

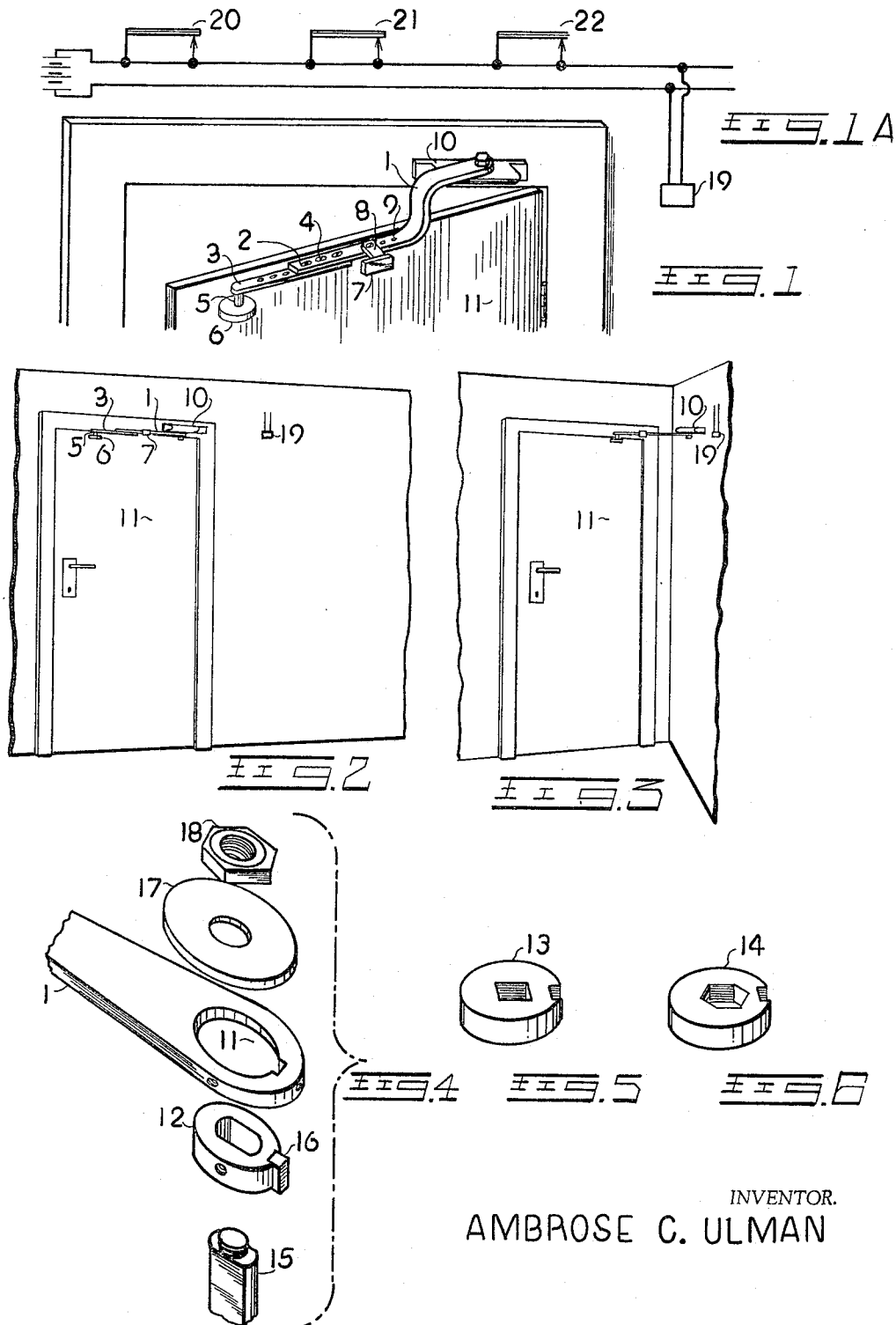
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A. C. ULMAN

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ADAPTOR LEVER ARM ELECTRO-MAGNETIC DOOR CLOSER

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INVENTOR.
AMBROSE C. ULMAN

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ADAPTOR LEVER ARM ELECTRO-MAGNETIC DOOR CLOSER

Ambrose C. Ulman, San Diego, Calif., assignor to Wesley Heil, El Centro, Calif., and Phillip N. Heil, San Diego, Calif.

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2 Claims. (Cl. 16—48.5)

My invention relates to door closers and more particularly to an adaptor lever arm and an electro-magnetic system for applying to existing door closers.

An object of my invention is to provide a device of low cost manufacture that may be applied to almost any existing door closer and that will automatically close one or more fire doors by sensing the heat produced by a fire.

Another object of my invention is to provide a device described that will sense the heat produced by a fire in any portion or portions of a structure and will automatically close one or more fire doors of almost any particular condition of design or location.

These together with other objects and advantages which will become apparent reside in the details of construction and operation as will be more fully described and claimed, reference being made to the accompanying drawing forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of my invention and how it may be applied to a fire door.

FIGURE 1A also shows an example of an electric circuit diagram.

FIGURE 2 is a perspective view of my invention applied to a door, the door being mounted in a wall away from a corner. This view shows my invention applied to the lower portion of the closer cylinder.

FIGURE 3 is a perspective view of my invention as it may be applied to a door in a corner.

FIGURE 4 is an exploded perspective view of a typical arm adaptation of my invention.

FIGURE 5 is an example of a modification of an adaptor part.

FIGURE 6 is another example of a modification of an adaptor part.

Referring specifically to the drawing, there is provided, an arm 1, FIGURES 1 and 2, that may be adjusted in length by means of a series of equally spaced countersunk holes 2, in arm 1, and threaded matching holes of arm extension 3, secured by threaded set screws 4, as indicated.

The extension 3 is further provided with a depending vertical shaft 5, and a roller 6, rotatably secured to shaft 5.

The purpose of the adjustable length feature of the arm is to be able to vary the lever arm pressure applied through the roller 6, to the door 11.

An armature 7 is secured to bracket 8. Bracket 8 is secured to arm 1 and is adjustable for position by means of threaded holes 9, in arm 1, in a similar manner to that of the extension length adjustment.

The arm thus assembled is in turn secured to the existing conventional door closer 10 by adaptor parts illustrated in FIGURES 4, 5, and 6.

In order that the door 11 is held open against the action of closer 10, a hold open mechanism is shown, FIGURE 4. Hole 11, of arm 1, is of a size to receive a variety of adaptors such as indicated at 12, FIGURE 4, at 13, FIGURE 5 and at 13, FIGURE 6. These various shapes are to receive shafts of the door closer 10, such as that illustrated at 15, FIGURE 4.

The adaptors 13, FIGURE 5, and 14, FIGURE 6, are to receive square and hexagonal shaped shafts respectively. The square key 16, FIGURE 4, is to lock the

movement of shaft 15, so that arm 1 will follow the rotating movement of shaft 15.

It is the intention of my invention to adapt to any other type of shaft shape, although such shapes may not be specifically shown.

The washer 17, and threaded nut 18, is shown as a means of securing the assembly arm assembly to the closer cylinder.

Electro-magnet 19, FIGURES 1, 2, and 3, is secured to the wall in a position so that armature 7 will make contact with it when the arm assembly is rotated away from door 11.

In operation:

Any number of normally closed electric thermostat switches 20—21—22, such as indicated in FIGURE 1, are located as desired throughout a structure. The fire door, or doors, as desired are equipped with my invention and the arm assemblies are stressed back against their internal spring away from the door opening so that the armature 7 is in contact with electro-magnet 19.

If any one, or more of the bi-metal thermostat normally closed switches indicated at 20, 21, or 22 open, and thus open the electric circuit to the electro-magnet 19, the electro-magnet 19 releases the armature 7. The arm is urged toward the door and the door is caused to close by contact with roller 6.

It will be noted that in the case of a corner installation such as shown, FIGURE 3, if a proper distance is maintained for positioning the closer cylinder 10, the position as to height may be any place opposite the door 11.

This novel feature of my invention is of great value in cases where an obstruction such as a ventilation outlet may prevent an installation at a position opposite the top of the door, that is the case with existing art.

It will further be noted that my invention may be applied to varied types of closers. A top mounted arm is shown, FIGURE 1, and lower mounted arms are shown, FIGURES 2 and 3.

It will be clear, to those skilled in the art, that my invention may be applied to a wide variety of existing electric circuit systems. As for example: An existing temperature sensing thermostatic switch closes a circuit rather than opens the circuit as in the case of my invention, and a normally closed relay may be added that will then convert to this system.

It will be clear that the embodiment of the invention may be used in many ways as well as changed. Such changes will not affect the essence of the invention as described in the annexed claims.

What is claimed as new is as follows:

1. Improvements in a spring operated door closer, comprising:

a spring operated shaft;
an arm fixedly secured at one end thereof to said shaft and having at the other end thereof an anti-friction element for pushing engagement only with one face of a door;

an armature secured to said arm;
an electromagnet securable to fixed wall structure for engagements with said armature when said arm is in door-open position; and

an electric circuit normally energizing said electro-magnet and including heat sensitive circuit opening means connected so that undue rise of temperature will de-energize said electromagnet releasing said armature and permitting said arm to move to a door-closed position, whereby the door is positively closed in the event of fire and at all other times the door is free to be moved to any desired position.

2. Structure according to claim 1, wherein said arm is adjustable in length and said armature is shiftably

mounted on an intermediate portion of said arm for adjustment longitudinally of the arm.

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BOBBY R. GAY, *Primary Examiner.*