March 16, 1937. G. E. VON BERG 2,073,820

DEVICE FOR MARKING VALUABLE PAPERS

Filed Feb. 8, 1936

Fig. 1

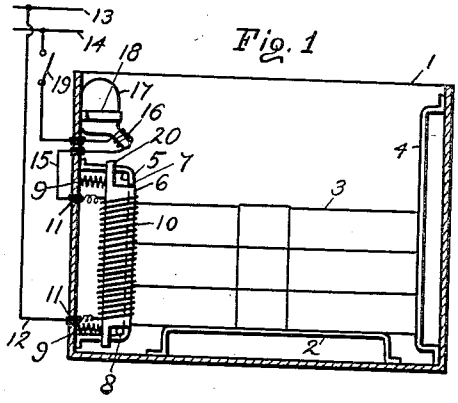


Fig. 2

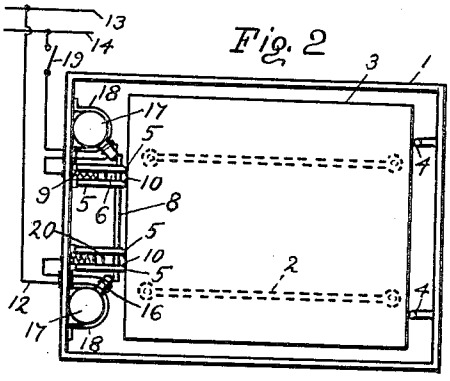


Fig. 3

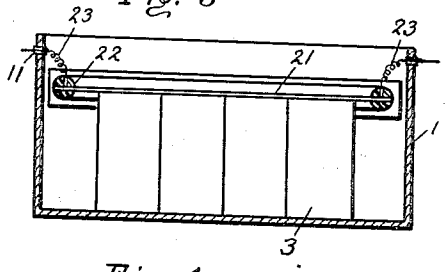


Fig. 5

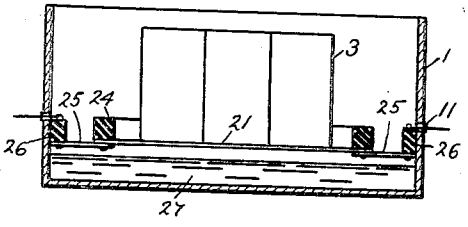


Fig. 4

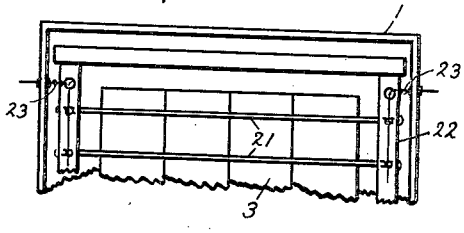


Fig. 6

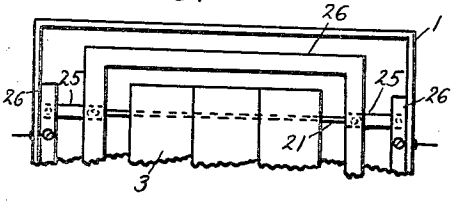


Fig. 8

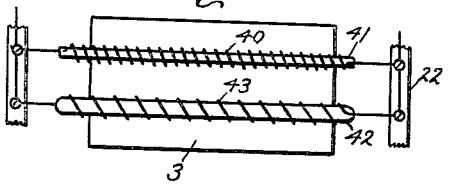
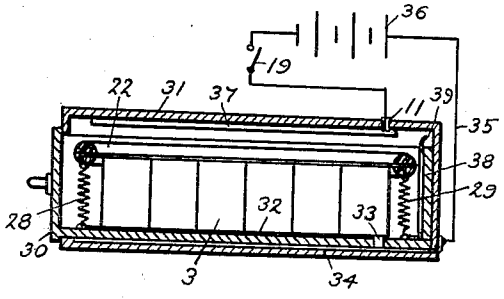


Fig. 7



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DEVICE FOR MARKING VALUABLE PAPERS

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Application February 8, 1936, Serial No. 62,915

4 Claims. (Cl. 219—29)

My invention relates to devices for marking valuable papers and has particular reference to devices for marking papers by electrically heated agents.

The object of my invention is to provide means for rendering valuable papers useless by indelibly marking them so as to prevent the possibility of their further circulation without detection. Such marking is very important for protecting values represented by negotiable commercial paper and paper money against burglary. The burglaries, as is well known, cause annually great losses to banks and other institutions handling valuable papers. I have found, however, that it is possible to provide simple electrical devices for indelibly marking papers in a very short time, usually a few seconds, which is sufficient to accomplish the purpose, even during the act of surrendering the papers to armed robbers.

For such marking I prefer to use filaments or similar conductors of electricity supported near the stacks of valuable papers which it is intended to protect against robbery. By closing the current from a battery or other suitable source, the conductors, usually in the form of metal filaments, become rapidly highly incandescent, burning easily recognizable marks on the papers and thereby rendering them valueless.

Another object of my invention is to provide means for automatically closing the current for the conductors by the act of opening containers with papers, for instance, when a drawer with papers is withdrawn. I also provide means for rendering the automatic feature inoperative during ordinary handling of the containers. For this purpose I provide a control switch within easy reach of the person in charge of the papers.

Another object of my invention is to provide means for pressing together my heating elements against papers, preferably their stacks or packages, also preferably edgewise against the heating wire. For this purpose the heating or burning elements may be pressed against paper packages by special springs, or the elements if the form of wires can be mounted in a frame, which can be pressed against the papers by springs or by its own weight. I also use arrangement whereby stacks of papers are placed over a heating grid. The object of pressure in all these cases is to cause the heated wire or similar elements to penetrate into the papers, preferably into their edges.

Another object of my invention is to provide means for extinguishing the burning papers after elapse of a certain interval of time sufficient for marking the papers. I use for this purpose bulbs or similar containers with an extinguishing fluid, the bulbs being placed in contact with wires also heated by the electric current, but at a slower rate than the burning wires, so that the bulbs become softened and opened after the hot wires have burned the required marking.

Still another object of my invention is to provide pieces of a combustible material in contact with heating elements and placed with the papers, so that the combustible material becomes ignited when the elements become sufficiently heated, burning the papers. A fire extinguishing fluid may be then released after a proper interval of time to extinguish the flames.

My invention is more fully described in the accompanying specification and drawing in which—

Fig. 1 is a sectional elevation of my device, Fig. 2 is a top plan view of the same, Fig. 3 is a sectional elevation of a modified device, Fig. 4 is a top plan view of the same. Fig. 5 is a sectional elevation of another modification, Fig. 6 is a partial top plan view of the same, Fig. 7 is a sectional elevation of another modification, and Fig. 8 is a fractional view of another modification.

My device consists of a container 1 which may be a box, drawer, or a portable housing. It has metal supports 2 at the bottom for packages 3 of money or other valuable papers. The packages are placed between metal guards 4 and 5. The guards 5 are arranged in pairs forming guides for bars 6 made of a refractory insulation such as asbestos composition, mica, quartz, etc. The bars 6 have shoulders 7 entering between rods 8 supported in the inner corners of the guards. Springs 9 press the bars 6 against the edges of the papers. A highly refractory wire, preferably made of tungsten, is closely wound on the bars 6. The ends of the wire 10 are coiled for flexibility and pass through insulation bushings 11 in the wall of the container 1 to the outside. A lead 12 connects one end of the wire 10 with a source of electric current which may be a light or power line consisting of conductors 13 and 14. The other end of the wire 10 is connected by a lead 15 with a heating coil 16 wound on the neck of a bulb 17 supported on the wall of the container by a band 18. The other end of the coil 16 is connected through a switch 19 with the line conductor 14. The bulb 17 contains a

fire extinguishing liquid and is made of glass or preferably some composition having low melting point.

The size and resistance of the wire 10 is proportioned so that it becomes heated to incandescence in a few seconds after closing the switch 19 and begins to burn the papers. Due to the pressure of the springs 9, the wire 10 with the bars 6 burns its way into the paper until lugs 20 come to rest against the rods 8.

The size and resistance of the coils 16 are selected so that the heat from these coils will open the necks of the bulbs 17 only after the wire 10 has burned its way into the papers. The fire extinguishing fluid in the bulbs may be placed under compression to facilitate the bursting of the necks when heated by the coils 16. The fluid spreads over the papers extinguishing their combustion. This is usually necessary in order to prevent spread of the fire outside of the container 1.

A modified arrangement is shown in Figs. 3 and 4. Here the paper packages 3 are placed on the bottom of the container 1 and a heating grid is placed over the edges of the papers. This grid consists of heating wires 21 stretched in a frame 22 made of an insulating material. The frame is made sufficiently heavy so as to press the wires on the paper and cause their penetration when heated to incandescence. Flexible leads 23 extend from the frame to the electric line.

Another modification is shown in Figs. 5 and 6. Here the paper packages 3 are placed on a grid formed of heating wires 21 stretched on an insulation frame 24. The latter is supported at a certain height above the bottom of the container by metal straps 25 fastened to insulation blocks 26 on the opposite walls of the container. A fire extinguishing liquid 27 is held in the lower portion of the container under the frame 24. The straps 25 are made of a metal having low melting point, and their size and resistance are so proportioned that these straps melt at the expiration of a certain time interval when the wires 21 have burned slots or notches in the papers. The whole frame then drops into the liquid with the packages 3 extinguishing their combustion.

The frame 22 may be drawn against the pile of papers 3 by springs 28 and 29 as shown in Fig. 7, in which a drawer 30 is represented slidably fitted in a box 31. The wires 21 are connected at one end through the spring 28 with a metal strip 32 having a contact member 33 in sliding engagement with a metal strip on the bottom of the box. This strip 34 is connected by a lead 35 with one terminal of a battery 36. The other terminal is connected through the switch 19 with a metal strip or bar 37 mounted on the under side of the top board of the box. The other spring 29 is connected at one end with the wires 21 and at the other with a metal post 38 having a resilient contact member 39 on top adapted to slidably engage the strip 37 when the drawer is moved out of the box.

With this arrangement, if the switch 19 is closed, the wires become connected with the current as soon as the drawer is moved out of the box. Fire extinguishing device may be also mounted in the drawer.

Fig. 8 shows a heating wire 40 wound around a rod 41 made of a combustible material and placed over a pile of papers 3. As soon as the current is turned on, the heated wire ignites the rod 41, which then burns the papers. A sealed tube 42 is placed alongside the rod 41 and is filled with a fire extinguishing fluid. A heating wire 43 is wound around the tube. The latter is made of a material which readily melts when heated by the wire thereby releasing the fluid and extinguishing the flames.

I do not wish to limit myself to the modifications shown and described, as my invention may be further modified without departing from its spirit and scope embraced by the claims.

I claim as my invention:

1. A device for marking valuable papers, comprising a plurality of electric conductors adapted to be electrically heated to incandescence, means to keep the conductors in an operative contact with the papers, a manual means for connecting the conductors with a source of electric current, a sealed container with a fire extinguishing liquid supported near the conductors, and an electric heating element adapted to open the container and further adapted to be heated simultaneously with the conductors.

2. A device for marking valuable papers, comprising a plurality of electric conductors adapted to be electrically heated to incandescence, means to maintain the conductors in an operative relation with the papers, a manual means for connecting the conductors with a source of electric current, a sealed container with a fire extinguishing fluid, and an electric heating element in contact with the container adapted to be energized simultaneously with the conductors and further adapted to open the container by melting its seal after the conductors begin to burn the papers.

3. A device for marking valuable papers, comprising a housing, brackets in the housing, means to support papers with their edges against the brackets, insulation bars slidably supported in the brackets, electric conductors on the bars, means to connect the conductors with a source of electric current, the conductors being adapted to be heated to incandescence by the current, and a yieldable means for pressing the bars with the conductors against the papers.

4. A device for marking valuable papers, comprising a housing, means to support stacks of papers in the housing, insulation bars slidably supported in the housing, electric conductors on the bars adapted to be electrically heated to incandescence, means to resiliently press the bars with the conductors against the papers, a manual means for connecting the conductors to a source of electric current, and an electrically operated automatic means for extinguishing the burning papers, said automatic means being adapted to be connected with the source of electric current simultaneously with the conductors.

GEORGE E. VON BERG.