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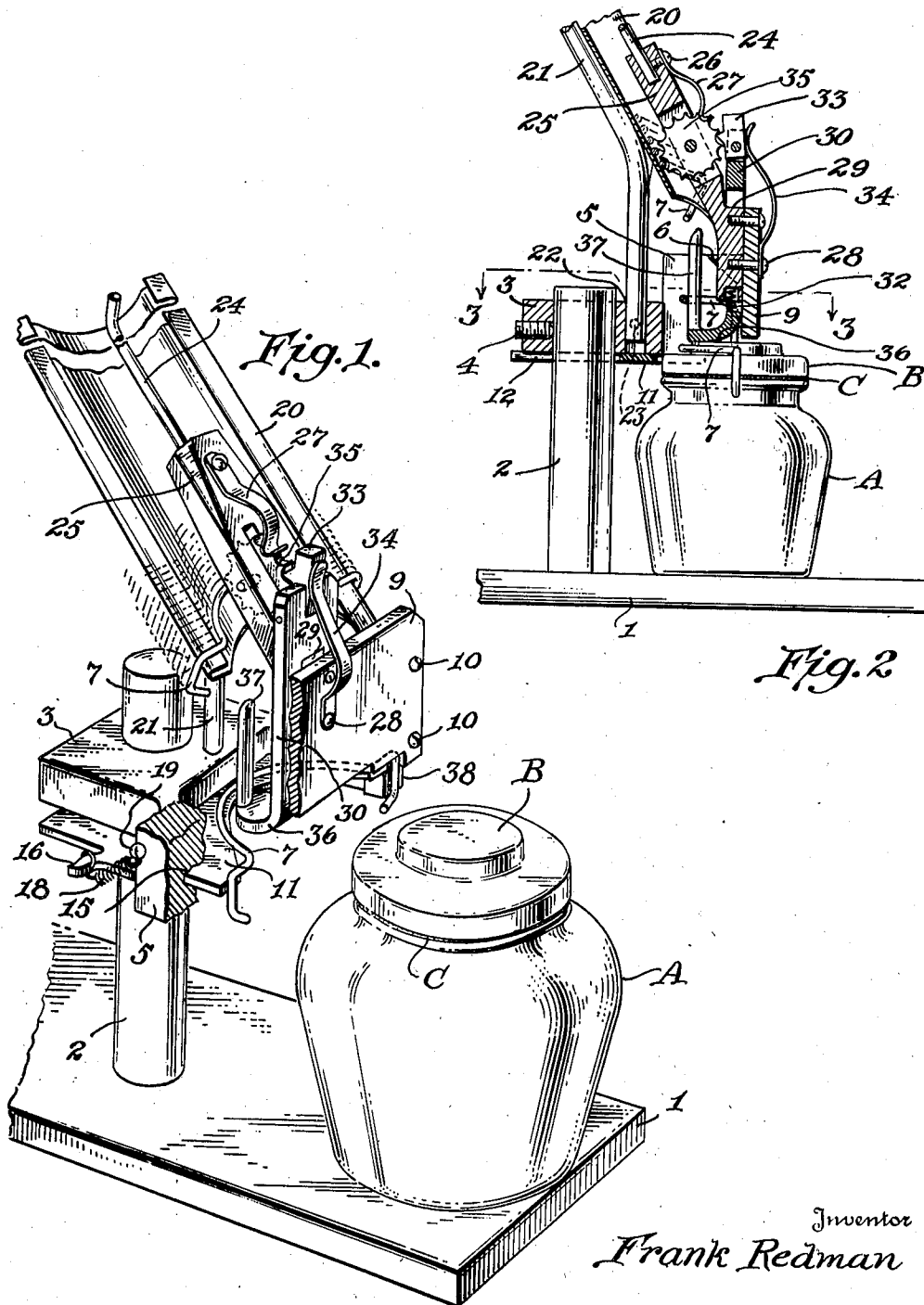
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CLAMP-APPLYING APPARATUS

Filed Jan. 14, 1942

2 Sheets-Sheet 1



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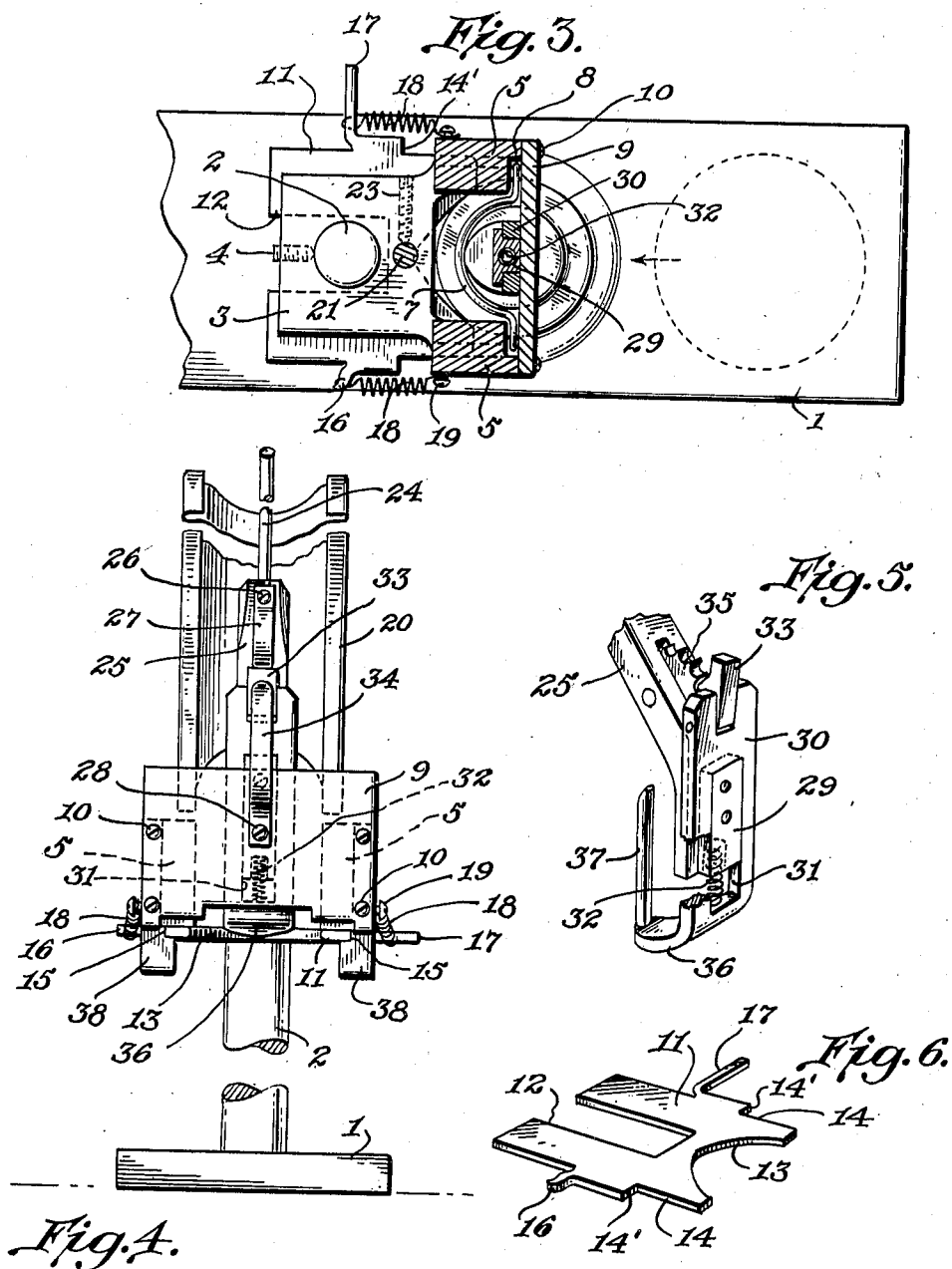
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UNITED STATES PATENT OFFICE

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CLAMP-APPLYING APPARATUS

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9 Claims. (Cl. 226—80)

This invention relates to an apparatus for applying wire clamps and the like to jars and similar receptacles, and has for its primary object to provide a simplified yet reliable construction by which the clamps will be successively fed into position and securely held while the jar and closure are forced against the clamp to properly secure the latter on the jar and thereby lock the closure in position.

Another object of the invention consists in the provision of a clamp-applying device having an automatic magazine feed for the jar clamps which is operated by each jar to present a clamp in position to be applied to the succeeding jar.

Another object of the invention consists in providing an anvil against which the clamp is held while the jar is being moved into the clamping position.

A further object of the invention resides in the provision of a clamp-applying device which may be readily adjusted for use with jars of varying height.

A still further object of the invention consists in providing a clamp applying apparatus for jars which is entirely automatic, it being only necessary to present the jar to the clamp-applying station, the operation of the parts of the mechanism all being caused to function by the movement of the jar to clamping position.

Other objects and advantages of the invention will be apparent from the following description when taken in connection with the accompanying drawings, in which,

Figure 1 is a perspective view of the clamp-applying apparatus; parts being broken away.

Figure 2 is a longitudinal sectional view of the apparatus; part of the magazine being broken away.

Figure 3 is a horizontal sectional view taken on line 3—3 of Figure 2.

Figure 4 is a front elevational view of the apparatus.

Figure 5 is a detail perspective view of the clamp feeding mechanism; and

Figure 6 is a perspective view of the slidable plate for temporarily supporting the clamps as they are individually fed into position to be applied to the jars.

Referring to the drawings in more detail, numeral 1 indicates a table top or other base upon which the clamp-applying apparatus is mounted, and on which the jars are supported as they are forced into cooperative relation with the apparatus and the jar clamp to be applied to the

particular jar. The numeral 2 indicates a rod or other standard mounted on the base 1 and upon which the horizontal portion 3 of the clamp-applying apparatus is mounted for vertical adjustment by a set screw 4, so as to adapt the apparatus to jars of varying vertical dimensions.

The body of the clamping apparatus includes in addition to the horizontal portion 3 which is mounted upon the standard 2, two vertically extending posts 5 located at opposite sides of the front end of the body. These posts 5 are rounded at their upper ends as indicated by numeral 6 (Figure 2) to form a guide for the clamps 7 as they are released, from the magazine, and each post is also formed with a groove or rabbet on its front face, as indicated by numeral 8, to provide passageways for the legs of the clamps. A face or cover plate 9 is secured to members 5 by means of screws 10, and forms a closure for the front side of the grooves 8.

Slidably mounted upon the under face of the body 3 is a plate 11 provided with a longitudinal slot 12 through which the standard 2 extends, and an arcuate notch 13 in its forward edge adapted to be engaged by a portion of the closure of the jar as the latter is presented to the apparatus. The side edges 14 of the plate 11 are slidably mounted in horizontal grooves 15 formed in the adjacent faces of the posts 5, and laterally extending lugs 16 and 17 are formed on the edges of plate 11 and form anchoring means for one end of springs 18 which have their opposite ends connected to screws 19 secured to the outer faces of the posts 5. Shoulders 14' formed on the plate 11 cooperate with the rear faces of posts 5 to limit the forward movement of the plate, and the springs 18 operate to return the plate to that position after each operation of the apparatus. The lug 17 is made somewhat longer than lug 16 so as to provide for manual operation of the plate 11 in the event that it should become desirable, for any reason, to manually remove one or more of the clamps from the apparatus.

A chute or magazine 20 is employed for receiving and feeding downwardly a supply of the jar clamps 7, and this chute is welded or otherwise connected to a supporting rod 21 which has its lower end positioned in an aperture 22 in body member 3. The rod 21 may be releasably secured in position by means of a set screw or the like 23 extending through a side of the body 3. A rod 24 overlies the series of clamps on the chute 20 and serves to maintain the clamps in stacked

relationship. The lower end of rod 24 is mounted in a bracket 25 and is releasably held therein by a set screw 26. This screw also forms an anchorage for a spring detent 27, the purpose of which will later appear.

The bracket 25 is secured at its lower end to the rear face of the cover plate 9 of the apparatus, as by screws 28. The base or lower end 29 of the bracket is of rectangular configuration and serves as a guide for an indexing finger or trigger which is generally indicated by the numeral 30. The finger 30 is in the form of a vertically disposed plate provided with an elongated slot 31 which is engaged over the base 29 of bracket 25 but is somewhat longer than the base 29 so as to permit vertical movement of the plate or finger. A compression spring 32 has one end mounted in a recess in the lower end of base member 29 and the opposite end thereof engages the bottom wall of slot 31 in the finger 30, so that the finger is normally maintained in its lowest or inoperative position.

Pivoted in a slot in the upper end of finger 30 is a pawl 33 which is normally pressed to the left (Figure 2) by means of a leaf spring 34 mounted on one of the screws 28 which attach the bracket 25 to the cover plate 9. The pawl 33 cooperates with an indexing wheel 35 which is mounted for rotation in a slot formed in the bracket 25. The periphery of the indexing wheel is provided with a series of notches adapted to individually engage over the mid-portion of the clamps 7 as they descend the chute 20. Upward movement of the indexing finger 30 will, through the medium of pawl 33, cause the wheel 35 to rotate one step and thereby allow one clamp to pass downwardly through the mechanism to the clamp-applying apparatus. A step-by-step movement of the indexing wheel is insured by reason of the leaf spring 27, heretofore referred to, which has its free end positioned to engage the successive notches in the wheel as it is rotated by the action of pawl 33.

The lower end of the indexing finger 30 is provided with a rearwardly curved portion 36 which terminates in an upwardly-extending pin 37. This curved portion 36 of the finger 30 functions as a cam to raise the indexing finger as the jar to be clamped is pushed into the clamping position; the movement of the forward edge and top surface of the jar closure producing a wiping action against the curved surface to lift the finger and thereby cause a partial rotation of the indexing wheel 35. The pin 37 serves as a guide for the mid-portion of a jar clamp released by the indexing wheel, while the downwardly-curved top edges 6 of the posts 5 serve as guides for the leg portions of the clamps, so that the clamp will be deposited in proper relationship to the jar when the mechanism is operated. Such position is indicated in Figure 1, in which the intermediate portion of the wire clamp rests upon the reciprocable plate 11, and the legs of the clamp are positioned in front of the anvil portions 38 of the posts 5.

The complete operation of the apparatus in applying clamps to the jars as the jars are successively presented to the apparatus, will now be described, it being assumed that a supply of clamps has been loaded into the magazine 20, and that the body member 3 of the mechanism has been adjusted to the proper position on the standard 2, for the height of the jars being clamped.

In this particular instance the jar A is pro-

vided with a closure having a central raised portion B, and it will be apparent that the mid-portion of the clamp partly encircles the raised portion B, while the legs of the clamp extend below the closure and engage under a shoulder formed on the body of the jar. A gasket or liner is provided between the jar and its cover, a gasket C being illustrated in the present embodiment.

With the parts shown in the positions indicated in Figure 1, the operator slides the jar forwardly into the clamping station. In this movement of the jar the forward edge of the closure enters the notch 13 of plate 11 and forces the latter rearwardly against the tension of the springs 18. Consequently the clamp is deposited on the top of the cover B, and continued movement of the jar causes the mid-portion of the clamp to snugly engage the part B while the legs of the clamp engage under the shoulder on the jar. In this final movement of the jar it will be noted that the legs of the clamp are in contact with the anvil portions 38 of the posts 5 so that the legs are firmly braced, thereby holding the clamp against rearward movement while it is being forced into actual clamping position to lock the cover in place. The clamped jar is now withdrawn and the apparatus is ready to receive another jar.

In the movement of the jar into the clamping station the forward edge of the raised portion B of the closure engages the rounded or cam-like portion 36 of the trigger 30 and raises it against the pressure of spring 32. This movement of the trigger causes the pawl 33 to rotate the indexing wheel 35 through one step so as to allow another clamp 7 to descend to a point adjacent the clamping station. This clamp is guided by the pin 37 and the curved portions 6 of posts 5 into a position just above the jar, as shown in Figure 2. As the jar is removed, after being clamped, the succeeding clamp which has been freed from the magazine by the jar, will drop from its position shown in Figure 2 to the position shown in Figure 1, where it rests upon the movable plate 11 with its legs presented to anvils 38, until another jar enters the apparatus.

From the foregoing description and the accompanying drawings, it will be apparent to those skilled in the art that I have devised a comparatively simple yet reliable clamp-applying apparatus, that the clamps are automatically fed into clamping position, that an anvil is provided to hold the clamps against rearward movement while being forced onto the jars, that the entire device is automatic except for the movement of the jars into the clamping station, and that by a very simple adjustment the apparatus may be adapted to jars of varying heights.

In accordance with the patent statutes I have described what I now believe to be the preferred form of the invention, but inasmuch as various changes may be made in the apparatus without departing from the spirit of the invention, it is intended that all such changes be included within the scope of the appended claims.

What I claim is:

1. A clamp-applying mechanism for jars, including a magazine for a supply of clamps, means for immovably supporting a clamp in position to be placed upon a jar, and means operated by movement of a jar against the immovable clamp for successively feeding clamps to said position.

2. A clamp-applying mechanism for jars, in-

cluding a magazine for a supply of clamps, an anvil for immovably holding a clamp against rearward movement, and means operated by movement of a jar against the immovable clamp for successively feeding clamps to the anvil.

3. A clamp-applying mechanism for jars, including a magazine for a supply of clamps, movable and immovable means for supporting a clamp in position to be placed upon a jar, said immovable means holding the clamp immovable during the clamp applying operation, and said movable means being disposed in the path of a jar so as to release the clamp as the jar is moved to clamping position.

4. A clamp-applying mechanism for jars, including a magazine for a supply of clamps, means for supporting a clamp in position to be placed upon a jar, and jar-operated means for successively feeding clamps to said position, said jar-operated means including a vertically movable indexing finger, a cam on said finger normally in the path of movement of a jar, and an indexing wheel cooperating with the supply of clamps and with the indexing finger.

5. A clamp-applying mechanism for jars, including a fixed and a movable support for immovably supporting a clamp, said movable support being disposed in the path of the jar to release the clamp as the jar is moved to clamping position, and means for feeding clamps to said fixed and movable supports.

6. A clamp-applying mechanism for jars, including a magazine for a supply of clamps, a

plate for supporting a clamp in position to be placed upon a jar, means for successively feeding clamps to the plate, and an anvil positioned behind a portion of a clamp fed to the plate to hold the clamp immovable during the clamp applying operation.

7. A clamp-applying mechanism for jars, including a magazine for a supply of clamps, movable means for supporting a clamp in position to be placed upon a jar, an anvil for holding the clamp immovable during the clamp applying operation, means for successively feeding clamps to said movable means and anvil, and said movable means being disposed in the path of a jar so as to release the clamp as the jar is moved to clamping position.

8. A clamp-applying mechanism for jars, including a magazine for a supply of clamps, fixed means for immovably supporting a clamp in position to be placed upon a jar, jar-operated means for successively feeding clamps to said fixed supporting means, and a guide connected with the jar-operated means for directing individual clamps to said support.

9. A clamp-applying mechanism for jars, including a magazine for a supply of clamps, a plate for supporting a clamp in position to be placed upon a jar, jar-operated means for successively feeding clamps to said plate, and a pin on said jar-operated means for directing clamps to said plate.

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