

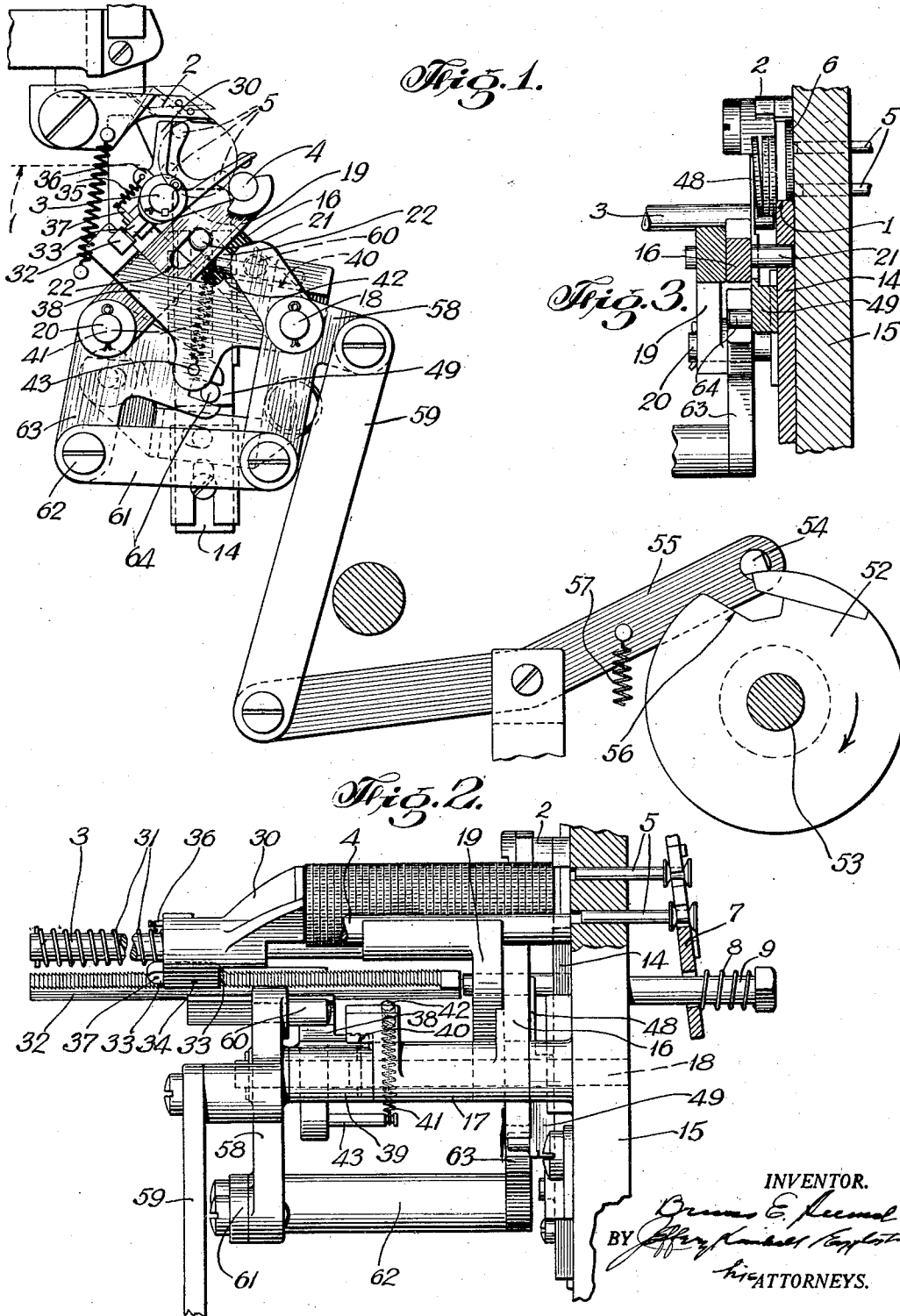
May 24, 1932.

B. E. SEEMEL

1,859,574

COIN STACKER

Filed Feb. 6, 1929



INVENTOR.

BY

his ATTORNEYS.

## UNITED STATES PATENT OFFICE

BRUNO E. SEEHEL, OF BROOKLYN, NEW YORK, ASSIGNOR TO AUTOMATIC COINWRAPPING MACHINE CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

## COIN STACKER

Application filed February 6, 1929. Serial No. 337,764.

My invention relates to mechanism for stacking coins, coin-like tokens, and the like (all of which are herein included in the term "coin"), and has for its object to make it possible to successfully stack coins by machine more rapidly than has been possible heretofore.

I have found that the factor which limits the speed of certain mechanical stackers at least, is the backing or holding mechanism, which backs one end of each growing stack and is moved along to give space for further coins to be added. For example, when these machines are speeded up beyond certain limits, coins sometimes creep out of a growing stack, and in machines where the coins are stacked horizontally at least, the first coin or first few coins of a new stack sometimes fall over instead of remaining upright. I have found the fault to lie with the backing mechanism.

According to my invention therefore, I build the backing mechanism in a number of parts as it were, using one backer to back the first coins of each new stack and then another backer to take up the backing function and carry it farther from the point where the first leaves off; and I take the thrust of the backing mechanism off the stack, at least after enough coins have been assembled in the stack to render creepage likely, and while arranging the backer to hold the coins in place, positively hold the backing mechanism at all times far enough from the opposite end of the growing stack to permit the coins to rest easily in their places.

In the accompanying drawings, Fig. 1 is an elevation of a coin stacking mechanism embodying my invention. Fig. 2 is a side view of the major portion of the mechanism of Fig. 1, a partly completed stack being shown in position and parts being broken away for illustrative purposes. Fig. 3 is a vertical section, at right angles to the drawings in Fig. 1, showing the placement of the coins on the stacker bars.

In the coin stacking mechanism illustrated, the coins are fed edgewise, one by one, along a track or path, the bottom of which

is indicated at 1. At the end of this path or track, they pass underneath a guide or latch 2 which is pressed resiliently against the edge of each coin. Thence the coins are thrust face-wise onto and stacked, successively, on two horizontal stacker bars 3 and 4 by the reciprocating stacker pins 5 as the coins come to the position occupied by the coin 6 in Fig. 3; these stacker pins are reciprocated by an appropriate swinging arm 7 for which the spring 8 on bolt 9 is a resilient back-stop. The stacker bars 3 and 4 are placed at a little lower level than the track 1, so that as the stacker pins 5 push a coin onto the stacker bars 3 and 4, the lower edge of this coin passes below the bottom of the track 1; likewise the top of the coin passes in front of a lip on the latch or guide 2 as illustrated in Fig. 1. The latch or guide lip and the face of the plate 14 forming the bottom of the track 1 thus constitute abutments against which the coin is pressed or leans until the next coin reaches the position of 6 in Fig. 3 and then thrusts it along the stacker bars and takes its place.

In order that the machine may handle coins of different diameters, the plate 14 is adjustable vertically and the stacker bars 3 and 4 are mounted for adjustment both vertically and horizontally. The plate 14 is mounted and guided on the frame member 15 in a suitable manner. The stacker bar 3 is mounted in an arm 16 fastened to a sleeve 17 which is free to turn on the pin 18, and likewise the stacker bar 4 is carried by an arm 19 carried by a sleeve free to turn on the fixed pin 20 which is parallel to the pin 18. Both these pins are mounted in 15. A pin 21 mounted in sliding plate 14 extends into oppositely inclined slots 22 pierced in the arms 16 and 19, each slot being parallel with its arm. Hence it follows that moving the slide 14 downwardly to depress the bottom 1 of the coin track in order to permit the passage of a larger coin along the track, turns the arms 16 and 19 in opposite directions to a corresponding degree, thus separating the stacker bars 3 and 4 and dropping them down to a little distance corresponding to the depression of the bottom 1 of the track.

With such stacking mechanisms it has been customary to use a spring-pressed float as a backing or holding mechanism to hold the coins upright on the stacker bars 3 and 4 between the float and the abutments on 2 and 14, this float being substantially like the float 30 mounted to slide on the stacker bar 3 and provided with a spring 31 to hold it in position and return it toward the abutments as soon as a finished stack is removed from the stacker bars. As an incident, the float 30, under the pressure of the spring, thrusts the stack against the abutments between movements of the stacker pins 5 adding new coins to the growing stack. According to my invention, however, while I permit the float 30 to come sufficiently close to the end of the stack to keep the coins upright on the stacker bars 3 and 4, I relieve the stack of this thrust of the spring-float. To this end I provide a rack bar 32, extended substantially parallel to the stacker bar 3, and for co-operation therewith a pawl 33 hinged at 34 in guide-ways formed on the float 30. By means of a spring 35 extending between an eye 36 on the body of the float and a pin 37 on one end of the pawl, the opposite end of the pawl 33 is normally kept in engagement with the teeth of the rack bar 32. Preferably these teeth are so numerous that each unit of length of rack bar equal to the thickness of one coin, contains two or more teeth. As the stacker pins 5 are thrust out to push another coin onto the stacker bars 3 and 4, they push the whole growing stack, and therewith the float 30, to the left in Fig. 2, and in order to take care of coins of different thicknesses and to assure that each coin passes well off the bottom of the coin track, the stacker pins 5 thrust the stack well to the left. As the stacker pins 5 retreat again to the right however, the float 30 can press the growing stack to the right again only so far as necessary for the pawl 33 to engage in the nearest tooth of the rack bar 32, the pawl and ratchet then stopping the float and this movement (because of the number of teeth per unit length of the rack bar) is less than is necessary to thrust the stack against the abutments on 2 and 14. The float now retains the coins in a substantially upright position as before between the float and the abutments on 2 and 14, but between these two end supports the coins now rest lightly.

The rack bar 32 is carried on a lever 38, the sleeve 39 of which is mounted on pin 18; a shoulder 40 on sleeve 17 limits the upward movement of the end of the lever carrying the rack bar 32 to a position in which the rack bar is suitably engaged by the pawl 33. A spring 41 mounted between a pin 42 on a projection from sleeve 17 and pin 43 on the lever 38, tends to normally hold the lever in its upward or pawl-engaging position against the shoulder 40. By thus controlling

the operating position of the rack bar 32 from the sleeve 17 which supports the stacker bar 3, it is evident that the rack bar 32 follows the movement of the float as the stacker bar 3, which carries the float, is moved to a new position to take a different size coin. When a completed stack is lifted off the stacker bars 3 and 4 and a new stack is to be begun, lever 38 is rocked to depress the rack bar 32 to release the pawl 33 and spring 31 then returns the float 30 toward the coin track 1. In order that the beginning of the new stack need not await the arrival of the float 30, I have provided another coin stacker or holding mechanism for the first few coins of each stack. This is in the form of a plate 48 sliding at 49 on the face of plate 14 (being held thereon by gibbs or guides), this plate 48 sliding between the stacker bars 3 and 4 and transversely of the latter. The finger or coin-engaging portion of 48 is displaced sufficiently from the face of the sliding plate 14 to receive a few coins, say three, as illustrated in Fig. 3. As a stack is finished and taken from the stacker bars 3 and 4, this temporary or supplemental backer 48 is pushed upwardly to the position shown in Fig. 3 where it is in position to support the first coin or coins pushed off the coin track 1 by the stacker pins 5. When the float 30 has reached the backer 48, the latter is retracted again, i. e., slipped downwardly to its position in Figs. 1 and 2, the float 30 takes over its function, and the stacking operation then continues as before described.

The pawl and rack bar are released, one from the other, to permit the return of the float 30 to its starting position substantially simultaneously with the upward movement of the supplemental or temporary backer 48 to its backing position, and this occurs, usually, about simultaneously with the removal of a finished stack from the stacker bars 3 and 4. Such operation is herein illustrated. The cam 52 on shaft 53 controls and times both the backers. The shaft 53 can be rotated in any way to bring about the starting of a new stack at the proper time, the actuation of the backers being brought about by pin 54 on lever 55 dropping into the recess 56 in the edge of the cam 52. When this occurs, spring 57 turns the lever 55 clockwise (in Fig. 1) thus rocking the three-armed lever 58 on its supporting pin 18; the link 59 connects the lever 55 to one arm of the lever 58. The upwardly extending arm of lever 58 carries a pin 60 which projects over the lever 38 carrying the rack bar 32, so that when the lever 58 is rocked as just described, the lever 38 is turned in such a direction as to withdraw the rack bar 32 from the reach of the pawl 33 and thus permit the spring 31 to return the float 30 toward the slide 14 and track 1 from which the coins are fed. At the same time, and by

the same movement, the downwardly extending arm of lever 58 acts through the links 61, pin 62 fastened to the bell crank lever 63 mounted on the pin 20, this lever 63, and pin 64 mounted on the temporary or supplemental backer 48, to slide the latter upwardly to its position in Fig. 3. The rack bar remains out of engagement with the pawl 33, and temporary or supplemental backer 48 remains in its upper or backing position, until the cam 52 is turned far enough (it turns in the direction of the arrow in Fig. 1) for the advancing wall of recess 56 to press the pin 54 out of the recess. When this occurs, the lever 55 is turned in the reverse direction. backer 48 is moved down out of the path of the coins along the stacker bars 3 and 4, and the ratchet bar 32 is allowed to engage against the pawl 33. The recess 56 is so large that this action is delayed an adequate time for the spring 31 to return float 30 to the backer 48, and of course this action takes place before enough coins have been thrust toward the backer 48 to cause jamming at this point.

It will be understood that my invention is not limited to the details illustrated and described except as appears hereinafter in the claims:

1. In a coin stacking mechanism, a backing mechanism, means to place a plurality of coins in a stack against said backing mechanism, said back mechanism then being removable from backing position, and a second backing mechanism to thereupon take over, from the first mentioned backing mechanism, the backing of said plurality of coins and back the stack, growing by the addition of further coins, until the stack is further completed.

2. In a coin stacking mechanism, a backing mechanism, means to place the first coin of each stack against said backing mechanism and then another substantially successively until a plurality of coins are stacked against said backing mechanism, said backing mechanism then being removable from backing position, and a second backer to thereupon take over, from the first mentioned backing mechanism, the backing function and back each stack to completion as further coins are added to the growing stack substantially successively.

3. The combination of claim 2, characterized by the fact that the first mentioned backing mechanism includes a coin-holding member sliding transversely of the stack.

4. In a coin stacking mechanism, a backing mechanism, means to place the first coin of each stack against said backing mechanism and then another substantially successively until a plurality of coins are stacked against said backing mechanism, said backing mechanism then being removable from backing position, and a floating backer, with

spring means for moving the same toward said backing mechanism to receive the growing stack, to thereupon take over the backing function from said backing mechanism and back each stack to completion as further coins are added to the growing stack substantially successively by said means.

5. In a coin stacking mechanism the combination of a pair of stacking bars, means to push coins successively onto said bars, a coin backer to back the growing stack until the stack is partly completed, a spring-pressed floating backer to then take over the backing function and carry it on until the stack is completed, and means to withdraw the first mentioned backer from the path of the stack after the floating backer has reached it at the beginning of a new stack.

6. In a coin stacking mechanism, the combination of means to place coins substantially successively in stacks, a coin backer movable into and from the path of the growing stacks to hold the first coins of each stack in position, a floating backer to then take over the backing function and carry it on until the respective stack is completed, a spring pressing the floating backer toward the coins, holding means to prevent the movement of the floating backer under the thrust of said spring, releasing means to release the float from said holding means and thereby permit the spring to move the first mentioned backer, means to move the first mentioned backer into and from the path of the stacks, and a single timing mechanism to substantially simultaneously cause said releasing means to release the float and cause the means for moving the first mentioned backer to move the latter into the path of the stacks, and thereafter cause the last mentioned means to move its backer from the path of the stacks.

7. In a coin stacking mechanism, the combination of a pair of stacker bars, means to push the coins onto the stacker bars successively in stack formation, a coin backer slidable substantially transversely of the stacker bars, means to slide said backer into backing position at the beginning of a new stack to back the first few coins of a new stack, and later to move it from said position, a sliding float against which the growing stack is pressed as further coins are pushed onto the stacker bars, said float being spring-pressed toward the end of the stack, pawl and ratchet mechanism to limit the movement of the float toward the growing stack while the stack is growing, and means to release the pawl and ratchet, one from the other, said means releasing the pawl and ratchet substantially simultaneously with the operation of the first mentioned means to move said sliding backer into backing position.

8. In a coin stacking mechanism, the combination of means to place coins substantially successively in stack formation, a backer

for the stack movable as the stack grows to give room for successively added coins, and means to hold the backer at such distances from the remote end of the stack as the stack grows as to relieve the stack of the thrust of the backer.

9. In a coin stacking mechanism, the combination of means to place coins substantially successively in stack formation, a backer for the stack movable step by step as the stack grows to give room for the successively added coins, and means to hold the backer at such a predetermined distance from the remote end of the stack after each step movement as to relieve the stack of the thrust of the backer.

10. In a coin stacking mechanism, the combination of means to place coins substantially successively in stack formation, a backer for the stack, spring pressed toward the stack and pressed back against its spring as successive coins are added, and means to so limit the movement of the backer toward the coins under the thrust of the spring as to relieve the stack of the thrust of the spring-backer.

11. The combination of claim 10, characterized by the fact that said means to limit the movement of the backer under the thrust of the spring is a pawl and rack.

12. In a coin stacking mechanism, the combination of a pair of stacker bars, adjustable means for carrying the stacker bars whereby the stacker bars are adjustable to and from each other for the stacking of coins of different sizes, means to thrust the coins successively onto the stacker bars at one end, a float to back the growing stack working from the opposite end of the stacker bars, a spring pressing the float toward the coins, and a pawl and rack to limit the movement of the float toward the coins under the thrust of said coins, one carried by the float and the other adjustable with said adjustable means.

13. In a coin stacking mechanism, the combination of means providing an abutment for one end of the growing stack, a backer for the opposite end of the stack movable as the stack grows to give room for successively added coins, means to place coins substantially successively between said abutment and backer in stack formation, and means to hold the backer at such distances from said abutment as the stacker grows as to relieve the stack of the thrust of the backer.

14. In a coin stacking mechanism, the combination of means providing an abutment for one end of the growing stack, a backer for the opposite end of the stack movable as the stack grows to give room for the successively added coins, means for moving said backer away from said abutment step by step and inserting coins substantially successively into the space between said backer and abutment in stack formation, and means to hold the backer at such a predetermined distance from

said abutment after each step movement as to relieve the stack of the thrust of the backer.

15. In a coin stacking mechanism, the combination of means providing an abutment for one end of the growing stack, a backer for the opposite end of the stack, spring pressed toward said abutment, means to move the growing stack step by step back in the direction of the backer and move the latter against its spring and successively insert coins in the space thus provided between said abutment and the adjacent end of the growing stack, and means to so limit the movement of the backer toward the abutment under the thrust of its spring as the last mentioned means releases the stack for movement toward the abutment as to relieve the stack of the thrust of the spring-backer.

In testimony whereof, I have signed this specification.

BRUNO E. SEEMEL.