Nov. 17, 1959 L. L. LEE 2,913,712

ANTI-SHOPLIFTING ALARM DEVICE

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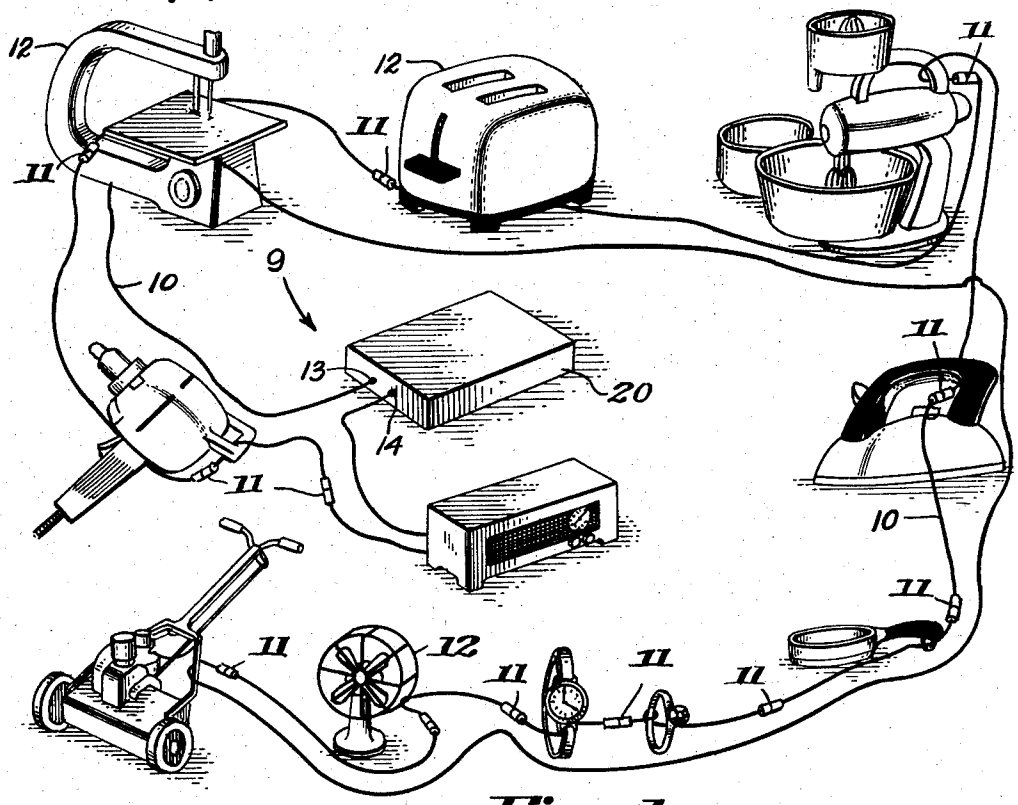


Fig. 1.

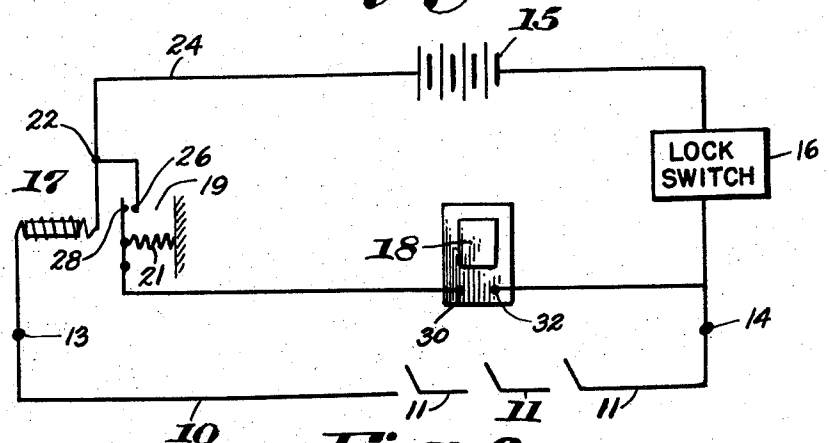


Fig. 2.

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Fig. 4.

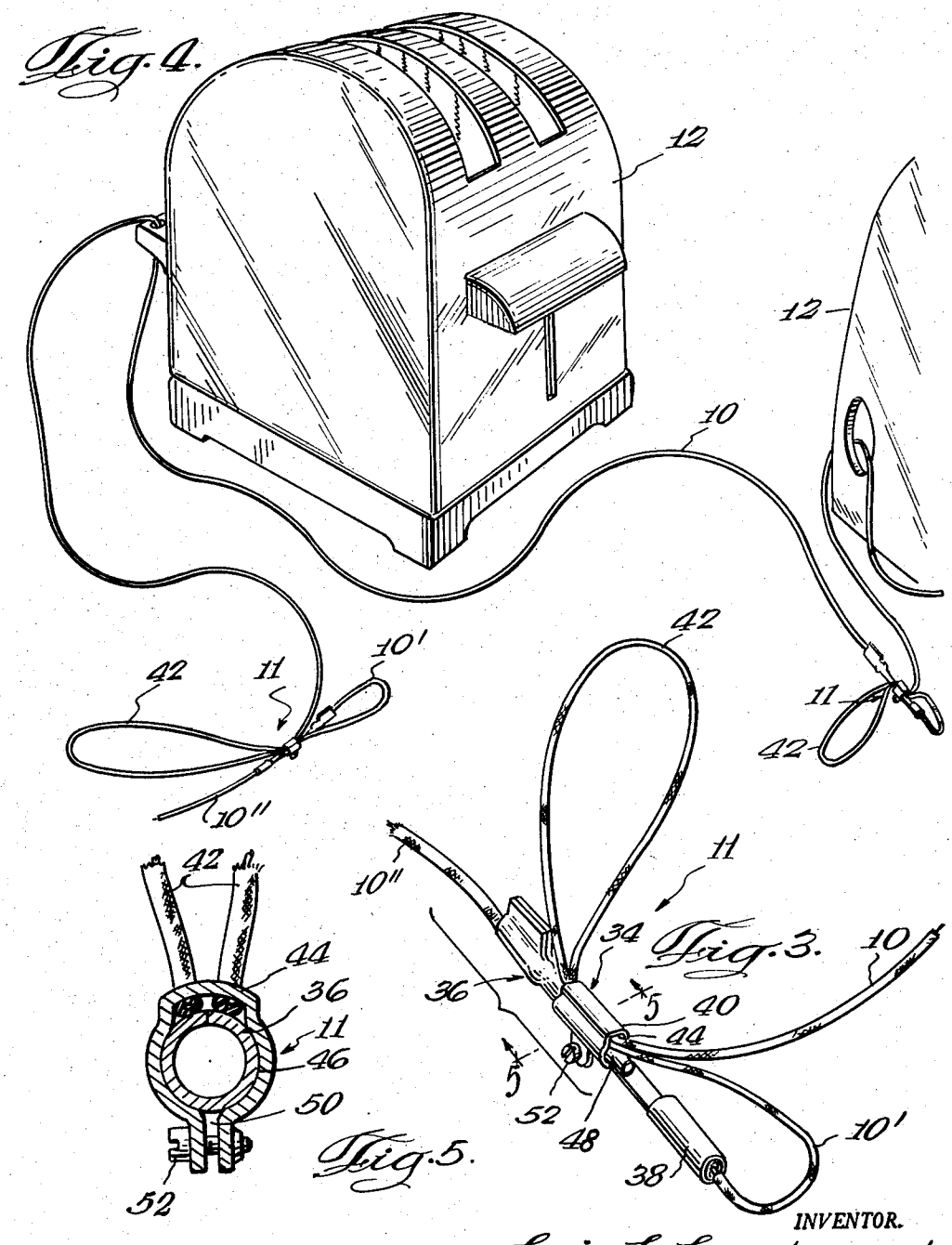


Fig. 3.

Fig. 5.

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ANTI-SHOPLIFTING ALARM DEVICE

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Application July 3, 1957, Serial No. 670,625

5 Claims. (Cl. 340—280)

This is a continuation-in-part of patent application, Serial No. 552,781, filed December 13, 1955, now abandoned.

This invention relates to an anti-shoplifting alarm device for causing an alarm to signal when an article is removed from a display counter by a shoplifter.

It is well known that shoplifting is on the increase, and that many organizations have been put to great expense in combating shoplifting. The problem of detecting the activities of a shoplifter has been one that has plagued merchants for many years. It has been found if the shoplifter's activities are detected as soon as an article of merchandise leaves the display counter then the chances of apprehending him are greatly increased.

Anti-shoplifting alarm systems have been produced, but these have been unsatisfactory for psychological reasons. Apparently the customers regarded the open use of such alarm systems as a personal reflection and they became strongly antagonized. This reaction by the customers was of such serious proportions, that for all practical purposes, prior anti-shoplifting alarm systems were seldom installed. Another troublesome feature with these prior alarm systems was that where the individual articles being protected were tied together by the alarm system, the individual articles could not be conveniently removed from the alarm system and sold. Furthermore, the spacing or the slack between these articles could not be easily adjusted. This was important because it is necessary for the customers to be able to handle the merchandise, and some items such a drills, etc., need a lot of slack so they can be carried to various electrical outlets and operated. What is needed therefore and comprises the chief object of this invention is an anti-shoplifting alarm system for stores which is effective yet decorative and not readily recognizable as an alarm system.

An additional object of this invention is to provide an anti-shoplifting alarm system which permits the individual articles being protected to be easily and conveniently removed from the system or lifted, handled and examined without removal from the system.

Still another object of this invention is to provide an anti-shoplifting alarm system of the type where the articles being protected are connected together, and which has means for conveniently adjusting the spacing between the articles.

A further object of this invention is to provide an anti-shoplifting alarm system with a self-contained power supply, independent of the store power supply.

Yet another object of this invention is to provide an anti-shoplifting alarm system which is compact and portable.

Another object of the present invention is to provide a simple and inexpensive alarm device which may be installed in practically any store and connected to articles which it is desired to protect without being obvious to the casual purchaser or to a prospective shoplifter, whereby the removal of one or more of the protected articles by a shoplifter may be detected immediately.

Still another object of this invention to provide an electric anti-shoplifting alarm device which can be operated from batteries and can be easily attached and set by even the most inexperienced persons.

Other and further objects of this invention will become apparent from the following specification taken together with the appended claims and accompanying drawing in which:

Fig. 1 shows a group of articles which it is desired to protect to which the anti-shoplifting alarm device of the present invention has been applied;

Fig. 2 is a circuit diagram of the electric anti-shoplifting alarm device according to the present invention;

Fig. 3 is a perspective view of the electric disconnect device for the alarm system showing the slack adjusting feature;

Fig. 4 is a perspective view showing one way the slack between adjacent articles can be conveniently adjusted;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4.

Referring now to Fig. 1 of the drawings, a portable anti-shoplifting alarm system indicated generally by the reference numeral 9 comprises an outer sealed housing 20 in which is mounted a source of power such as a battery 15, a main control lock switch 16, an electromagnet 17, an alarm indicator 18, and a normally closed, spring-loaded, magnetically-responsive switch 19 which is operatively associated with the electromagnet to remain open so long as the electromagnet is energized. With the battery 15 mounted inside the sealed housing, the power supply for the alarm system is self contained. Thus, the alarm system is portable and functions even when the power supply to the store is interrupted.

An extremely fine wire 10, which may also be made to simulate gaily colored string, has therein a plurality of electric disconnect devices 11 which are frictionally maintained in the connected position. As seen in Fig. 1, the extremely fine wire 10 has been looped through a plurality of articles such as 12 and a disconnect device 11 has been provided for each article. In practice, sufficient wire is provided so that the articles may be picked up and examined by a purchaser without disconnecting the disconnect devices 11. Also it may be desired to place the disconnect devices 11 beneath the articles so that the wires may be even less conspicuous.

As seen in Fig. 2 of the drawings, the source of power 15 is connected to terminal 22 of the electromagnet by a wire 24. The opposite end of the electromagnet is connected to terminal 13 on the outside of the housing 20. One terminal 26 of the spring-loaded switch 19 is connected to terminal 22 and the other terminal 28 is connected to terminal 30 of the alarm indicator 18. The opposite terminal 32 of the alarm indicator is connected to terminal 14. With this arrangement, the spring-loaded switch 19 and the alarm indicator 18 are connected in parallel to the electromagnet 17 and the disconnect devices 11. A main control lock switch 16 is associated with the battery 15 to activate and deactivate the alarm system.

Each disconnect device 11, as seen in Fig. 3, comprises a resilient conductive socket 34 and a pin 36. The socket has a wire-receiving portion 38 and a spaced pin-receiving portion 40. The wire-receiving portion of said socket is electrically connected by soldering or other conventional means to one end of section 10' of the conductive wire 10. The spaced pin-receiving portion 40 of socket 34 is provided with means 44 for receiving and positioning a portion 42 of a wire loop which is inserted through it. In the example shown, the means employed happens to be a positioning groove. This loop-receiving portion 44 of the socket 34 provides a means for regulating the spacing or the slack between the articles 12. This is important

since some articles such as jewelry and watches need not be moved far, while more slack must be provided for others such as lawn mowers or drills. The pin **36** is electrically connected by soldering or other conventional means to the end of another section **10''** of the wire and is adapted to penetrate the inner portion **46** of the socket to electrically connect sections **10'** and **10''** together. The socket-entering portion **48** of the pin **36** is slightly tapered so that when it is forced into the socket **34**, the pin and socket become wedged together in frictional engagement. When this happens the pin also engages the portion of the wire loop in the positioning groove inside the socket. This additional function of the pin **36** maintains the size of the wire loop and the spacing between the articles constant. In addition, the socket is slotted at **50** and may be provided with a screw **52** for varying the size of the socket and regulating the frictional engagement between the pin and the socket, see Fig. 5.

In the operation of the device, the switch **16** is opened while the fine wire **10** is looped through the articles to be protected and the electric disconnect devices **11** are connected. The switch **16** is then closed energizing the electromagnet **17** and opening the electric circuit through the sounding device **18** by opening switch **19**. When an article of merchandise is removed from the display counter by a shoplifter sufficiently far to disengage one of the disconnecting devices **11**, the circuit through the electromagnet **17** is de-energized permitting the switch **19** to close thus energizing the electric signal device **18** and sounding the alarm.

Obviously, the disengaging of the disconnect device is not the only thing which will cause the alarm to sound. Cutting or breaking the fine wire in order to remove an article will also cause the alarm to sound, the cutting or breaking of the fine wire having the same effect as disengagement of the disconnect device.

To remove an article from the alarm system it is necessary to first open switch **16**, to avoid setting off the alarm. Then the disconnect device elements **34** and **36** adjacent the article are separated, and the article is removed from the system. After this the pin **36** may be reinserted in the socket **34** and the alarm system reactivated.

To vary the slack between adjacent articles, the excess wire is bent to form a loop **42**, and this loop is inserted and positioned in the wire-receiving groove **44**, see Fig. 4. This groove is sized so that when the pin is inserted in the socket it engages the portion of the slack-adjusting wire loop in the socket. This locks the wire loop portion between the pin and the socket and maintains the size of the wire loop and the spacing between them constant. To readjust the slack, it is only necessary to partially withdraw the pin **36** from socket **34**. This partial withdrawal leaves sections **10'** and **10''** of the fine wire still in electrical engagement, so that the alarm is thereby prevented from being set off and the rest of the articles in the system remain protected. This partial withdrawal also decreases the frictional engagement between the pin **36** and the wire loop portion **42** in the positioning groove **44** in the socket **34**. This permits the wire loop to be adjusted to increase or decrease the slack between adjacent articles. After the slack is adjusted, the pin **36** is reinserted completely in the socket, whereby the size of the wire loop, and the spacing between the adjacent articles is again maintained constant, see Fig. 4.

It is desirable from the point of view of economy, that if someone should forcibly remove an article from the alarm system the break in the circuit should occur at one of the disconnect devices rather than in the fine conductive wire. This requires that the frictional engagement between the pin and socket of the disconnect device **11** be less than the tensile strength of the wire. Since the tensile strength of fine wire is susceptible to a wide variation the slotted socket and the adjusting clamping screw **52**, which provides a means for adjusting the frictional engagement between the pin **36** and the socket **34**, can be used to regulate the force of the frictional engagement so it is less than the tensile strength of any fine wire employed, see Fig. 5.

The utility of the device is believed to be quite obvious. Sufficient fine wire is provided to permit the article to be easily removed from the counter or display area so that it may be inspected or tried out. The length of the fine wire which is provided may be varied, depending upon how far it is desired to permit the customer to move the article. For example, with an article of jewelry it might not be desired to permit the customer to remove the article very far from the jewelry counter, in which case a relatively short length of fine wire would be provided. On the other hand with a tool, such as an electric drill, it might be desirable to permit the customer to remove the drill to a demonstration area, in which case a relatively long length of fine wire would be provided. When an article that is mounted on wheels is to be protected, e.g. a lawn mower or bicycle, the fine wire supply can be of sufficient length to permit the customer to wheel the article about a demonstration area. However, the length of the wire can be such that the distance which the article can be rolled is only that which the proprietor desires that the article be moved.

Because the wire is fine, it is light enough not to interfere in any way with the use or demonstration of the articles through which it is strung.

Articles which do not have convenient holes therein or do not readily lend themselves to having fine wire passed therethrough can also be protected by the present invention. The fine wire can be attached, e.g. to a screw driver by holding the wire against the screw driver and wrapping it with a plurality of layers of adhesive cellophane tape. By making the length of wire supplied to the screw driver relatively short, when a potential shoplifter attempts to unwrap or break the tape, the disconnect device will be stirred sufficiently to cause the alarm to sound.

The alarm itself can be chosen so that when a store has sufficient personnel to police for shoplifters the alarm will sound only at a central control point and will indicate at what location an item has been removed. The store personnel can then quickly proceed and possibly apprehend the shoplifter. In smaller establishments, the alarm can be made to sound throughout the store and will serve not only to warn a proprietor but to scare off or possibly startle the shoplifter so that he reveals himself by his actions.

It is thus seen that an extremely simple and inexpensive anti-shoplifting alarm system has been provided which has a self-contained power supply and which is provided with means for conveniently regulating the slack between adjacent articles. Furthermore, it does not offend the customers because the wire connecting the articles is so fine that cannot be readily seen or else the wire simulates gaily colored string so that the customers are not aware of the presence of the alarm system. Having shown and described this invention, what is claimed as new and desired to be secured by Letters Patent is:

1. An electrical disconnect device for an electric anti-shoplifting alarm system comprising a conductive socket and a pin, said socket electrically connected to one end of a first conductive wire and provided with a resilient pin-receiving band, said band having an offset portion for receiving a portion of a wire loop for adjusting slack in said first conductive wire, said pin electrically connected to one end of a second conductive wire and adapted to penetrate said band to electrically connect said first and second conductive wires together, said pin engaging the portion of said slack adjusting wire loop in said offset portion to hold it in position.

2. An electric disconnect device for an electric anti-shoplifting alarm system comprising a resilient conductive socket and a pin, said socket having a wire-receiving portion and a spaced-pin receiving portion, first and

second conductive wires connected at spaced intervals to the articles to be protected, said first conductive wire electrically connected to the wire receiving portion of said socket, said spaced pin receiving portion provided with a band having an offset portion for receiving a portion of a wire loop for adjusting slack in said first conductive wire, said pin electrically connected to one end of said second conductive wire and adapted to penetrate said band to electrically connect said first and second conductive wires together, said pin wedgingly engaging the walls of said band whereby the pin and socket are frictionally held together, said pin also adapted to engage the portion of said offset portion adjusting wire loop in said socket so that the wire loop portion is locked between the pin and the offset portion maintaining the size of the wire loop and the spacing between the articles constant.

3. An electric anti-shoplifting alarm system comprising a closed circuit including a fine wire and a relay which will actuate an alarm circuit when the closed circuit is opened, and a plurality of electric disconnect devices connected in series to said fine wire, each of said disconnect devices comprising a resilient socket and a pin, said socket having a wire-receiving portion and spaced pin-receiving portion, said wire-receiving portion connected to one section of said fine wire, said pin connected to a second section of said fine wire, said spaced pin-receiving portion comprising a band having an offset groove for receiving a portion of a wire loop for adjusting slack in said fine wire, said pin frictionally engageable in said band to electrically connect said first and second wire sections, said pin and band cooperating to lock a portion of said slack adjusting wire loop in said groove to maintain the size of the loop and the spacing between the articles being protected.

4. The system of claim 3 in which said band is split,

a pair of apertured flanges depending from the free ends of said band, and a tensioning screw positioned through said flanges for regulating the frictional force holding said pin in said band so that the same will be less than the tensile strength of said fine wire.

5. An electric anti-shoplifting alarm system comprising a closed circuit including a fine wire and a relay which will actuate an alarm circuit when the closed circuit is opened, and a plurality of electric disconnect devices connected in series to said fine wire, each of said disconnect devices comprising a resilient socket and a tapered pin, said socket having a wire-receiving portion and a spaced pin-receiving portion, said wire-receiving portion connected to one section of said fine wire, said pin connected to a second section of said fine wire, said pin-receiving portion comprising a split band having an offset groove and a pair of apertured flanges depending from the open ends thereof, said pin frictionally engageable in said band to electrically connect said first and second wire sections, said pin and band cooperating to lock a portion of a fine wire loop in said groove for regulating and maintaining the spacing between the articles being protected, a tensioning screw positioned through said apertured flanges for regulating the frictional force holding said pin in said band so that the same will be less than the tensile strength of said fine wire.

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