F. D. LEWIS.

AUTOMATIC COIN STACKER.

APPLICATION FILED MAR. 26, 1920.

1,371,383.

Patented Mar. 15, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

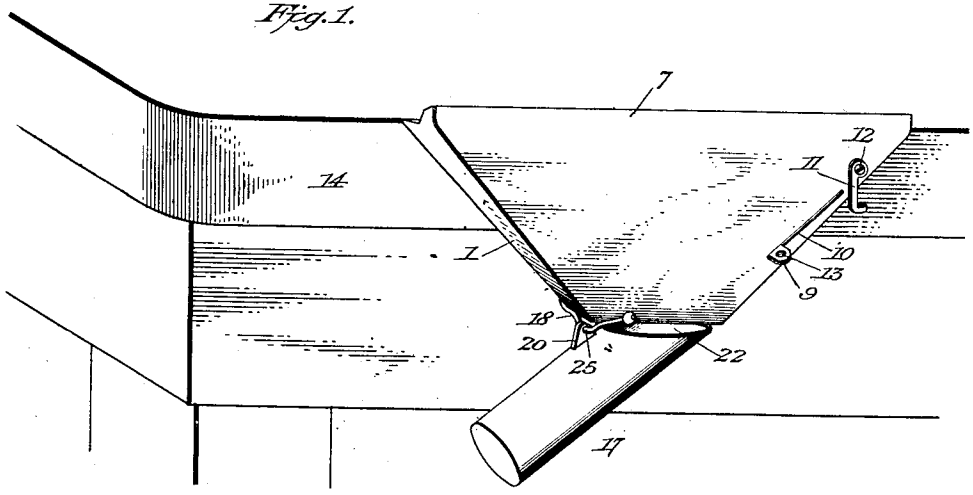


Fig. 2.

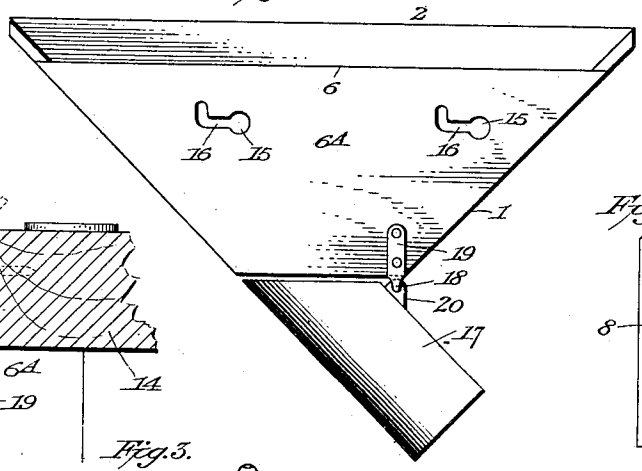


Fig. 4.

Fig. 9.

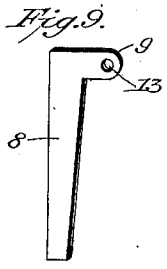


Fig. 3.

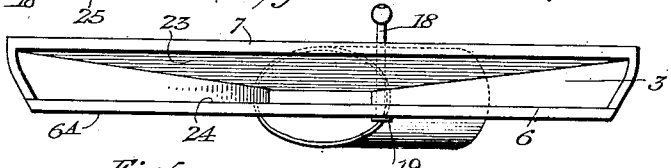


Fig. 5.

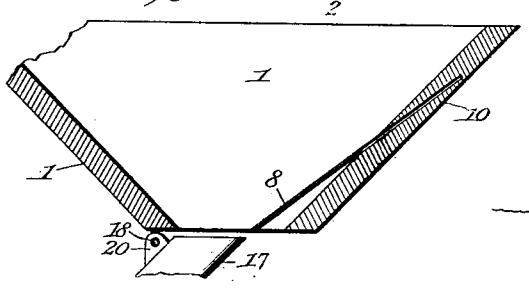
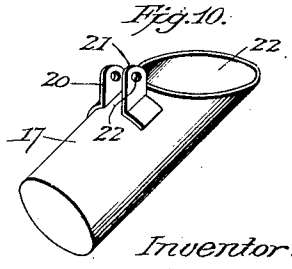


Fig. 10.



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2 SHEETS—SHEET 2.

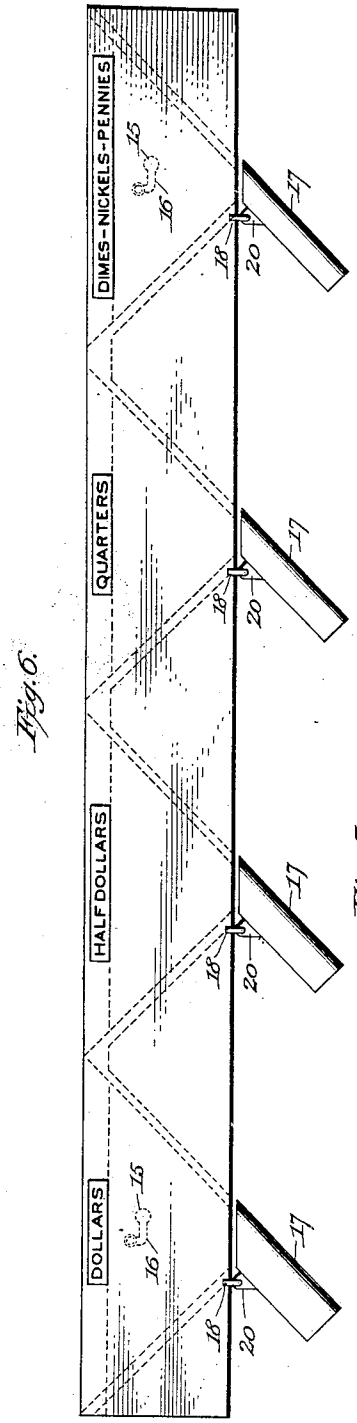


Fig. 6.

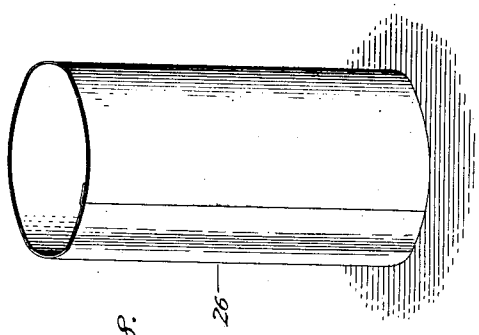


Fig. 8.

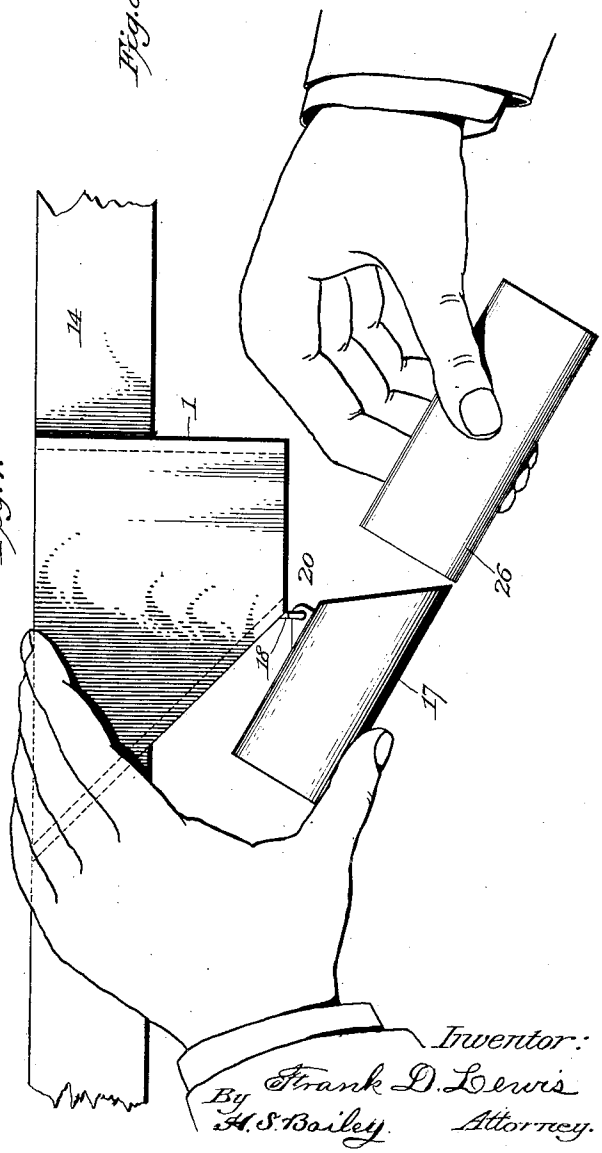


Fig. 7.

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UNITED STATES PATENT OFFICE.

FRANK D. LEWIS, OF DENVER, COLORADO.

AUTOMATIC COIN-STACKER.

1,371,383. Specification of Letters Patent. Patented Mar. 15, 1921.

Application filed March 26, 1920. Serial No. 368,941.

To all whom it may concern:

Be it known that I, FRANK D. LEWIS, a citizen of the United States of America, residing at the city and county of Denver and State of Colorado, have invented a new and useful Automatic Coin-Stacker, of which the following is a specification.

My invention relates to a new type of an automatic coin stacker, and the objects of my invention are:

First: to provide a coin stacker that is provided with pivotally swinging coin receiving receptacles for all sizes of coins.

Second: to provide a coin stacker that is adapted to be made of such varying lengths and sizes as to receive any predetermined number of coins and that will receive coins of different sizes.

Third: to provide a coin stacker that is pivotally hinged to its receiving hopper so that it can be instantly emptied when full, and that is also so connected to its hopper that when it is emptied an operator can hold a paper coin receiving tube in one hand and empty the full coin receptacle directly into it.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of my automatic coin stacker, illustrating it secured to the edge of a desk or table in its operative position to receive and stack coins.

Fig. 2 is a side elevation of that side of the stacker that is secured to the edge of the table.

Fig. 3 is a top plan view of my automatic coin stacker.

Fig. 4 is a section through the hopper portion of the stacker and of the edge portion of a table, showing the method I preferably use to secure it to the edge of a table or desk.

Fig. 5 is a longitudinal section of the hopper portion of my coin stacker, showing the adjustable means I employ to enable two or more sizes of coins to drop through the aperture in the bottom of the hopper into the coin receptacle.

Fig. 6 is a front view, illustrating a modification of the stacking, in which a plurality of coin-receiving hoppers are combined in one device, and arranged to receive dollars, half dollars and quarters, in the order named, the last hopper of the series being for the reception of dimes, nickels and pennies.

Fig. 7 is a front view of a form of hopper having one vertical end, and one end at an angle of forty-five degrees, the said view also illustrating the manner of tipping the coin stacker in order to empty the contents into a paper tube or receiver.

Fig. 8 is a perspective view of one of the paper tubes that receives the stacked coins from the coin stacking cylinders.

Fig. 9 is a perspective view of the adjustable slide for varying the size of the outlet of the coin-receiving hopper. And

Fig. 10 is a perspective view of a receiving and stacking cylinder provided with an additional suspending ear for the purpose of steadying the said cylinder.

Similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings:

The numeral 1, designates the casing of my automatic coin stacker, which may be made of wood, metal or any other suitable material. I make this casing preferably in the form of a hollow narrow hopper, that is also preferably made in the form of a triangle, in side elevation, as shown in Fig. 1. Its top edge 2, which is its coin-receiving edge, is provided with a slot 3, that is wide enough to allow a silver dollar to over-balance and fall into its slot portion, when the dollar is lying flat on the table and is pushed into the top of the slot of the hopper.

The slot is made the full length of the top of the hopper, and it follows the converging angles of the opposite ends of the hopper, and the two ends, in the style of coin stacker shown in Fig. 1. But in the style of hopper shown in Fig. 7, the slot also follows the straight up and down side of the stacker and also the angle of its angular converging end that extends from the top down to its bottom end, from which the coin drops into the coin receptacle.

In order that the coins may easily overbalance and fall into the slot in the hopper, I curve the upper edge 6, of the inside 6^A, of the hopper, that rests against the edge of the table, inwardly and downwardly, and also make the opposite outside part 7, of the casing enough higher than the inside edge

6A, to allow the edge of the dollar or other coin to strike against its inside surface. The slot, however, at its upper end is wide enough so that dollars, when they are pushed with force enough to strike the inside of the surface of the outside part of the hopper, are so considerably over-balanced that they cannot possibly fail to tip down and fall edgewise into the slot of the hopper.

This slot 3, extends throughout the entire form and shape of the hopper, except the thickness of the material of which the hopper is made. Consequently, if the hopper is made of metal such as tin, sheet brass, aluminum, or of wood, its sides and ends need not be and would not be very thick.

The hopper is formed so that its slot is the widest at its coin entrance end, and it tapers slightly smaller down to its coin discharging end, where it is just large enough to allow the coins to drop freely through it.

I contemplate making my coin stacker either in single coin receiving stackers, or as combination coin stackers, or as a stacker that is provided with all of the triangular slot coin receiving compartments that are necessary to receive all of the several kinds of coins in our monetary system, as shown in Fig. 6, in which the hopper is made long enough to provide separated compartments for the dollars, and the half dollars, and the quarters, and a compartment for the dimes, the nickels and the cents. These last three mentioned are moved into and dropped through this one compartment, the discharge slot in the bottom of which is opened or closed by a slide 8, which comprises a tongue or blade that is slidably placed against one of the sides of the bottom of the hopper in a position to be moved to close or to open wider the discharge aperture to accommodate whichever one of these three small coins is being stacked.

The upper end of this slidable blade 8, is provided with a finger grasping portion 9, which projects through a slot 10, that is formed through the side of the hopper within easy reach of the operator.

The blade is arranged to be secured in that position of its sliding movement in the hopper in which it does not in the least close the aperture formed in the bottom of this triangular shaped slot of this compartment of this long multi-compartment hopper.

My invention contemplates any quickly applied and releasing means for locking the slidable blade in its position of disuse, or drawn back from the coin discharging aperture of the hopper. I preferably, however, use a hook 11, that is secured to the outside 7, of the hopper by a screw-eye member 12, and the finger grasping member of the sliding blade is provided with an aperture 13, through it, in which the point of the hook fits loosely.

When the sliding blade is released from the hook, it is pushed down until its lower end strikes against the bottom side edges of the hopper, and it will stay there, owing to its downward inclination in the hopper, and when it is down it admits only the smallest of the coins that this compartment is adapted to allow to pass through it.

The hopper portion of my coin stacker is adapted to be secured to the edge of a table or desk 14, as shown in Fig. 1, and my invention contemplates any means for removably securing or attaching it to the desk or table. I preferably, however, secure the stacker to a table or desk in the following manner: In the inner side 6A, of the hopper, I form two screw or tack head receiving apertures 15, that extend through the side 6A, and that are positioned at a short distance below the top edge 6, of the hopper and at any predetermined distance from the opposite ends of the hopper; and laterally from the same sides of these apertures, slots 16 are extended at short but equal distances, that are wide enough to receive loosely the shank or stem of the tack or screw, and the ends of these slots are turned upwardly just enough to allow the hopper to be moved down so that the stems or bodies of the screws or tacks will fit up into these upturned ends of the slots 16, which brings the stems or bodies of the tacks or of the screws out of alinement with the longitudinal slots through the side of the hopper, and prevents the hopper from being moved sidewise while the weight of the hopper hangs firmly down on the tacks or screws, and it is thus held firmly and securely, and at the same time it can be instantly removed from the headed screws or tacks, which are left permanently in the edge of the desk or table.

To the bottom of the hopper I pivotally and removably secure coin receiving cylinders 17, which are made in the various sizes to receive and stack automatically within themselves, dollars, half dollars, quarters, dimes, nickels and pennies, and these several sizes of coin receiving cylinders are made and arranged coöperatively with the bottom portion of the hopper, to be quickly interchanged one with another on the bottom of the hopper.

My invention also contemplates that these automatic coin stacking cylinders should be arranged so that each one can be quickly tipped up the instant it is filled with coin, and that the stack of coins in them can be emptied quickly into a paper tube, in which they are secured by folding the open end of the paper tube inwardly and tightly over and against the coin in it.

My invention contemplates any suitable means for carrying into practical operation these several features of my invention.

I have, preferably however, illustrated the following simple mechanism by which an operator can instantly empty the cylinders when full, and can also change them quickly from one coin receiving size to any other desired.

To one of the lower corners of the hopper close to the bottom of the hopper, I secure one end of an arm 18, preferably by flattening one end 19, of it and securing this end to the adjacent side of the hopper by either screws or rivets, as desired. This arm extends from its fastened end under the bottom of the hopper to near the center of the width of the bottom of the hopper, at which portion it is curved sharply downward to a point opposite to the center of the slot in the bottom of the hopper, from which point it is bent slightly upward so as to form a short downward curve, and from the top of this curve the arm extends at a slight upward angle for a short distance beyond the outside surface of the hopper, and at its outer end I secure a knob or nut, preferably by threading it to the end of the arm so that it can be quickly and easily removed and replaced by the fingers of an operator.

On this arm I place loosely one of my automatic coin stacking cylinders. These cylinders are preferably made of metal such as sheet brass or tin or of any other suitable metal or material. They are cylindrical in shape and have closed bottoms and open tops, and they are each made a trifle larger than the largest coin they are each intended to receive and stack. And I preferably make them in three different sizes, the largest of which receives and stacks silver dollars and half dollars; the next largest size is preferably made for silver quarters alone, or for half dollars and quarters, and the smallest size is made for dimes, nickels and pennies. But cylinders can be made if desired, for each of these coins alone. They work satisfactorily, however, in the three sizes named, with the use of the sliding blade, 8, to decrease the size of the coin discharging outlet in the bottom of the hopper, and they are made and arranged to receive and turn and stack the several sizes of coins mentioned, flatwise and on top of each other inside of each of the cylinders that are made coöperatingly with the two different sized discharge apertures in the bottom of the individual chambered hoppers.

In Fig. 1 I have illustrated the dollar size receiving and stacking cylinder.

My invention contemplates any means for removably securing all of the several size cylinders used for the several sized coins, from dollars down to and including cents, that are in common circulation.

In order, therefore, to meet the requirements of coin receiving cylinders that can be quickly changed from one size to another and that can be instantly tilted to discharge the stacked coin therein, I preferably pivotally hang the cylinders on the arm, and for this purpose I provide each cylinder with an ear 20, that is secured to its upper edge at its diametrical center, and this ear is provided with an aperture that fits loosely on the arm 18, and the top of the cylinders are all formed to stand at an angle that will permit the cylinders to stand with their top edge up against the under side of the bottom of the hopper, and their body portion to stand at a downward and outward angle to the bottom of the hopper, and in the drawings I have preferably shown the opposite ends of the hopper in Fig. 1, and also the cylinders standing at an angle of forty-five degrees to the top and bottom portions of the hopper.

The angle at which I preferably hang the cylinders on the arm 18, is for the purpose of permitting me to form the top open entrance end of the cylinder at such an angle to the oval aperture in the cylinder that its entrance is in the form of an ellipse 22, which is an essential element of my invention, as when the coins drop through the bottom of the slot in the hopper edges on entering this elliptical form of entrance, they strike against the side of the curved wall of the inner peripheral surface of the cylinder, and they are quickly turned into a flatwise position and stop, lying flat and stacked up in the tube on top of one another.

The reason that the coins strike the side wall of the curved surface of the cylinder is because the other side wall 23, of the coin receiving slot in the hopper is purposely beveled slopingly from its top coin entering end straight down over toward and to the opposite straight down inner side wall 24, of the slot in the hopper, and the coins in dropping through the slot in the hopper, are guided by the angled wall to shoot through the discharge slot in the bottom of the hopper and at the same angle, and they consequently enter the elliptical shaped top of the cylinder and strike against its outer curved side, which instantly turns them and they stop in a flat position in the cylinder.

The ear 20, of the cylinder rests in the bottom of the curved recess 25, in the arm, and consequently the cylinders 17 all naturally position themselves centrally under the coin discharging slot in the bottom of the hopper.

In Fig. 10, I illustrate a cylinder with two ears 20 and 21. In this view, the ear 20, is in the diametrical center of the cylinder, and the ear 21, is placed to the side of it that is toward the removable nut end of the arm. This ear 21, is also provided with an aper-

ture 22, that fits loosely on that portion of the arm that inclines slightly upward from its curved recess.

This ear 21, is made long enough to fit easily over the arm without interfering with the central and operative coin receiving position of the cylinders under the hopper, and this additional ear acts to steady the cylinders against lateral swinging movements under the bottom of the hopper, and would be an advantage where long cylinders are used that would hold a much larger number of coins than those usually stacked in paper receptacles or tubes by banks, but if desired, this additional steadying ear can be used on all sizes of cylinders, as it does not interfere with the outward sidewise movement it is necessary to apply to the cylinders every time they are to be emptied, which occurs every few seconds, when coins are being rapidly stacked.

The operation of my improved automatically operating coin stacker is as follows; both as to the automatic stacking of coins in the cylinders as they are pushed into and fall through the hopper, and also as to the discharging of the coins from them instantly, after they are filled with coins from the cylinders, into the paper tubes or receptacles 26, as shown in Fig. 7.

The coins are deposited on top of the table or desk 14, and naturally they are all lying flatwise, and sometimes all mixed more or less together. The operator places his fingers on the coins and moves them into the hopper, Fig. 1, or into the hopper of the shape shown in Fig. 7, if a single compartment hopper of either of these shapes is used, or into the compartment of the long hopper shown in Fig. 6 that has a coin receiving cylinder that is adapted to stack the coin he has in hand; and the coin drops down through the hopper into the cylinder underneath the hopper he drops the coin into, and falls edgewise into the cylinder and turns itself as it strikes the sides of the cylinder and stops flatwise against the bottom of the cylinder or of the coin or coins below it.

The operator moves with a quick pushing movement of the fingers, which results in sliding the coins very rapidly from the top of the table, to the edge of the coin hopper, and into the hopper, the inner top edge of which is positioned at or just a trifle below the top edge of the table, so that the advancing edge of each coin commences to tip downwardly and quickly just before it strikes the inner side of the outside shell portion of the hopper, and it drops, in the fraction of a second, through the hopper, and into and stops in a flat position in the cylinder.

The operator can either make a mental count of the number of coins he desires to deposit in the cylinder, or of the number required to fill it full; or he can glance down at the top of the cylinder and can see when it is full, as a part of the open end of the cylinder is in plain view at all times, as it projects toward him from below the bottom of the cylinder, as shown in Fig. 3, as all of the cylinders are larger in diameter than the thickness of the bottom of the hopper.

The instant the cylinder is full, assuming that the operator is filling one cylinder at a time, through an individual hopper, like Fig. 1, he grasps the cylinder in one hand and a paper coin receiving tube in the other and moves the cylinder toward him lifting it out of its curved recess in the arm 18 and sliding it along the arm toward the nut at its outer end, he tilts its lower end up swinging it pivotally on the arm into such an angular position as will cause the coins to slide out of it and at the same time holds the paper coin receiving tube to allow the coins to slide into it as shown in Fig. 7, and then foldingly closes the open end of the paper tube, and lays it aside. As soon as the cylinder discharges its coins, the operator releases the cylinder with a slight movement that causes it to slide down the arm into the recess in the arm, which holds it in operative coin receiving relation to the discharging slot in the bottom of the hopper.

The cylinders can all be tipped up to discharge their coins without sliding them sidewise on the arm, as they are pivotally connected to the corner of the individual hoppers to tip up against the adjacent angular end of the shapes of hoppers shown in Figs. 1 and 7, but in the multiple compartment hopper shown in Fig. 6, each coin receiving cylinder has to be drawn sidewise on the arm 18, toward the operator far enough to clear the bottom of the hopper before it can be tipped up high enough to discharge its coins.

The individual hoppers and cylinders can be made to stack dollars only, or halves only, or quarters only, and dimes and pennies only, or nickels only, but if, in either case, the hoppers are made with the sliding blade in them, they will stack half dollars also in the dollar stacking cylinder, that is, without changing the cylinder, if the blade be moved down against the bottom of the hopper, as shown in Fig. 5, as the lower end of the blade closes the discharge aperture in the bottom of the hopper so the half dollars pass easily through it and at the same time are guided centrally into the dollar stacking cylinder, and the same arrangement will operate satisfactorily with halves and quarters with a half dollar receiving cylinder; and a hopper and cylinder for nickels will, with the closing of the slide, stack nickels, dimes and pennies. But if desired,

the cylinders can be changed when changing from stacking one size coin to another, by simply unscrewing the nut from the end of the arm 18, and removing the cylinder thereon and placing on the arm, the next size cylinder desired. When, however, the long hopper is used, all of the different sized stacking tubes can be kept mounted on their indicated hopper compartments, and it is not necessary to change the cylinders or move the slide for different sizes of coins.

My invention provides a very simple and a very rapid coin stacking and discharging and manually operating paper tube filling type of coin stacker, and while I have illustrated the preferred construction and arrangement of its several features, I do not wish to be limited to them, as changes can be made without departing from the spirit of my invention.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a coin stacker, the combination with a table, of a hopper removably secured to one edge thereof, the outlet of said hopper being of a size to discharge the coins in a vertical position, an adjustable slide in the bottom of said hopper to vary the width of its discharge aperture, and interchangeable coin tubes which are adapted to be pivotally suspended beneath the said discharge aperture.

2. In a coin stacker, the combination with a hopper, of an arm secured to the hopper and extending beneath its discharge end, said arm having a slight V-shaped bend in line with the center of the hopper outlet, a coin stacking tube having an apertured ear through which said arm passes, and supports said tube beneath said hopper, said ear resting in said V-shaped bend which serves to center said tube, and an additional apertured ear on said tube through which said arm passes, which seems to steady said tube.

3. In a coin stacker, a hopper adapted to be removably secured to the edge of a table, adjustable means in said hopper for varying the length of its discharge opening, and interchangeable coin stacking tubes which are adapted to be pivotally suspended beneath said opening.

4. In a coin stacker, a hopper adapted to be removably secured to the edge of a table, an adjustable blade in said hopper for varying the length of its discharge opening, means for holding said blade in a position of disuse, and interchangeable coin stacking tubes which are adapted to be pivotally suspended beneath said discharge opening.

5. In a coin stacker, a hopper adapted to be removably secured to the edge of a table, said hopper comprising narrow end members and relatively wide front and back members, the front member being of greater depth than the back member, thereby to prevent coins swept into said hopper from sliding over the top of the said front member, and a coin stacking tube removably suspended beneath the discharge opening of said hopper.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK D. LEWIS.

Witnesses:
G. SARGENT ELLIOTT,
ELIZABETH SMITH.