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WIRE GUARD AND METHOD OF MAKING THE SAME

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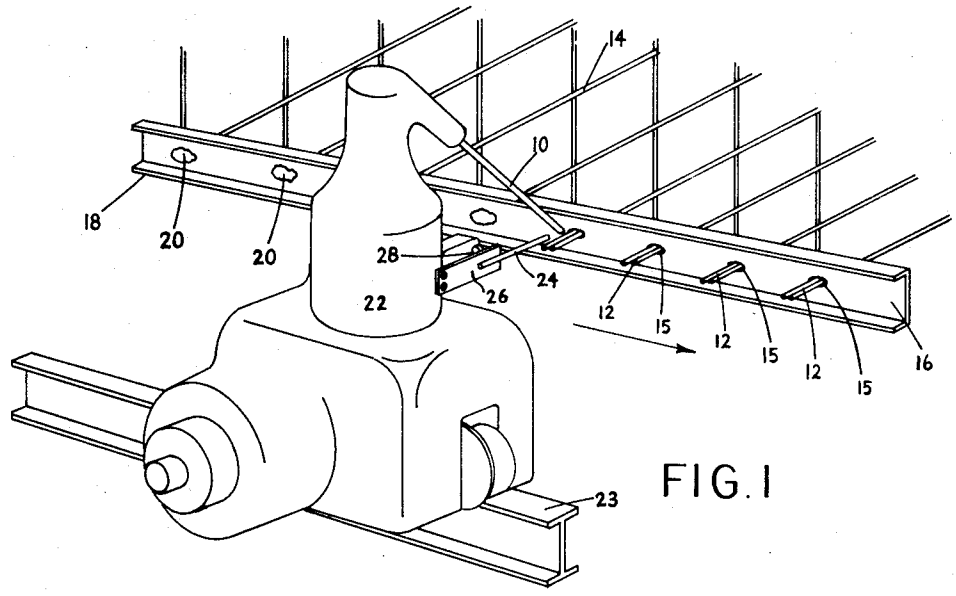


FIG. 1

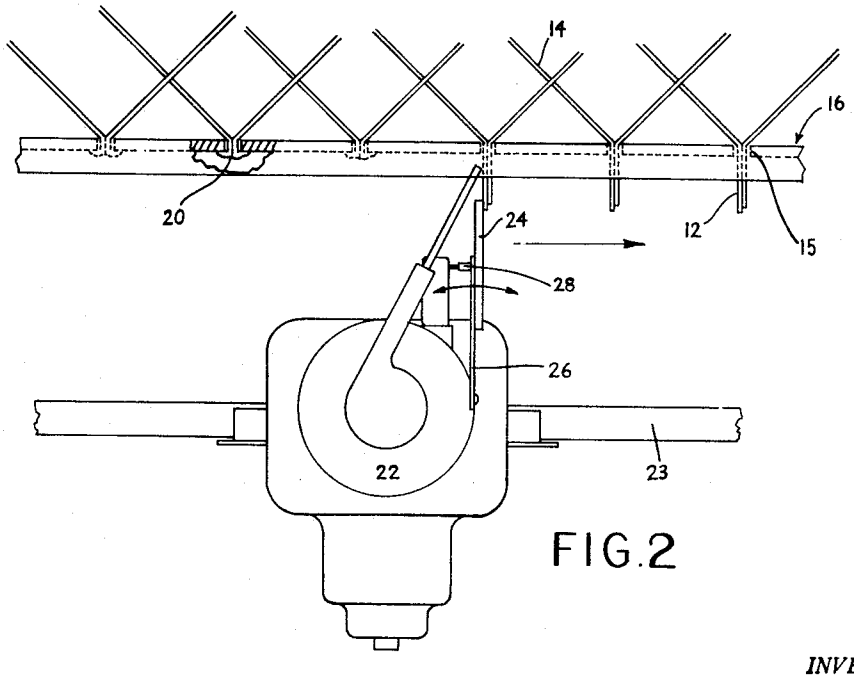


FIG. 2

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WIRE GUARD AND METHOD OF MAKING THE SAME

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This invention relates to the art of manufacturing a guard of the type which includes a frame, a screen made of wire of the desired gauge and mounted in said frame, and means for securing the guard detachably, or permanently, over a window, or other access opening to prevent ingress or egress therethrough. Such guards are used extensively over the glass windows of establishments displaying expensive jewelry and over the windows and doors of detention rooms in police stations and elsewhere.

As far as I am aware, the guards referred to have heretofore been made by forming openings in the frame, by projecting the ends of the wires forming the screen through said openings, and by bending and/or twisting the projecting ends of the wires to prevent their withdrawal from the openings in the frame. Individually bending and/or twisting the projecting end of each wire or the ends of each pair of wires, is responsible for a substantial portion of the cost of the guard. Furthermore, for greater security requirements, it is necessary to weld the ends of the wires which project through the openings in the frame to each other and/or to the frame through which they project. Manually welding the projecting ends of the wires makes the finished product that much more expensive.

The object of this invention is to produce an improved method of, and an improved apparatus for producing guards in which all of the projecting ends of all of the wires are rapidly and automatically welded to each other or to the frame whereby such guards will meet maximum security requirements and whereby the cost of making such guards is greatly reduced.

The full nature of the invention will be understood from the following specification and the accompanying drawings in which:

Fig. 1 is a diagrammatic perspective view showing the method of, and one form of apparatus for, carrying out the invention.

Fig. 2 is a top plan view of Fig. 1.

According to my invention, I simultaneously burn off the outer portions of the projecting ends of the wires and I weld the remaining portions of said ends to each other and to the frame member through which the wire ends project, thus doing away with the bending and twisting operations and producing guards which are inexpensive and which will meet maximum security requirements.

To this end, and as illustrated in the drawings, I apply an electric arc or other torch **10** to the projecting ends **12** of wires **14** at a point slightly spaced from the surface **16** of frame member **18**. The heat of the arc promptly burns the wires at the point to which the arc is directed and the outer portions of ends **12** fall off. Simultaneously, the less direct heat melts the remaining portions of wire ends **12** projecting beyond the surface of the frame member and melts the adjacent surface **16** of frame member **18**, thus welding, or braising, the ends of the wire to each other and to the surface of the frame, as shown at **20**. Experience shows that the type of wire used in making the guard described can be burned off and melted very rapidly and by a substantially continuous movement.

While the operation described can be carried out manually, I prefer to carry it out in an automatic manner and to this end, I mount torch **10** on a carriage **22**, and I mount the carriage for movement on a rail **23**. The carriage is propelled by a reversing, two speed motor, not shown. In order to synchronize the movement of the carriage with the operation of the torch, I provide the carriage with control means, such as a feeler **24** which is normally biased to the right, as shown in Fig. 1, by a spring **26** which is secured to the carriage. Adjacent feeler **24** I provide a two-position switch **28** which, in a first position, energizes the torch and causes the motor to run at a relatively low speed and, in a second position, de-energizes the torch and causes the motor to run at a relatively high speed. The feeler is placed in registration with the torch so that, as the carriage moves in the direction of the arrow in Fig. 1, the feeler will be engaged by one, or by a pair of projecting ends **12** and will be deflected to the left to move switch **28** to its first position, simultaneously to energize the torch and slow down the movement of the carriage. This allows enough time for the torch to burn through the wire ends and to melt the remaining portions of the wires and the adjacent surface of the frame, to braise them together as above described. As soon as the outer portions of the wires, that is, the portions thereof which are engaged by the feeler, drop off, spring **26** moves the feeler to the right to move the switch to its second position in which it de-energizes the torch and returns the motor to high speed. When the feeler abuts the next wire end, or ends, the cycle is repeated.

From the foregoing, it will be seen that, by my novel method, the outer portions of the wire ends are automatically, and substantially instantly cut off and that the remaining portions are simultaneously welded to the adjacent surface of the frame member through which the wire ends project. Actual experience shows that this operation is much faster than bending the wire ends and twisting them and I, therefore, produce guards which meet maximum security requirements and which are less expensive than guards in which the wire ends are only bent and twisted and which do not meet maximum security requirements. It will also be seen that the apparatus devised for carrying out the method is very simple to operate and is inexpensive to produce.

If desired, another switch can be placed to the other side of feeler **28** so that the apparatus may be used as it moves from left to right, as above described, or as it moves in the opposite direction. Since a reversing, two speed motor and the necessary wiring are well known and do not, per se, form part of the invention, they have not been shown nor described.

In the place of a two-speed motor, I may use an adjustable motor, the speed of which can be regulated so that, when the feeler engages a set of wire ends, the motor is slowed down and vice versa, instead of being abruptly switched from one speed to another.

When the wires to be burned off and welded are relatively thin, or, when the wires and/or the frame are made of metal which melts at relatively low temperature, the feeler and the switch can be omitted and the operation can be carried out in a continuous manner, it being merely necessary to regulate the speed of the motor so that, as the torch reaches a wire or a pair of wires, it will burn through them and will weld them without any interruption. For example, if the wire ends are relatively close together and are relatively easy to melt, the movement of the carriage will be so controlled that the burning off of the wire ends and their welding to the frame will all take place in the length of time it takes the torch to traverse the wire end.

While, in the foregoing description, reference was made to steel guards and to their use as protective devices over doors and windows, it is obvious that by varying the speed of the motor and/or the size of the torch, guards of different metals and of different sizes and of different meshes may be cut off and welded or braised or soldered, the essence of the present invention being in cutting off the outer portions of the wires and in simultaneously welding the remaining stumps together with and/or to the frame, in the manner above disclosed.

What I claim is:

1. In the method of making a wire screen of the type which includes a rigid frame member, and a wire screen bounded by said frame member with the ends of the wires forming said screen protruding through openings in said frame member, the step of subjecting said ends of said wires to a burning heat to cut off said wire ends at a predetermined distance from the frame member through which said ends project, and subjecting the remaining portions of said ends and the adjacent surface portions of the frame through which said ends project to a heat sufficient to melt said wire ends and said surface portions to weld the same together.

2. Apparatus for trimming and for welding the ends of wires which form a screen carried by a rigid frame with the ends of said wires projecting through said frame, said apparatus including a track, a carriage movable on said track, a two-speed electric motor, an electrically activated torch, a two-position switch movable to a first position in which it energizes said torch and causes said motor to run at a relatively low speed, and to a second position in which said switch de-energizes said torch and causes said motor to run at a relatively high speed, control means mounted on said carriage and engageable with said wire ends for moving said switch to its first position and means for normally biasing said switch to its second position.

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