Oct. 2, 1945. J. N. WOGNUM 2,385,956

DISPENSING DEVICE

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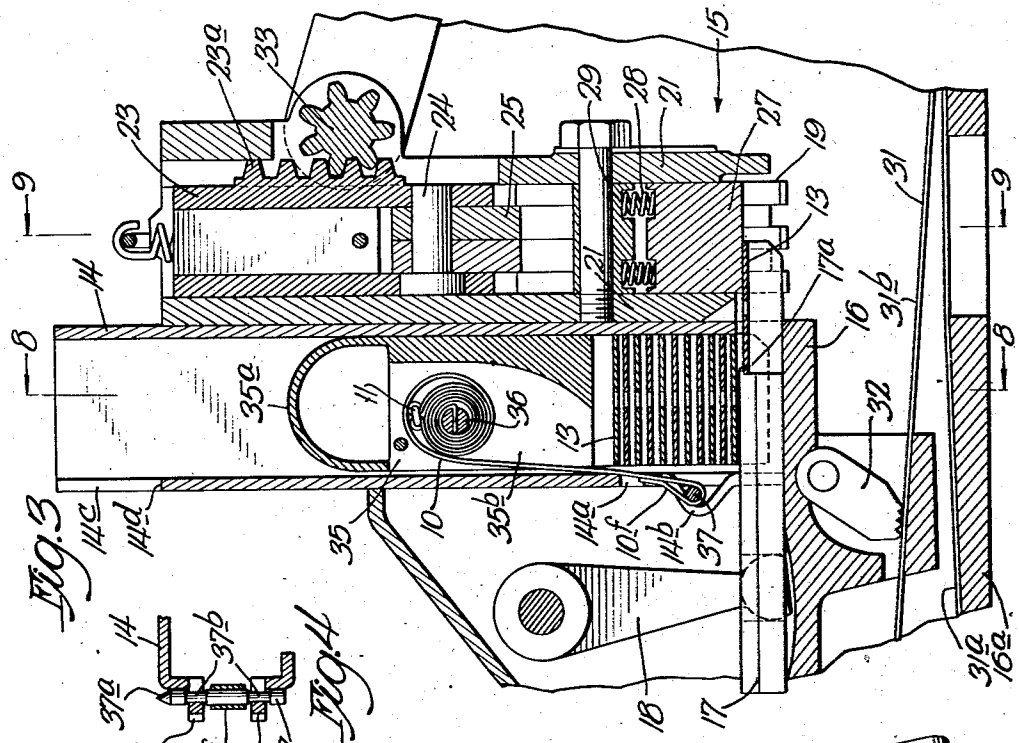


FIG. 3

FIG. 4

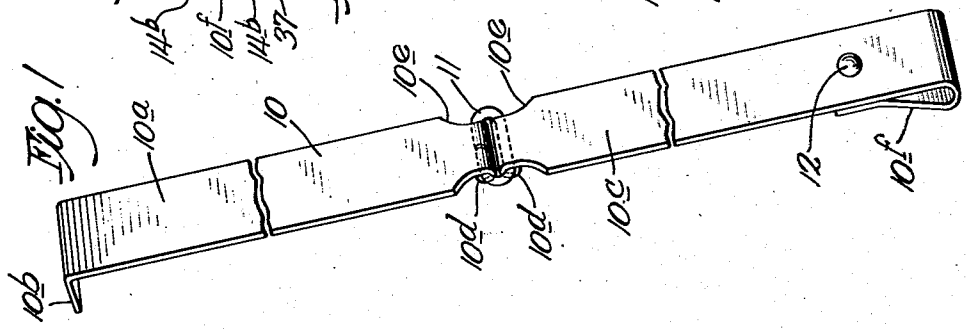


FIG. 1

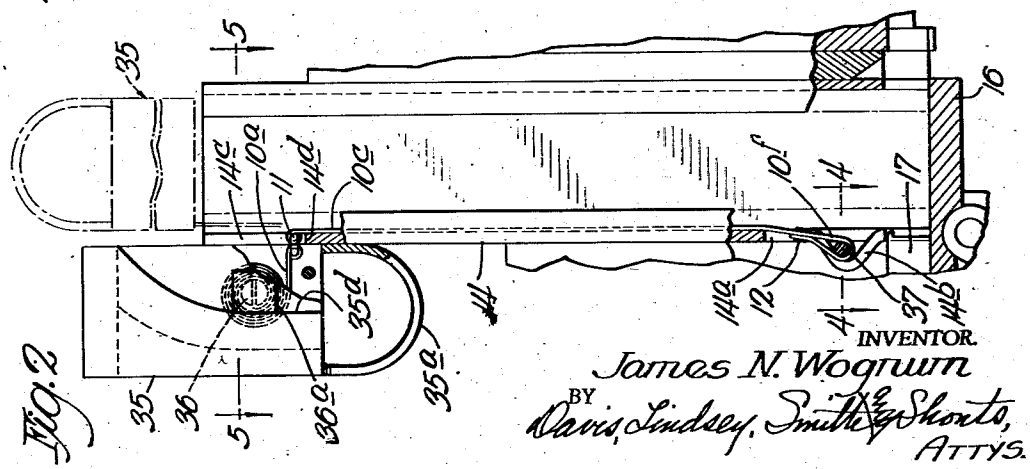


FIG. 2

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Fig. 9

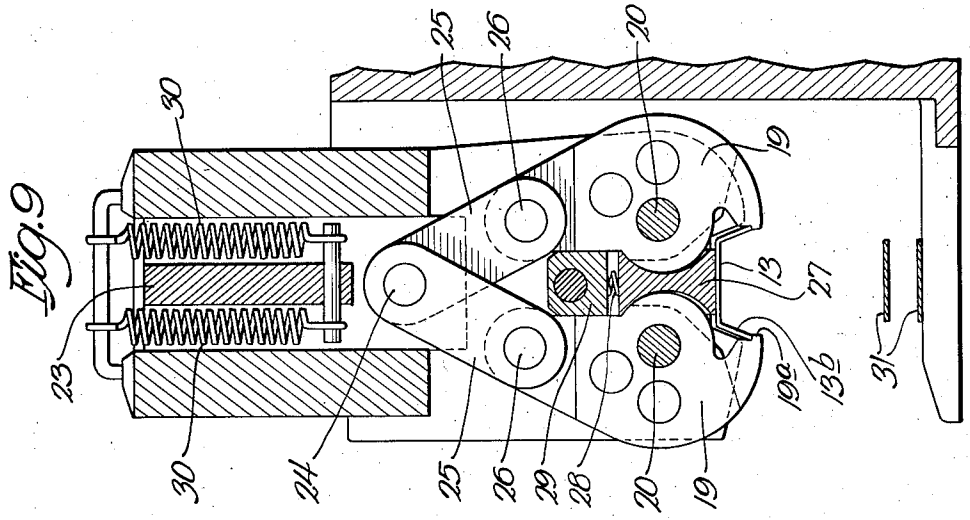


Fig. 8

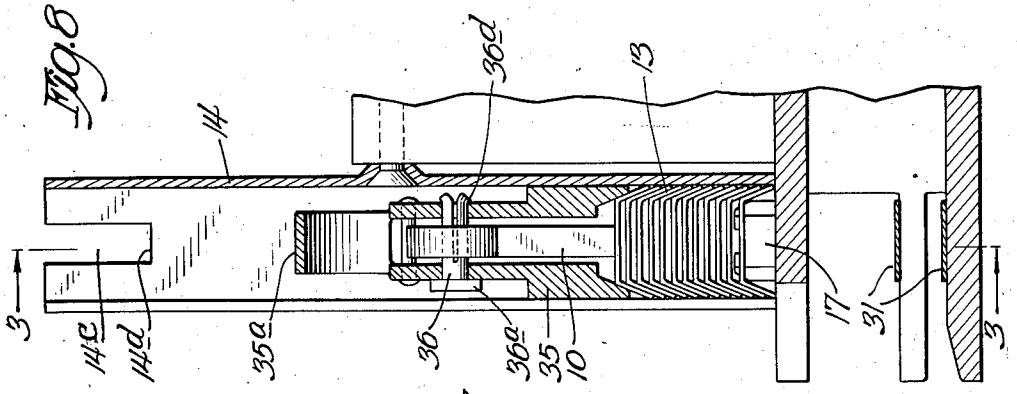


Fig. 5

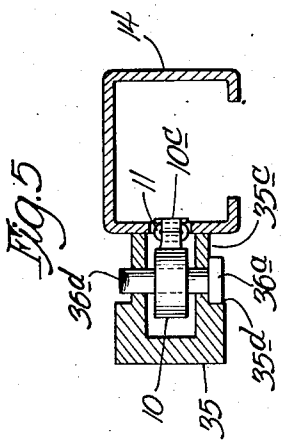


Fig. 6

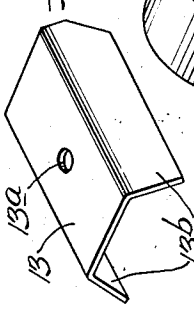
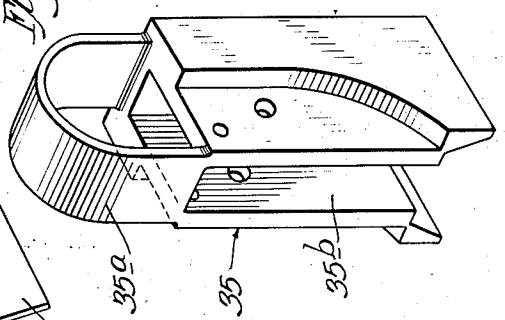


Fig. 7



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UNITED STATES PATENT OFFICE

2,385,956

DISPENSING DEVICE

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Application January 30, 1942, Serial No. 428,829

5 Claims. (Cl. 312—68)

This invention relates to improvements in dispensing devices, and its purpose is to provide dispensing apparatus comprising a spring which may readily adjust itself to the movements and requirements of the device in which it is embodied.

The principal object of the invention is to provide a dispensing device comprising a spring having a hinge connection or other equivalent connection which will permit relative pivotal movement between different parts of the spring. Such a construction is of advantage in permitting one part of the spring to move bodily with respect to another part, without bending or flexing the spring at a predetermined point in the normal operation of the spring as, for example, after a predetermined portion of a coil spring has been unwound. For illustration, such a spring may be used advantageously in connection with the seal feeding mechanism of a strap sealing device of the type disclosed in the United States patent of Ralph H. Norton No. 2,097,955, dated November 2, 1937, and in the copending application of William C. Childress and James M. Royal, Serial No. 310,276, filed December 21, 1939, where a plurality of metal channel-shaped seals are stored in superimposed relationship in a magazine and are fed in succession from that magazine to a sealing device by a movable plunger, the seals being normally retained in the magazine and moved to the seal feeding position by a retaining member which is preferably spring-actuated, so that it effects a positive movement of the seals independently of the force of gravity. As disclosed in said application, the seal retaining member is controlled in its movements by a coil spring and when it is desired to place a new stack of seals in the magazine the retaining member is removed temporarily from the open end of the magazine and positioned alongside the magazine while at the same time bending the connected spring in a direction opposite to that in which the spring is normally bent when it is coiled in position within the retaining member. It has been found in practice that it is difficult to place the retaining member in a position at the side of the magazine to permit the insertion of the seals and that the spring tends to crystallize and break off due to the reverse bending of it about an edge of the magazine when the retaining member is so withdrawn.

An important object of the present invention is therefore to provide a dispensing device for seals or the like comprising a spring having a hinge connection which will permit one part of the spring to be readily swung about the remaining portion thereof after the spring has been partially uncoiled. A further object is to provide a strap sealing device comprising a magazine for receiving metal seals to be fed therefrom in combination with a seal moving member actuated by a spring coiled on a trunnion carried by said member and having its outer end attached to a part which is fixed with respect to the magazine, the coil spring being provided with a hinge connection between its parts and at a point spaced from the fixed end of the spring in such a manner that after the spring has been partially uncoiled the hinge connection will be located at an edge of the magazine about which the remaining coiled portion of the spring and the seal moving member may be swung to a position at the side of the magazine to permit the insertion of a stack of seals. Another object is to provide a device comprising relatively movable machine elements one of which has mounted thereon a coil spring provided with a hinge connection between its ends, the outer extremity of the spring being attached to another part of said device so that said parts may have free relative movement after a predetermined uncoiling of the spring has taken place. Other objects relate to various features of construction and arrangement which will appear more fully hereinafter.

The nature of the invention will be understood from the following specification taken with the accompanying drawings in which one embodiment is illustrated. In the drawings,

Figure 1 shows a perspective view of a flat spring embodying the features of a part of the present invention and adapted to be wound in a coil, portions of said spring being broken away;

Fig. 2 shows a side elevation of the seal magazine and associated parts of a strap sealing device including the improvements of the present invention, with parts thereof broken away and illustrated in vertical section, the seal retaining member being shown withdrawn from the magazine and swung to a position alongside thereof as permitted by the hinge connection which is embodied in the actuating spring;

Fig. 3 shows a vertical section taken on the line 3—3 of Fig. 8, illustrating the seal retaining member when it is in its normal position in the magazine wherein it is adapted to move the seals downwardly to the seal feeding position;

Fig. 4 shows a detailed sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 shows a detailed sectional view taken on the line 5—5 of Fig. 2;

Fig. 6 is a perspective view of one of the seals which are stacked in superimposed relationship in the magazine shown in Fig. 3;

Fig. 7 is a perspective view of the seal retaining member which is adapted to slide vertically in the magazine;

Fig. 8 is a vertical section taken on the line 8—8 of Fig. 3; and

Fig. 9 is a sectional view taken on the line 9—9 of Fig. 3.

In Fig. 1 of the drawings, there is shown a flat steel spring 10 embodying the features of the present invention and consisting of a flat band comprising one part 10a which may be of considerable length and which is provided at one end with a transverse flange 10b adapted to be inserted through a slot in a trunnion or the like upon which the spring may be wound into the form of a spiral coil. At its other end, the part 10a is adapted to be connected with another part 10c through a hinge connection formed through an elongated wire loop 11, the parallel sides of which pivotally engage the eyelets or beads 10d which are formed on the ends of the parts 10a and 10c of the spring. The end portions of these parts of the spring are preferably cut away at their lateral edges adjacent the loop 11, as shown at 10e, so that the length of the connecting loop 11 will not be greater than the width of the body portions of the spring. The part 10c of the spring may be looped, as shown at 10f, and the bent extremity is united to the body of this part of the spring by a rivet 12, thus providing an eyelet which will permit this part of the spring to be connected at its free end to a part of the machine or other device in which the spring is incorporated. When the spring is wound in the form of a coil, the part 10c is adapted to be wound as a continuation of the part 10a and after a partial unwinding of the coil the part 10a and any machine element connected thereto may be swung bodily with respect to the part 10c about the hinge connection.

In Figs. 2, 3, 4, 5, 7, 8 and 9 of the drawings, the invention is shown as being embodied in a strap sealing device of the type above referred to wherein channel-shaped metal seals 13, having the form shown particularly in Fig. 6, are adapted to be stacked in superimposed relationship in a magazine 14 and to be fed therefrom successively to a strap sealing device 15 which is shown particularly in Figs. 3 and 9. The magazine extends upwardly from a frame 16 on which it is mounted and the lowermost seal in the stack is adapted to be fed from the magazine to the sealing device 15 by a seal feeding plunger 17 which slides in a guideway formed in the frame 16 and which moves through openings in the opposite side walls of the magazine 14, as shown in Fig. 3. The seals 13 are of channel form having registering openings 13a in their back walls which permit a stack of seals to be temporarily secured together by a wire or the like preliminary to being placed in the magazine, and overlapping side walls 13b which contact with each other as shown in Figs. 3 and 8 and space the back walls of the seals apart. This permits a projection 17a on the upper edge of the forward end of the plunger 17 to overlie the back wall of the lowermost seal of the stack when the seal feeding plunger is actuated by the lever arm 18 to move this seal from the magazine to a position between the jaws 19 of the sealing device. These jaws are mounted on pivots 20 extending between the side plates 21 of the sealing head which is adapted to be moved bodily in a vertical direction alongside the magazine 14. Between the side plates of the head there is slidably mounted an actuating member 23 which is pivotally connected at 24 to a pair of links 25 which have their other ends pivotally connected at 26 to the upper arms of the jaws 19. When the actuating member 23 is moved downwardly, the links 25 serve to spread the upper arms of the jaws apart, thus closing the lower parts of these jaws upon each other to bend the side walls 13b of a seal which is positioned between the jaws and retained by the projecting extremities 19a of these jaws. A saddle or supporting member 27 engages the back wall of the seal and is actuated by a spring 28 mounted between the saddle and a block 29 to press the seal against the projections 19a of the jaws so that the seal is held securely in position between the jaws after being fed thereto by the plunger 17. A pair of springs 30 serve normally to retract the actuating member 23 and to separate the lower portions of the jaws, as shown in Fig. 9, so that they are in readiness to receive a seal between them.

The feeding of a seal to a position between the jaws of the head or sealing device 15 is effected when this sealing device is in its elevated position as shown in Fig. 3 and, after the seal has been inserted, the sealing device 15 is moved bodily downward to position the seal over the overlapping ends of a strap 31 which may be passed around a box or package to be reinforced thereby and which has one end portion 31a seated upon a base flange 16a of the frame of the machine. After being placed around the box or package with the end portion 31a held by a gripping device (not shown), the supply portion 31b of the strap is placed in position to be held by other gripping devices, including the gripping dog 32, and, after the strap has been drawn taut, it is cut off from the source of supply by means not illustrated, but which may preferably be actuated by the initial downward movement of the head 15, so that when the head reaches the limit of its downward movement the seal 13 carried by the jaws will be positioned upon the overlapping strap ends. The means for moving the head 15 bodily downward is not illustrated but, after this means has been actuated, to place the seal in position on the strap ends, the plunger 23 is moved downwardly through the actuation of a pinion 33 carried by the head and arranged to mesh with rack teeth 23a formed on the plunger. This causes the jaws 19 to be actuated to bend the side walls of the seal about and beneath the overlapping strap ends and shearing dies embodied in the jaws then shear the lateral edges of the seal and the enclosed strap ends and deflect portions thereof adjacent the cuts which are thus formed, thereby providing an interlocking joint.

In order that the superimposed seals 13 in the magazine 14 may be moved successively to a position where they may be engaged by the feeding plunger 17, upon the forward movement of this plunger, toward the right as viewed in Fig. 3, the magazine 14 is equipped with a removable retainer or follower 35 in the form of a block of rectangular cross section which fits loosely with the corresponding rectangular chamber of the magazine. This retainer is provided at its upper end with a U-shaped handle portion 35a to permit it to be withdrawn by the fingers and it is provided on the side thereof, which is farthest removed from the head 15, with a vertical slot 35b, in the walls of which there is mounted a trunnion 36 in the form of a split pin adapted to receive between the semicircular portions thereof the extremity 10b of the spring 10. The pin or trunnion 36 has a square head 36a which enters a recess 35c in the side of the retaining member and which engages a shoulder 35d to hold the pin against rotation. The semicircular extremities 36d of the pin are adapted to be spread apart to hold the pin in place after it has been inserted. Having placed the transverse flange 10b of the spring in engagement with the slot of the pin or

trunnion 36, the spring is wound in spiral fashion thereon and the eyelet 10f, previously described, is secured in place at the bottom of the magazine 14, adjacent to the plunger 17, by a pin 37. The wall of the magazine 14 is provided with an opening 14a to receive the eyelet 10f and adjacent parts of the spring and the wall is further slitted at the sides of this opening 14a and parts of the metal of the magazine wall are bowed outwardly to form two loops 14b which act as bearings for the pin 37 when this pin is inserted endwise through these loops and through the eyelet 10f, as shown in Figs. 3 and 4. The pin 37 is pointed at one end, as shown at 37a and is provided with two annular grooves 37b which register with the loops 14b when the pin is fully inserted. The tension of the coiled spring 10 then holds the pin upwardly, as shown in Fig. 3, with the upper parts of the loops 14b engaging the grooves 37b so that the pin is then securely held against endwise movement.

With the foregoing arrangement, the spring 10, attached to the lower part of the magazine and being normally coiled upon the trunnion 36 carried by the retainer or follower 35 when the follower is in the magazine, serves to supplement the action of gravity in moving the member 35 downwardly so that it presses upon the upper end of the stack of seals 13 and moves a new seal to the feeding position when the feeding plunger 17 is restored to its normal position after a feeding operation. When all of the seals in the magazine have been used and it is desired to insert a new stack of seals, the operator engages the handle 35a and pulls the member 35 out of the magazine while at the same time extending the spring 10 and unwinding it from the trunnion 36. As the member 35 is withdrawn through the mouth of the magazine, it is tilted laterally over the upper edge of the magazine and the spring 10 then extends through a slot 14c which is formed in the wall of the magazine in vertical alignment with the opening 14a. As the member 35 swings over the edge of the magazine, it is inverted in position and the coil spring automatically pulls the member 35 in its inverted position against the side wall of the magazine as shown in Fig. 2. With this arrangement of the parts, the hinge connection 11 in the spring is located at or slightly above the edge 14d of the slot or opening 14c so that the extended portion of the spring between the hinge connection 11 and the eyelet 10f lies flat against the side wall of the magazine and does not interfere with the insertion of a stack of seals. When the seals have been inserted, and the temporary connection between the seals removed, the member 35 is again placed in the magazine, by reversing the process just described, whereupon the spring 10 will again act to hold the member 35 against the uppermost seal in the stack and to force the seals successively downward to the feeding position where they are engaged by the feeding plunger 17.

Although one form of the invention and one of its uses have been shown and described by way of illustration, it will be understood that the invention may take various forms and have various adaptations without departing from the scope of the appended claims.

I claim:

1. In combination, an open mouth receptacle having a dispensing opening therein and adapted to contain a plurality of stacked articles, a member adapted to engage the endmost one of said articles in said receptacle, and a normally coiled spring connected to said receptacle and to said member arranged to press said member against said article engaged thereby to force said articles toward said opening, said spring having a hinge connection therein adapted to be located at the edge of said mouth when said spring is partially uncoiled and the coiled portion thereof removed from said receptacle.

2. In combination, an open mouth receptacle having a dispensing opening and adapted to contain a plurality of stacked articles, a member adapted to engage the endmost one of said articles in said receptacle, and a flat spring normally wound in a coil, said spring having one end attached to said receptacle and the other end attached to said member, said spring comprising parts which are hinged together at a point removed from the place of attachment of said spring to said receptacle a distance substantially equal to the distance of said place of attachment from an edge of the receptacle about which the spring may be tilted when partially unwound and upon removal of said member from said receptacle through said open mouth.

3. An elongated receptacle adapted to contain a stack of superimposed articles, said receptacle being open at one end and having an outlet removed from said opening, a follower mounted to slide in said receptacle and to engage one end of said stack between said outlet and said open end, and a normally coiled spring connected to said follower and having its outer end attached to said receptacle at a point such that said spring is adapted to move said follower toward said outlet due to the tension of the spring, said spring comprising two parts hinged together at a point removed from said connection with said receptacle to permit said follower and the body portion of said spring to be swung over an edge of said receptacle when removed therefrom.

4. In combination, an open mouth receptacle adapted to contain a plurality of stacked articles, said receptacle having an outlet through which said articles are adapted to be discharged, a member occupying normally a position in said receptacle and engaging the endmost one of said articles, and a normally coiled spring carried by said member with one end thereof attached to said member and the other end attached to said receptacle, whereby the tension in said spring causes said member to move said articles toward said outlet, said coil spring having a hinge connection therein to permit said member and the major portion of the coil to be swung laterally over an edge of the mouth of said receptacle upon partially unwinding the coil.

5. In combination, an open mouth receptacle having a dispensing opening and adapted to contain a plurality of stacked articles, a member adapted to engage the endmost article in said receptacle, a flat spring normally wound in a coil and having one end attached to said member and its other end fixed with respect to said receptacle, said spring having a hinge connection therein at a point more removed from said attached end than from said fixed end to permit said member and the major portion of said coiled spring to be swung about said hinge when removed through said mouth.

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