March 22, 1932. C. D. HATFIELD 1,850,077

WIRE SEALING FASTENING MACHINE

Filed March 12, 1931 2 Sheets-Sheet 1

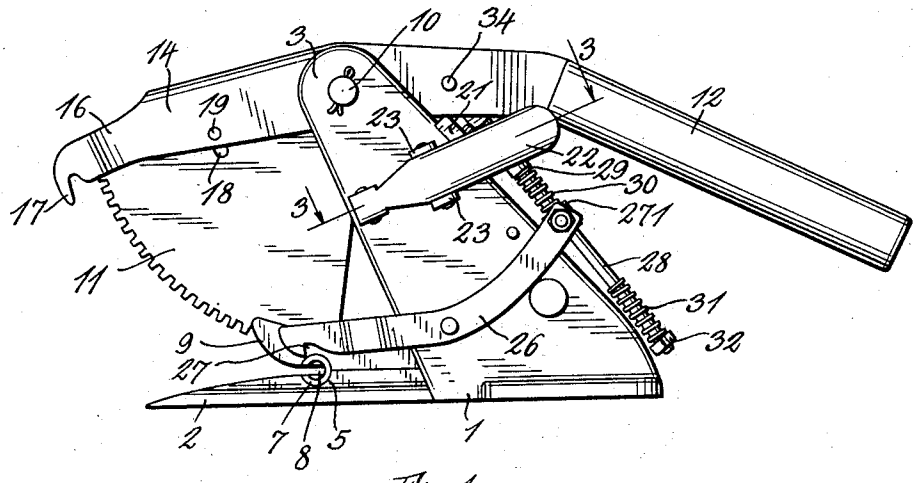


Fig. 1.

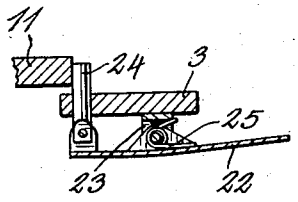


Fig. 3.

Fig. 2.

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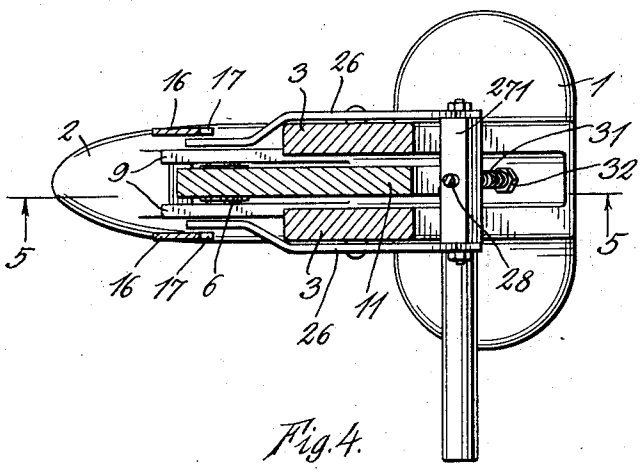


Fig.4.

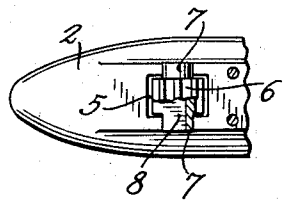


Fig.6.

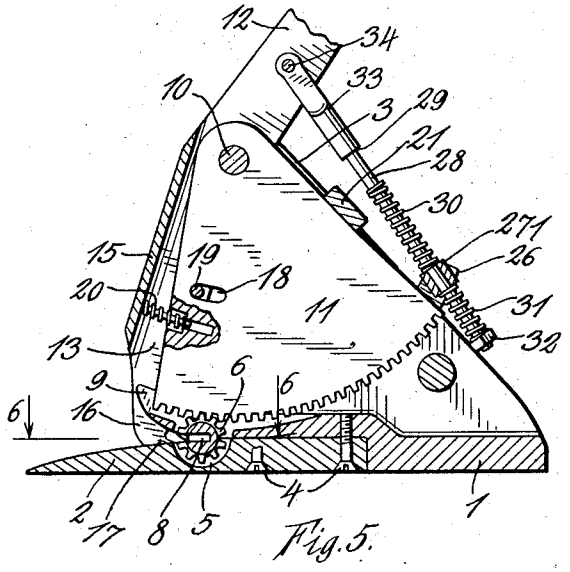


Fig.5.

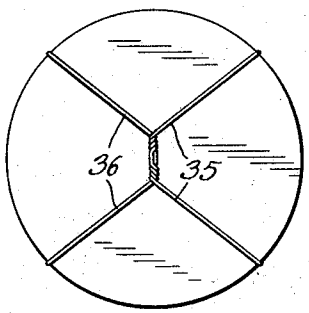


Fig.7.

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UNITED STATES PATENT OFFICE

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WIRE SEALING FASTENING MACHINE

Application filed March 12, 1931. Serial No. 521,971.

This invention relates to improvements in devices for twisting wires and has reference more particularly to a device intended for use in sealing candy pails and similar containers in which the cover is held in place by means of two wires whose ends are secured to the pail portion.

This invention briefly described, consists of a base having two spaced brackets extending upwardly therefrom. A pinion is rotatably mounted between the brackets near the bottom of the base. A sector-shaped gear wheel is located between the two arms and pivotally attached to the latter. This gear is in mesh with the pinion so that when it is turned about its pivot, it will rotate the pinion. The pinion is provided with a slot or opening extending inwardly to a point slightly beyond its center. This opening is for the reception of the two wires that are to be twisted. A handle is secured to the gear wheel and serves as a means for rotating the same. The end of the handle is provided with hooks for engaging one of the wires and moving it into the opening in the pinion. Holding members are secured to the brackets and are provided with notches on their lower surfaces and serve to hold the wires after they have been moved into the opening in the pinion. The pinion is first rotated in one direction to the extent of its movement and the two wires are then introduced into the slot, after which the pinion is rotated in the opposite direction and twists the wires.

Having thus briefly described the invention, the same will now be described in detail, and for this purpose reference will be had to the accompanying drawings, in which the preferred embodiment thereof has been illustrated, and in which:

Fig. 1 shows a side elevation of the machine;

Fig. 2 is another side elevation showing the parts in another position;

Fig. 3 is a section taken on line 3—3 Fig. 1, and shows the stop;

Fig. 4 is a section taken on line 4—4, Fig 2;

Fig. 5 is a section taken on line 5—5, Fig. 4;

Fig. 6 is a fragmentary view taken on line 6—6, Fig. 5, and shows the position of the pinion with respect to the base; and

Fig. 7 is a top plan view of a candy pail that has been sealed by means of this device.

In the drawings reference numeral 1 represents the base which is preferably made of two parts and has a removable portion 2 and two upwardly extending spaced brackets 3. The part 2 is secured to the part 1 by means of screws 4 and is provided with a recess 5 in which is located a pinion 6. This pinion is provded with trunnions 7 at each end and is also provided with a slot or opening 8 that extends inwardly to a point beyond the center, as shown in Fig. 5. The trunnions are mounted for rotation in bearings between the member 2 and the guide members 9. Pivotally connected to the upper ends of the brackets by means of a pin 10 is a sector-shaped gear wheel 11. This gear wheel is operatively connected with the pinion in the manner shown in Fig. 5. Secured to the gear wheel is a handle 12. This handle has two parallel sides 13 and 14 connected by a member 15, so that its cross section is substantially U-shaped. This handle is pivoted on pin 10 and extends outwardly beyond the periphery of the gear where it terminates in two ends 16 that are provided with hooks 17 on the side adjacent the pinion. The gear is provided with a longitudinal opening 18 for the reception of a pin 19 that extends through the two sides 13 and 14. This pin connects the handle with the gear and permits a slight relative movement between the two. Interposed between the handle and the gear is a spring 20 which is shown in Fig. 5. This spring tends to hold the handle and the gear in a certain positon, but permits the handle to move relative to the gear after the gear has come in contact with the stop 21. Secured to the outside of one of the brackets is a lever 22. This lever is pivoted between lugs 23 and has a plunger 24 attached to its end in the manner shown in Fig. 3. A spring 25 serves to move the plunger inwardly so as to bring it into the path of the gear 11. Pivotally attached to the two brackets are holder bars 26, the forward ends of which are provided with notches 27. These notches are

located slightly to the front of the center of the pinion and serve to receive the wires and hold them in place in a manner which will hereinafter be more fully described. The rear ends of the members 26 are connected by means of a bar 271 as shown most clearly in Figs. 4 and 5. This bar has an opening through which the rod 28 extends. Rod 28 is provided with an abutment 29 against which one end of the spring 30 abuts, and another spring 31 is located between the lower surface of bar 271 and the upper surface of nut 32. Secured to the upper end of rod 28 is a connector 33 having its upper end pivoted at 34 to the handle 12. When the handle is in the position shown in Fig. 1, in which it engages the stop 21 spring 30 is under compression and the holders 26 are held with their front ends elevated but when the handle is moved to the position shown in Fig. 2, the holders have their lower ends down besides the ends of the pinion so that the hooks in the ends of these holders are in position to hold the wires that have been indicated by reference numerals 35 and 36.

The extent of the movement of the gear wheel is limited by the stop 21 with which it is engaged by the handle when the parts are in the position shown in Figs. 2 and 5 and by the plunger 24 which is interposed in the path of the gear wheel when the parts are in the position shown in Fig. 1, in which position the gear and the handle can move as a unit through a small angle since the stops are so located that when the gear engages the stop 24, the handle is spaced a short distance from stop 21. The gear wheel 11 is permitted to move through such an angle that it will rotate the pinion two complete turns and a slight amount in excess of this. Although two turns is believed to be preferable, a larger number of turns can be employed if found desirable.

With the parts assembled in the position shown and described, we will now assume that the device is to be used for sealing a candy pail provided with two sealing wires 35 and 36 as shown in Fig. 7. The ends of the sealing wires are attached to the pail portions and form loops that are bent over the top of the cover. With the parts in the position shown in Fig. 1 the device is inserted underneath wire 35 which is moved into the opening in the pinion. The plunger 24 is then withdrawn by pressure on the handle 22 after which handle 12 is moved upwardly from the position shown in Fig. 1 to that shown in Fig. 2. During this movement the hooks 17 engage the wire 36 and brings it into the position shown in Fig. 2. When the parts are in the position shown in Figs. 2 and 5, the gear has engaged the stop 21 and any further movement of the handle compresses the spring 20 and when this occurs the wire 35 is brought into the opening 8 in the pinion and back of the shoulders of the hooks in the holding members. The wires will now be held in place and when the handle is moved from the position shown in Fig. 2 to that shown in Fig. 1, the pinion will be rotated in a counter clockwise direction through two complete turns, thereby twisting the two wires together in the manner shown in Fig. 7. In order to compensate for the resiliency of the wires, the pinion is rotated slightly beyond the position shown in Fig. 1 and then returned so that the wires can be readily removed without the force that would otherwise be required. Guides 9 project in front of the pinion and serve to direct the wires into the notch in the pinion.

From the above description it will be seen that the device described is very simple and can therefore be cheaply made. The operation is positive and the construction is such that the device will be able to resist all the strains to which it will normally be exposed.

I wish to call particular attention to the lost motion connection between the gear and the handle and to the fact that the pinion is rotated through a certain number of complete turns plus a small angle so that it will remove the strains due to the resiliency of the wire, and therefore permit the free removal of the device from the wires.

Having described the invention what is claimed as new is:

1. A device of the class described comprising in combination, a pinion mounted for rotation about its own axis, said pinion having a radial opening extending inwardly and terminating substantially at the center, a sector-shaped gear of larger diameter than the pinion and operatively associated with the latter, a handle attached to the gear for moving the same about its axis, a removable stop interposed in the path of the gear when it is in one position, and a stationary stop interposed in the path of the handle and adapted to be engaged by the latter when it is moved in such a direction that the gear is moved away from its stop, the stops being positioned so that the gear and handle can be moved through a small angle while the removable stop is in operative position.

2. A device of the class described comprising, in combination, a pinion mounted for rotation about its own axis, said pinion having a radial opening extending inwardly and terminating substantially at the center, a sector-shaped gear of larger diameter than the pinion and operatively associated with the latter, a handle attached to the gear for moving the same about its axis, a connection between the gear and the handle permitting a slight relative movement, a removable stop interposed in the path of the gear when it is in one position, and a stationary stop interposed in the path of the handle and adapted to be engaged by the latter when it is moved

in such a direction that the gear is moved away from its stop, the stops being positioned so that the gear and handle can be moved through a small angle while the removable stop is in operative position.

3. A wire twisting machine comprising, in combination, a frame, a pinion rotatably connected therewith, two spaced brackets extending upwardly from the base, a sector-shaped gear pivotally connected with the brackets, said gear meshing with the pinion, a handle fastened to the gear with a lost motion connection, a spring interposed between the handle and the gear, the handle extending beyond the outer edge of the gear, the end of the handle having a hook, the pinion having a radial opening extending to the center, said opening being adapted to receive two wires to be twisted and a hook carried by the frame for holding wires in place in the opening.

4. A wire twisting machine comprising, in combination, a frame, a pinion rotatably connected therewith, two spaced brackets extending upwardly from the base, a sector shaped gear pivotally connected with the bracket, said gear meshing with the pinion, a handle fastened to the gear with a lost motion connection, a spring interposed between the handle and the gear, the handle extending beyond the outer edge of the gear, the end of the handle having a hook, the pinion having a radial opening extending to the center, said opening being adapted to receive two wires to be twisted, a hook carried by the frame for holding wires in place in the opening and means for moving the hook into and out of operative position.

5. A device for twisting two parallel wires comprising, a base having two spaced upwardly extending brackets, a pinion mounted for rotation between the brackets, a sector shaped gear also pivotally connected with the brackets and operatively associated with the pinion, the pinion having an opening extending entirely through it and inwardly to the center, a handle connected with the gear and adapted to rotate the latter about its pivot, means for limiting the rotation of the gear in both directions, the angle through which the gear is permitted to rotate being such that the pinion will be rotated through a number of complete turns plus a small angle, the handle having its end extending beyond the outer edge of the gear and provided with notches on the side towards the pinion, the distance from the center of the gear to the notches being equal to the distance between the centers of the gear and the pinion, and holding members secured to the brackets and extending over the ends of the pinion, the ends of the holding members being provided with hooks for holding the wires in the opening in the pinion.

6. A device for twisting two parallel wires comprising, a base having two spaced upwardly extending brackets, a pinion mounted for rotation between the brackets, a sector shaped gear also pivotally connected with the brackets and operatively associated with the pinion, the pinion having an opening extending entirely through it and inwardly to the center, a handle connected with the gear and adapted to rotate the latter about its pivot, means for limiting the rotation of the gear in both directions, the angle through which the gear is permitted to rotate being such that the pinion will be rotated through a number of complete turns plus a small angle, the handle having its end extending beyond the outer edge of the gear and provided with notches on the side towards the pinion, the distance from the center of the gear to the notches being equal to the distance between the centers of the gear and the pinion, holding members secured to the brackets and extending over the ends of the pinion, the ends of the holding members being provided with hooks for holding the wires in the opening in the pinion and means for moving the holding members.

7. A machine for bringing two spaced parallel wires together and twisting them comprising, in combination, a frame, a pinion rotatably connected therewith, a sector shaped gear pivotally connected with the frame, said gear meshing with the pinion, a handle fastened to the gear for turning the same about its pivot, the pinion having a radial opening extending substantially to its center, said opening being narrower than twice the diameter of the wires to be twisted and means for engaging one of the spaced wires and moving it into the radial opening adjacent the other wire and means for holding the wires in the opening while they are twisted.

8. A machine for bringing two spaced parallel wires together and twisting them comprising, in combination, a frame, a pinion rotatably connected therewith, a sector shaped gear pivotally connected with the frame, said gear meshing with the pinion, a handle fastened to the gear for turning the same about its pivot, the pinion having a radial opening extending substantially to its center, said opening being narrower than twice the diameter of the wires to be twisted, means for engaging one of the wires and moving it towards the other wire, and means for holding the wires in place in the opening while they are twisted.

In testimony whereof I affix my signature.

CEPHAS D. HATFIELD.