioned to receive a coin passing freely through said pass in said generally vertical position of the barrier and another of which is positioned to receive a larger coin delivered from said barrier in the aforesaid inclined position thereof resulting from the arresting of said larger coin at said pass and the consequent exerting of downward pressure against said barrier.

5. In a coin-classifying bank, means defining a coin passageway, said means including a rollway inclined downwardly from the entrance of said passageway and a disc having on one side thereof a barrier providing an edge surface opposed to the lower extremity of said rollway to define a restricted pass, said edge surface having at least a portion thereof diverging from the periphery of said disc in a downward direction, and said lower extremity of the rollway having a rounded nose surface that is eccentric to the axis of rotation of the disc and disposed predominately above said axis, whereby a coin of a proper size may pass freely through said pass in the normal position of said barrier whereas a larger coin may partially enter said pass and be arrested between said edge surface and said rounded nose and be thereby caused to exert downward pressure against said barrier such as to cause said disc to rotate and consequently widen said pass sufficiently to permit said coin to roll downwardly along the edge of said barrier, and a plurality of receptacles one of which is positioned to receive a coin passing freely through said pass in the normal position of said barrier and another of which is positioned to receive a larger coin delivered from said barrier in the downwardly shifted position thereof.

6. In a coin-classifying bank, means defining a coin passage, said means including a casing having a slot forming the inlet end of said passage, a rollway inclined downwardly from said slot, fixedly associated with said casing, and having a curved nose extremity at its lower end, a disc rotatably mounted in said casing on an axis eccentric to and lying below the center of curvature of said nose extremity, and a meniscus-shaped barrier carried by said disc, lying in the plane of said rollway and spaced from said curved nose portion to define a restricted pass that is adapted to be widened by downward movement of said barrier; and a plurality of receptacles one of which is adapted to receive a coin passing freely through said pass in the normal position of said barrier and another of which is adapted to receive a larger coin that has been temporarily arrested at said pass and thereby caused to bring downward pressure against said barrier such as to rotate said disc to a position in which said barrier will guide said larger coin into said other receptacle.

7. A coin bank as defined in claim 1, in which said disc is provided with a counterweight adapted to counter-balance said barrier in a normal position thereof in which said barrier projects upwardly along one side of the disc, and to return said disc to said normal position of the barrier after the disc has been rotated.

8. In a classifying coin bank, means defining a coin passage, said means including a downwardly inclined rollway, and a rotatable disc having a barrier spaced from an extremity of said rollway to define a restricted pass, and three coin receptacles disposed below said disc, said barrier being arranged to guide a coin of minimum size through said pass into a first receptacle, to be moved downwardly by an intermediate sized coin

temporarily arrested at said pass, and to thereby move to an inclined position in which said pass is widened sufficiently to permit said intermediate sized coin to pass therethrough and in which position it will then guide said intermediate sized coin to a second receptacle, and to be moved by a maximum sized coin to a position in which its direction of inclination is reversed with reference to the aforesaid inclined position, in which position of reversed inclination, said maximum sized coin will back-track and move into the third receptacle.

9. In a coin-classifying bank, a casing having formed in its lower region a first, an intermediate and a third receptacle respectively, means defining a coin passageway above said receptacles, said means including a portion of said casing projecting above said receptacles and a rotatable disc mounted therein, said rotatable disc having a barrier extending along a portion of the periphery thereof at one side thereof and normally positioned roughly vertically with its lower end disposed to guide a coin into said intermediate receptacle, and a downwardly inclined coin rollway fixed in said casing and having a rounded nose extremity spaced from said barrier to define a restricted pass in said passageway, adapted to freely pass a coin of minimum size but to arrest coins of larger size, said barrier being so related to said nose extremity and said nose extremity being of such eccentricity relative to the axis of rotation of said disc and being so disposed above said axis, that an intermediate-sized coin, arrested at said pass, will bear downwardly against said barrier, causing said disc to rotate until the upper end of said barrier has moved away from said rounded nose to widen said pass sufficiently to permit said intermediate sized coin to freely move therethrough, while at its lower end a coin of maximum size, arrested at said pass, will continue to bear against said barrier, rotating said disc, without widening said pass sufficiently to permit said maximum-sized coin to pass therethrough, until said barrier has been moved past bottom dead center and into a position of reversed inclination such as to cause said maximum-sized coin to back track and be guided by the formerly upper end of said barrier into said first receptacle.

10. A classifying-coin bank comprising a transparent casing means and a disc rotatably mounted therein and cooperating with said casing means to define a coin passageway, said disc having a barrier attached thereto and said casing having rigidly associated therewith, a downwardly inclined coin rollway the lower extremity of which is spaced from said barrier to define a restricted pass, said lower extremity lying largely above the axis of rotation of said disc whereby downward movement of said barrier may widen said pass, and a plurality of receptacles one of which is positioned to receive a coin of minimum size passing freely through said pass and guided by said barrier in its normal position, and another of which is positioned to receive a larger coin arrested at said pass and exerting downward pressure against said barrier such as to move the same to a position for guiding it into said other receptacle, said transparent casing permitting visual inspection of the operation of said disc.

11. In a coin-classifying bank, means defining a coin passage, said means including a fixed abutment and a rotatable disc having a barrier spaced from said fixed abutment to define a restricted

pass that is adapted to be widened by downward movement of said barrier, and a plurality of receptacles one of which is positioned to receive a coin passing freely through said pass in the normal position of said barrier, and another of which is positioned to receive a larger coin delivered from said barrier in a shifted position thereof resulting from said larger coin becoming arrested at said pass and exerting downward pressure against said barrier such as to rotate this disc.

12. In a coin-classifying bank, means defining a coin passageway, said means including a fixed abutment and a rotatable disc having a barrier spaced from said abutment to define a restricted pass, said barrier having a normal position extending generally vertically and being adapted, under the weight of a coin arrested at said pass, to shift downwardly to a position inclined more toward the horizontal, and being so related to said abutment so as to widen said pass as it thus shifts downwardly, and a plurality of receptacles one of which is positioned to receive a coin passing freely through said pass in said generally vertical position of the barrier and another of which is positioned to receive a larger coin delivered from said barrier in the aforesaid inclined position thereof resulting from the arresting of said larger coin at said pass and the consequent exerting of downward pressure against said barrier.

13. In a coin-classifying bank, means defining a coin passageway, said means including a fixed abutment, a disc having on one side thereof a barrier providing an edge surface opposed to said abutment to define a restricted pass, said edge surface having at least a portion thereof diverging from the periphery of said disc in a downward direction, and said abutment having a rounded edge surface that is eccentric to the axis of rotation of the disc and disposed predominantly above said axis whereby a coin of proper size may pass freely through said pass in the normal position of said barrier whereas a larger coin may partially enter said pass and be arrested between said edge surfaces of said barrier and abutment respectively and be thereby caused to exert downward pressure against said barrier such as to cause said disc to rotate and consequently widen said pass sufficiently to permit said coin to roll downwardly along said edge surface of the barrier, and a plurality of receptacles one of which

is positioned to receive a coin passing freely through said pass in the normal position of said barrier and another of which is positioned to receive a larger coin delivered from said barrier in the downwardly shifted position thereof.

14. A coin bank as defined in claim 12, in which said disc is provided with a counterweight adapted to counter-balance said barrier in the aforesaid normal position and to return said disc to said normal position of the barrier after the disc has been rotated.

15. In a coin-classifying bank, means defining a coin passage, said means including a fixed abutment and a rotatable disc having a barrier spaced from said abutment to define a restricted pass, and three coin receptacles disposed below said disc, said barrier being arranged to guide a coin of minimum size through said pass into a first receptacle, to be moved downwardly by an intermediate-sized coin temporarily arrested at said pass, and to thereby move to an inclined position in which said pass is widened sufficiently to permit said intermediate-sized coin to pass therethrough and in which position it will then guide said intermediate-sized coin to a second receptacle, and to be moved by a maximum-sized coin to a position in which its direction of inclination is reversed with reference to the aforesaid inclined position, in which position of reversed inclination said maximum-sized coin will backtrack and move into the third receptacle.

16. A coin-classifying bank comprising a transparent casing means and a disc rotatably mounted therein and cooperating with said casing means to define a coin passageway, said disc having a barrier attached thereto and said casing having a fixed abutment spaced from said barrier to define a restricted pass, said abutment lying largely above the axis of rotation of said disc whereby downward movement of said barrier may widen said pass, and a plurality of receptacles one of which is positioned to receive a coin of minimum size passing freely through said pass and guided by said barrier in its normal position, and another of which is positioned to receive a larger coin arrested at said pass and exerting downward pressure against said barrier such as to move the same to a position for guiding said larger coin into said other receptacle, said transparent casing permitting visual inspection of the operation of said disc.

PHILIP B. KELLER.