July 20, 1943. H. BEDARD 2,324,901

SPRING FEEDING APPARATUS

Filed Nov. 19, 1941

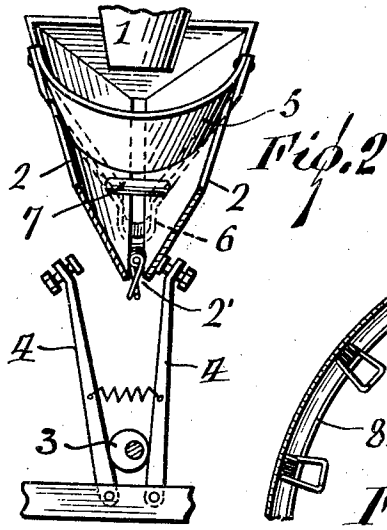


Fig. 2

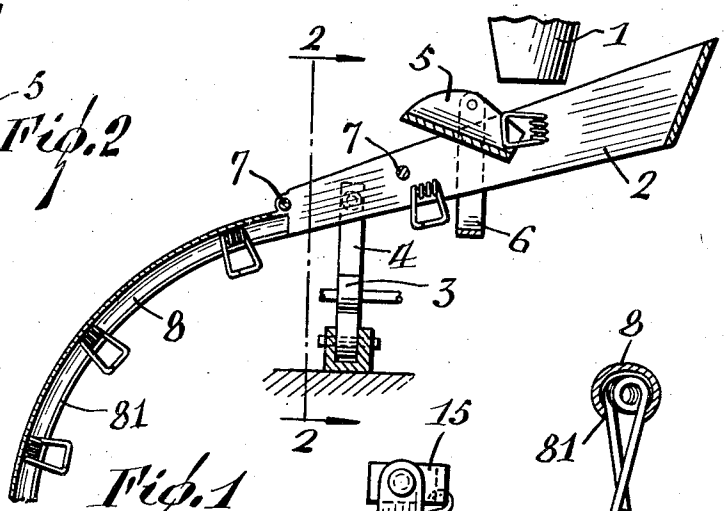


Fig. 1

Fig. 4

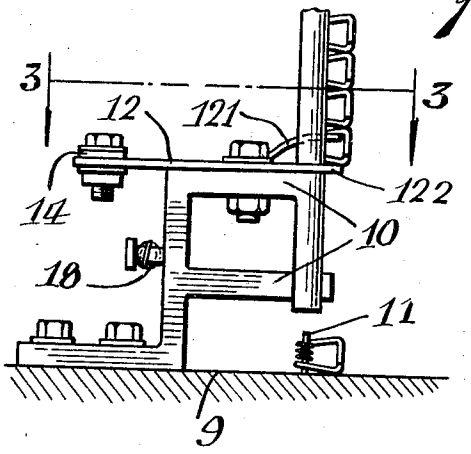


Fig. 3

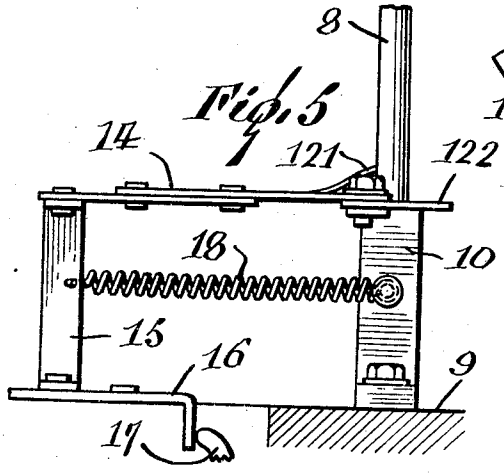


Fig. 5

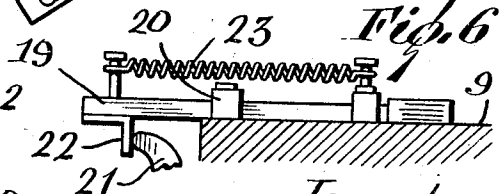


Fig. 6

Inventor:
Henri Bédard
By Albert Journiès
Attorney

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SPRING FEEDING APPARATUS

Henri Bedard, Levis, Quebec, Canada, assignor to Hervé Baribeau, Levis, Quebec, Canada

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2 Claims. (Cl. 193—40)

The present invention pertains to the feeding of springs in the assembly of clothes pins of the type consisting of a pair of rocking jaws normally pressed together by a spring. The spring for this purpose consists of a coil having angular arms extended from both ends to straddle the jaws, while the coil is received from the jaws. This type of spring is not new, and the invention resides in apparatus for facilitating the assembling of the spring in the clothes pin.

Ordinarily the springs are delivered in a mass from the spring forming machine to the assembling station. Here they must be picked up one at a time and mounted manually on the assembly table in a suitable position for the remainder of the assembly operation. The objects of this invention are to eliminate the transporting of the springs in mass from the forming machine and to eliminate also the separate manual operation of positioning the springs individually on the assembly table.

In the accomplishment of this object, the springs are delivered from the forming machine through a hopper through a chute, and from the latter by means of a track to the delivery station. The chute is provided with mechanism for setting the spring in a given position for entering the track, after which all springs are delivered in the proper position to the assembly table. Also, there is provided a device for releasing the springs from the track individually and at suitable intervals regulated according to the speed of the operator.

The invention is fully disclosed by way of example in the following description and in the accompanying drawing in which:

Figure 1 is an elevation of the device, partly in section, showing both operating levels;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a plan view on the line 3—3 of Figure 1;

Figure 4 is a detail section of the conveyer track, showing a spring suspended therefrom;

Figure 5 is a vertical elevation of the lower portion of Figure 1 and at a right angle thereto, and

Figure 6 is a vertical elevation of a portion of Figure 3.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

The spring which the apparatus is designed to handle consists, as previously indicated, of a coil having crossed angular arms extending from its ends for the purpose of straddling the pivotal jaws of a conventional jaw type of clothes pin.

These springs are fabricated in a suitable machine and, according to the invention, are dropped into a hopper 1. Beneath the hopper is a chute comprising a pair of side plates 2 converging towards their lower edges but there spaced apart at 2'. This space is sufficient to receive the arms of the spring but not coil, as illustrated in Figure 1. In order to seat the springs in this manner, the plates 2 are caused to vibrate by means of a cam 3 oscillating a pair of hammers 4 which strike the plates as shown in Figure 2. Also, a trip member 5 supported on a strap 6 projects into the paths of the springs falling from the hopper, whereby to give them a rotary motion, as a result of which the arms are more likely to drop into the slot 2'. Further, a pair of transverse bolts 7 are mounted in the chute near its discharge end. These are positioned to invert any springs that may be standing with the arms extending upwards.

The discharge end of the chute communicates with a slotted conveyer or track 8 extending generally in a downward direction. This member need only be such as to provide a slot admitting the spring arms but too narrow to pass the coils. In the present case it is in the form of a tube having such a slot 81 cut in its under surface.

A few inches below the lower end of the track 8 is an assembly machine table 9 where the springs are assembled on the jaws by an operation that need not be illustrated here. On the table is mounted a frame 10 extending some distance upwardly along the tube 8. Each spring is allowed to drop, by means presently described, with its coil sliding on a pin 11 set on the table, manually or otherwise. The pin facilitates mounting the spring on the jaws. This is already known in the art.

The purpose of the frame 10 is to support mechanism for regulating the dropping or releasing of the springs on the pins 11.

An arm 12 is pivotally mounted on the frame by a suitable pin or bolt 13. From the arm 12 are extended fingers 121 and 122 around the tube 8 but at different levels to engage simultaneously two consecutive spring fingers, as illustrated in Figure 1.

A link 14 adjustable in length extends from the free end of the arm 12 to a vertical depending member 15 (Figure 5) from which extends a slide plate 16 actuated by a suitably propelled cam 17. The parts are returned in the opposite

direction by a coil spring 18 joining the member 15 to a suitable portion of the frame 10. By the alternate movement of the fingers 121 and 122 and their opposite direction, the springs are released or tripped one at a time and at regular intervals.

To insure accurate position of the spring on the pin 11 previous to assembly, a forked arm 19 is slidably mounted on the table 9 in suitable guides 20. It is actuated in one direction by a cam 21 bearing against a bracket 22, in the other direction by a coil spring 23. The forked end is brought adjacent to a pin when a spring is to be dropped thereon, and guides the spring in falling on the pin.

To complete the assembly of the clothes pin, the jaws thereof are pushed between the angular arms of the spring, while the coil thereof seats between the jaws, in a manner well known in the art.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention as indicated by the appended claims.

What I claim is:

1. A feeding apparatus for coil springs comprising a pair of spaced plates converging and spaced apart at their lower edges, hammers adapted to strike and vibrate said plates, a slotted tube extending downwardly from said plates, the lower portion of said tube being vertical, a pivoted arm having rigid converging fingers at different levels adapted to retain two separate articles in said lower portion, and means for oscillating said arm, whereby to deliver the articles singly from said track at intervals.

2. A feeding apparatus for coil springs comprising a pair of spaced plates converging and spaced apart at their lower edges, a slotted tube extending downwardly from said plates, the lower portion of said tube being vertical, a pivoted arm having rigid converging fingers overlapping at different levels adapted to retain two separate articles in said lower portion, means for oscillating said arm, whereby to deliver the articles singly from said track at intervals, a vertical pin disposed beneath the vertical portion of said tube and adapted to receive a coil spring thereon, a reciprocating guide member cooperating with said pin to position a spring on the pin, and actuating means for said member timed with said oscillating means.

HENRI BEDARD.