Feb. 15, 1966 K. F. SONNTAG 3,235,125

PIN-DISPENSING APPARATUS

Filed Dec. 3, 1963

Fig. 1.

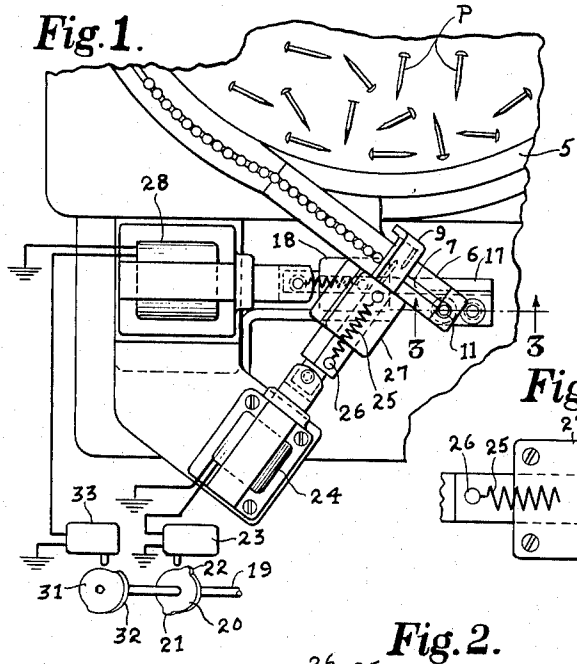


Fig. 3.

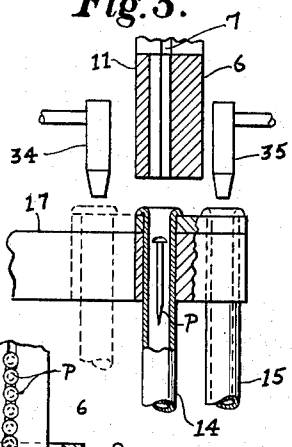


Fig. 4.

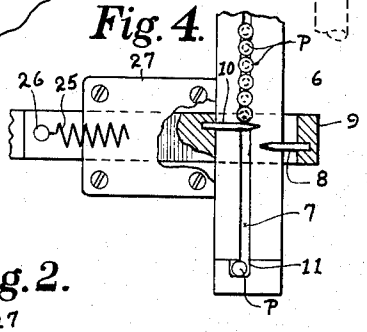


Fig. 5.

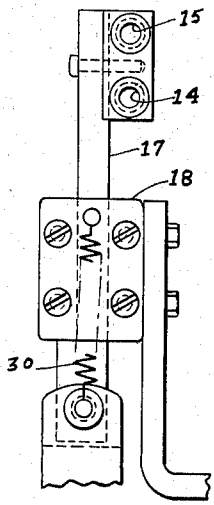
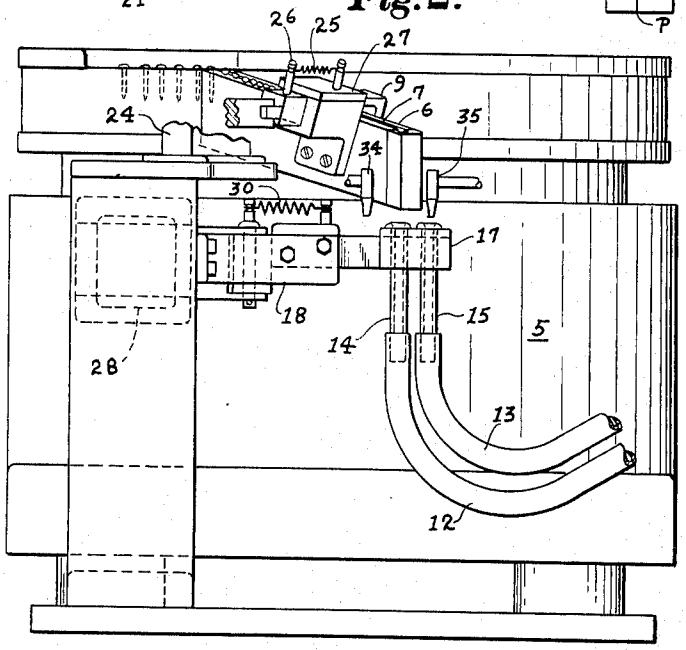


Fig. 2.



INVENTOR.

Karl F. Sonntag

BY

H. F. Johnston

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PIN-DISPENSING APPARATUS

Karl F. Sonntag, Middlebury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn., a corporation of Connecticut

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This invention relates to a pin-dispensing apparatus adapted to dispense a plurality of pins for delivery to pin-sticking locations forming a part of an automatic folding machine. One example of the use of such a machine is in the manufacture of men's shirts where they are folded by an automatic machine and made to be held in place by two or more plain common pins.

The object of the invention is to dispense the pins under the timed control of a portion of the folding machine. My improved apparatus for accomplishing this result utilizes only a single pin race or guide which can be conveniently supplied by a single hopper in combination with movable chutes for conducting the pins in endwise relation, and further involves the combination with an escapement or cut-off and release device, of means for shifting the chutes so that they will in turn register with a drop-out and release device. The escapement device operates one complete cycle in timed relation to said chute-moving means to release a pin with each change of registry of said chutes.

In the accompanying drawing, I have shown for purpose of illustration, one embodiment which the invention may assume in practice. In the drawing:

FIG. 1 is a plan view of the apparatus with the controls shown schematically;

FIG. 2 is a front elevation with portions removed to better show the construction;

FIG. 3 is a detailed cross-section on line 3—3 of FIG. 1 on a larger scale;

FIG. 4 is a plan view of the cut-off and release device with portions broken away; and

FIG. 5 is a plan view of the chute transfer slide.

Any type of hopper device may be employed for picking up and arranging the pins in uniform relation and preferably, there is shown a vibratory hopper having a circular bowl indicated in FIG. 1 by the numeral 5.

The pins P are common pins, and as they emerge in uniform position from the hopper, they enter the guide or race 6 with the pin heads supported by the guide along the upper edges of the slot 7 into which the pins depend. The pins move along the guide which is slightly inclined, as seen in FIG. 2, under the influence of gravity and the vibration of guide 6. The initial pin comes to rest against the finger 10 and holds the remaining row of pins in check, as indicated at FIG. 4. The finger 10 is mounted to the left side of the guide on a cut-off slide 9 which may reciprocate back and forth. When the slide 9 moves from the position shown in FIG. 4, toward the left, it will permit the row of pins to advance down the guide 6 and at the same time, a second finger 8 mounted on slide 9, slightly below the finger 10, will intercept the advancing row of pins and hold them. On the reverse movement of the cut-off slide 9, the finger 8 will release the bottom pin while finger 10 moves back to hold the remaining pins. When one of the pins is released, it will move along the slot 7 to a hole 11 which is large enough to allow the pin to pass freely. This may be referred to as the drop-out station.

The present machine is intended to dispense two pins for each cycle of the folding machine, and for this purpose, there are provided chutes in the form of flexible tubes 12 and 13 fitting over metal chutes 14 and 15 respectively, which are fixed at their upper ends to a chute

slide 17. This slide is mounted for back and forth movement in a suitable guide bracket 18 so that one or the other of the entrance ends of the chutes will be brought into registry with the hole 11 at the drop-out station.

The means for operating the escapement device and chute-shifting slide in timed relation to each other, and in proper timed sequence with the folding machine, will now be described. A shaft 19, diagrammatically indicated in FIG. 1, is operated by the folding machine, one complete revolution for each complete cycle of the machine. A cam 20 on the shaft 19 has two lobes 21 and 22 arranged to close a microswitch 23 to energize a solenoid 24 directly connected to the escapement slide 9.

In the operation of my pin-dispensing apparatus, starting off with the chutes and cut-off slide in the position shown in FIGS. 3 and 4 respectively, one of the lobes 22 of cam 20 will first close switch 23 to operate solenoid 24 which will move the cut-off slide 9 to the left. This will cause the uppermost finger 10 to move out of the pathway of the pin heads and finger 8 to intercept said pathway, whereupon the row of pins will move down the race with the foremost pin coming to rest against the lowermost finger 8.

As soon as switch 23 is opened by the passing of the cam lobe 22 to de-energize solenoid 24, the slide 9 will be moved to the right by spring 25 whereupon the foremost pin will be released by the finger 8 and the remaining pins in slot 7 will be held in check by finger 10. The foremost released pin will slide down the remaining distance of the race 6, then drop through the hole 11 at the drop-out station and into chute 14 and tube 12. The return movement of the slide 9 is accomplished by a spring 25, one end of which is attached to the slide at 26 and the other end is attached to the top of the guide bracket 27.

The slide 17 which mounts the ends of the chutes 14 and 15, has one end directly connected to a second solenoid 28 and is shown in the de-energized position in FIGS. 1, 2 and 3. A spring 30, acting between the guide bracket and slide, serves to hold the chute slide 17 to the right and hold the tube 14 in registry with the drop-out station. It will also be observed that the tube 15 registers with the hole 11 when the solenoid 28 is energized to move the slide 17 to the left.

The cam 31 carrier a single elongated lobe 32 to operate a microswitch 33 to affect energization of the solenoid 28. In the position shown, the switch 33 is open for a period of time until the lobe 22 of the cam 20 actuates switch 23 and for such further time as may be needed for a pin to drop into the tube 14. Then, the cam 31 closes switch 33 where it remains to hold the chute tube 15 in registry with the drop-out station until the lobe 21 of the cam 20 contacts switch 23 to again cycle the escapement device, and for a sufficient time to allow the second pin so released, to come into the upper end of the tube 15.

As seen in FIG. 3, a pair of air jets 34 and 35 are mounted on opposite sides of the pin guide 6 in position to register the upper ends of chutes 14 and 15 respectively, when such chutes are moved out of registry with the drop-out station. If desired, a valve may be provided for each air jet and such a valve may be actuated in timed sequence to the operation of the machine by any suitable means, such as a cam or cams on the shaft 19, for controlling suitable solenoid valves. At any rate, when one of the tubes 14 and 15 moves into registry with its air jet, the pin therein will be propelled along one of the flexible tubes 12 and 13 to the place where the pins are to be utilized.

As a result of my invention, it will now be understood that a very simple and reliable apparatus has been pro-

vided which will dispense a plurality of pins to the desired place from a single guide or race, by means of the delivery chutes shifting in timed relation to the escapement device which controls the release of the pins one at a time, in such a way that the escapement device operates two complete cycles for each cycle of the tube-shifting device, which in turn, operates one cycle for each complete operation of the folding machine.

What I claim is:

1. In a pin-dispensing apparatus, a pin guide having a single vertical slot for conducting a row of pins in orderly arrangement with the shanks of said pins depending into said slot while the pins are supported by their heads riding on the guide at the upper edge of said slot, said slot having a hole adjacent its outlet end providing a drop-out station at the end of said guide, a cut-off and release device co-operating with said guide adjacent said drop-out station to release a pin on each operating cycle of said device, a plurality of chutes each adapted to conduct said pins endwise therethrough, means for moving the entrance ends of said chutes so that they repeatedly register in turn with said hole at the drop-out station, and means for actuating said cut-off and release device one complete cycle in timed relation to said chute-moving means to release a pin for each change of registry of said chutes.

2. In a pin-dispensing apparatus, a pin guide having a single vertical slot for conducting a row of pins in orderly arrangement with the shanks of said pins depending into said slot while the pins are supported by their heads riding on the guide at the upper edge of said slot, said slot having a hole adjacent its outlet end providing a drop-out station at the end of said guide, a cut-off and release device co-operating with said guide adjacent said drop-out station to release a pin on each operating cycle of said device, a pair

of chutes each adapted to conduct said pins endwise therethrough, means for simultaneously shifting the entrance ends of said chutes so that they alternately register with said hole at the drop-out station, and means for actuating said cut-off and release device one complete cycle in timed relation to said chute-shifting means to release a pin for each change of registry of said chutes.

3. In a pin-dispensing apparatus, the combination defined in claim 2 wherein said means for actuating said cut-off and release device includes a solenoid for moving said device to one position and a spring for returning the same to the original position to complete one cycle of operation of said cut-off and release device; and wherein said chute-shifting means includes a solenoid to hold one chute entrance end in registry with said drop-out station when energized and a spring acting, when said second-mentioned solenoid is de-energized, to shift said chute ends to the other position where the first chute is away from said drop-out station and the other chute is in registry with said station; and a common means for automatically controlling said solenoids to actuate said cut-off and release device and said chute-shifting means in properly timed sequence.

References Cited by the Examiner

UNITED STATES PATENTS

Re. 16,106	7/1925	Benjamin	221—298 X
2,611,896	9/1952	Chmelar	221—163
2,735,096	2/1956	Miller	221—68
2,803,274	8/1957	Zubal et al.	
3,061,147	10/1962	Vilmerding	221—296 X
3,133,670	5/1964	Heyer	221—7 X

LOUIS J. DEMBO, *Primary Examiner.*