Nov. 24, 1959 N. D. BENSON 2,913,937

AUTOMATIC BOTTLE DECAPPER

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Fig. 1

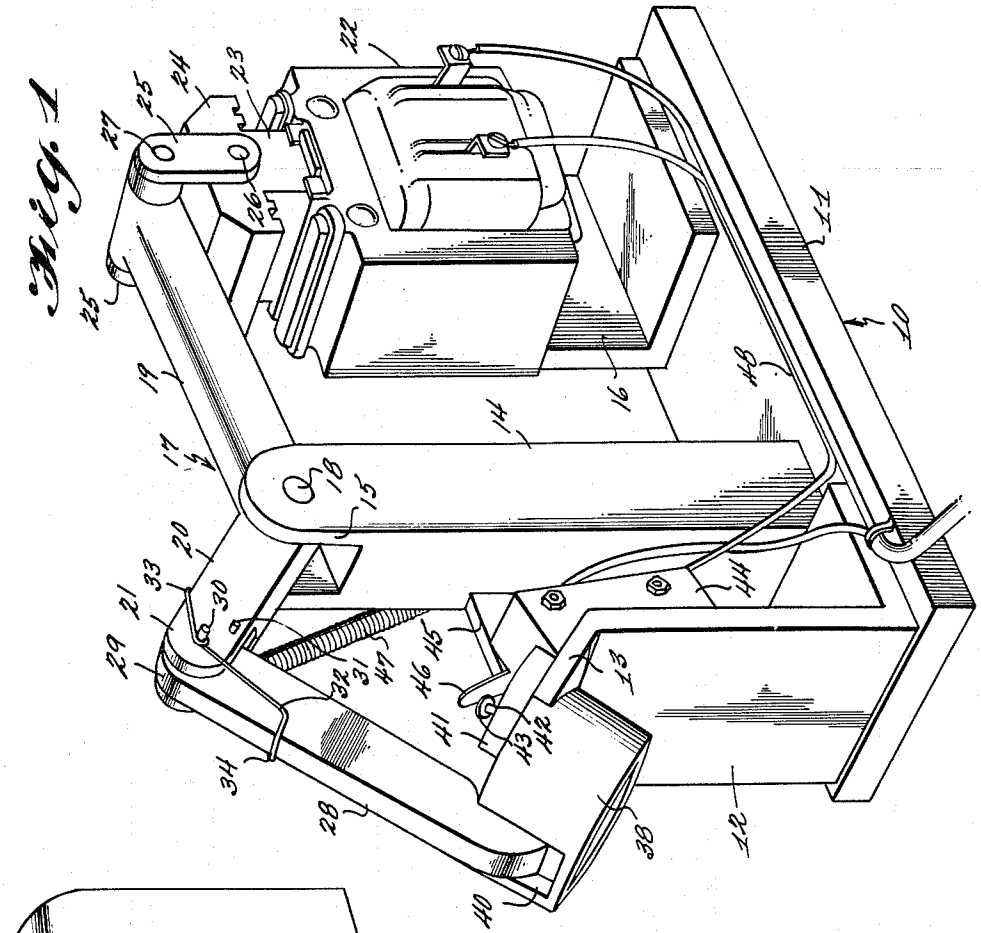
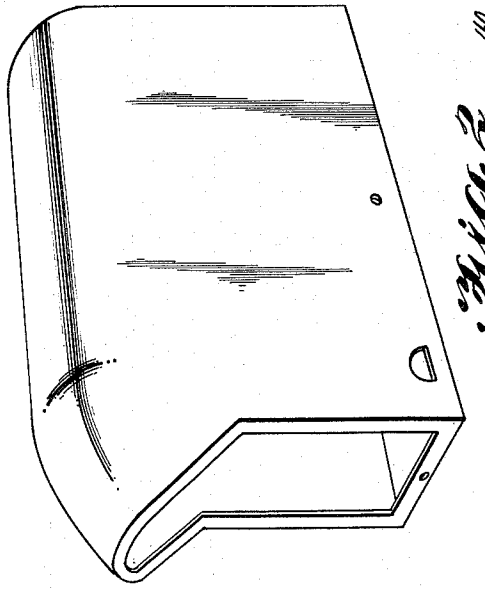


Fig. 2



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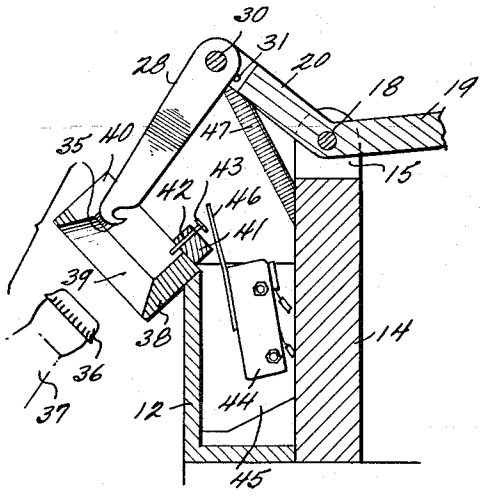


Fig. 3

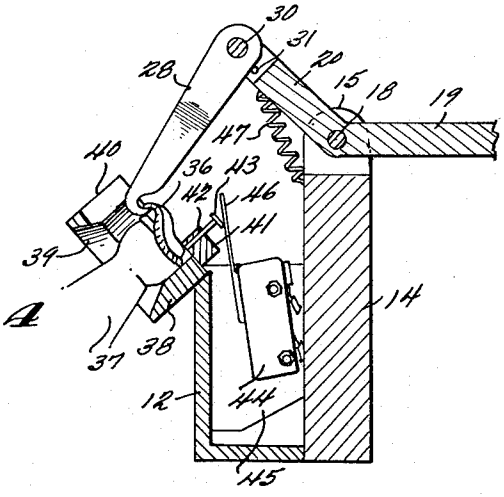


Fig. 4

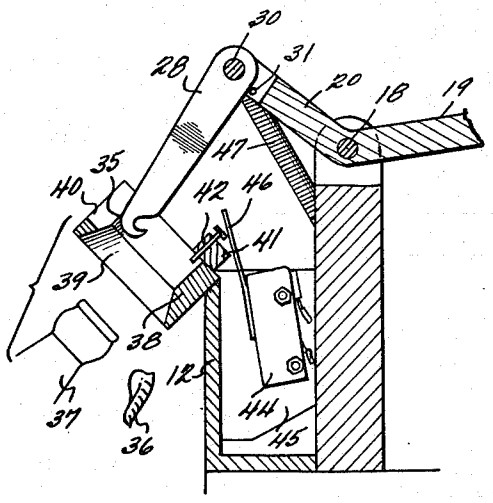


Fig. 5

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2,913,937

Patented Nov. 24, 1959

2,913,937

AUTOMATIC BOTTLE DECAPPER

Norman D. Benson, Dearborn, Mich.

Application October 1, 1958, Serial No. 764,582

4 Claims. (Cl. 81—3.2)

The present invention relates to automatic bottle decappers of the electrically operated type.

The primary object of the invention is to provide a bottle decapper which automatically engages and removes a bottle cap when the bottle is placed in position for having the cap removed therefrom.

Another object of the invention is to provide a bottle decapping device of the type described above which is spring returned to complete the decapping cycle in preparation for the next decapping cycle.

A further object of the invention is to provide a bottle decapping device of the class described above which is inexpensive to manufacture, simple to use and which is completely effective in removing bottle caps.

Other objects and advantages will become apparent in the following specification when considered in the light of the attached drawings, in which:

Figure 1 is a perspective view of the invention with the cover removed;

Figure 2 is a perspective view of the cover;

Figure 3 is a fragmentary sectional view illustrating a bottle about to be inserted in the decapper;

Figure 4 is a view similar to Figure 3, illustrating the decapper in the process of removing the cap; and

Figure 5 is a view similar to Figure 3 illustrating the bottle being moved away from the decapper following the decapping operation.

Referring now to the drawings in detail wherein like reference characters indicate like parts throughout the several figures, the reference numeral **10** indicates generally a decapping device constructed in accordance with the invention.

The decapping device **10** includes a generally rectangular base plate **11** having an upright support plate **12** secured thereto adjacent one end thereof. The support plate **12** has an angularly offset outwardly extending upper end portion **13** integrally formed on its upper end. A generally rectangular post **14** is secured to the base **11** and extends upwardly therefrom parallel to the support plate **12**. The post **14** has a bifurcated upper end **15**, as can be seen in Figure 1. A support bracket **16** is secured to the base plate **11** at the end thereof opposite the support plate **12**. A lever, generally indicated at **17**, is positioned in the bifurcated end **15** of the post **14** and pivotally secured therein by a pivot pin **18**. The lever **17** has an elongated portion **19** extending from the pivot **18** and an angularly offset portion **20** extending generally oppositely from the pivot **18**. The elongated portion **19** and the angularly offset portion **20** are formed integrally and the angularly offset portion **20** has a bifurcated end **21** formed thereon.

An electro-magnetic coil **22** is supported on the bracket **16** and is provided with a vertically reciprocating armature **23** projecting from the upper end thereof and carrying a head **24** on its upper end. A pair of links **25** are arranged in spaced parallel relation and have their lower ends pivotally secured to the head **24** by means of a pivot pin **26** and have their upper ends pivotally secured to the

elongated portion **19** of the lever **17** by means of a pivot pin **27**.

A hook arm **28** has an end **29** thereof secured in the bifurcated end **21** of the offset portion **20** of the lever **17** by means of a pivot pin **30**. A stop pin **31** extends transversely of the bifurcated end **21** to provide a rest for the hook arm **28** to limit the movement of the hook arm **28** toward the post **14**. A spring **32** is coiled about the pivot pin **30**, having an end **33** thereof engaging the offset end portion **20** and the opposite end **34** engaging the hook arm **28** normally biasing the hook arm **28** toward the post **14**.

As can be best seen in Figures 3 through 5, the hook arm **28** has a hook **35** formed on its lower end for engaging a cap **36** of a bottle **37**.

A generally tubular bottle guide **38** is provided with a flared mouth **39** to guide the bottle **37** into position for engagement by the hook **35** with the cap **36**. The tubular bottle guide **38** has a slot **40** formed therein to permit the hook arm **28** to move therethrough. The bottle guide **38** is mounted on the upper end portion **13** of the support plate **12** and extends downwardly and outwardly therefrom. A bar **41** extends across the inner end of the guide **38** to provide a stop for the bottle **37** as it is inserted into the guide **38**. A pin **42** is slidably positioned in the bar **41** for engagement by the bottle cap **36** and has a head **43** on the opposite end. A micro-switch **44** is supported on a plate **45** extending between the support plate **12** and the post **14** and is provided with a switch arm **46** which is engaged by the head **43** when the pin **42** is pushed inwardly by the cap **36**.

A coil spring **47** extends between the pivot **30** and the post **14** to normally bias the hook arm **28** inwardly of the guide **38** to return the hook arm **28** to its starting position after a cap **36** has been removed from the bottle **37**.

Wiring **48** connects the electro-magnetic coil **22** with a source of electricity (not shown) through the switch **44**.

In the operation of the device, the bottle **37** is pushed into the guide **38** so that the cap **36** engages the pin **42** closing the switch **44** by engagement with the switch arm **46**. The cap **36** engages the hook **35** and cams the hook **35** out of the way of the cap **36** as the bottle **37** is inserted into the guide **38**. The spring **32** biases the hook arm **28** toward the bottle **37** so that the hook **35** thereof engages under the cap **36** for removal as the hook arm **28** is moved away from the guide **38** by action of the lever **17** and the movement of the armature **23** in the electro-magnetic coil **22**.

Having thus described the preferred embodiment of the invention, it should be understood that numerous other modifications and adaptations may be resorted to without departing from the scope of the appended claims.

What is claimed is:

1. A bottle decapping device comprising a base, a post supported on said base and extending in generally upright relation therefrom, a support plate secured to said base and extending upwardly in parallel relation to said post, a lever pivotally supported on the upper end of said post, an electro-magnetic coil mounted on said base, circuit means for electrically connecting said coil to a source of electricity, an armature vertically slidably mounted in said electro-magnetic coil, means connecting said armature to one end of said lever for pivoting said lever on said post on vertical sliding movement of said armature, a generally tubular bottle guide mounted on said support plate, a hook arm pivotally mounted on said lever and having one end thereof positioned in said bottle guide, and resilient means normally urging said lever in a direction to move said armature away from said coil to a position with said hook arm engaging a bottle cap on a bottle in said guide.

2. A device as claimed in claim 1 wherein resilient

means are provided for biasing said hook arm transversely with respect to said bottle guide toward a bottle supported in said bottle guide.

3. A device as claimed in claim 1 wherein means are provided in said bottle guide for engagement by said bottle to complete the circuit in said circuit means and energize said electro-magnetic coil.

4. A device as claimed in claim 3 wherein said bottle guide is provided with a bottle stop at the inner end thereof and the means for completing the circuit in said circuit means and energizing said electro-magnetic coil includes

a pin slidably mounted in said bottle stop and a switch engaged by said pin on movement of said pin inwardly on said guide by contact with a bottle inserted in said guide.

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