Dec. 20, 1955 A. W. HAMILTON 2,727,772

ELECTROMAGNETIC LOCK

Filed Nov. 5, 1953

Fig. 1

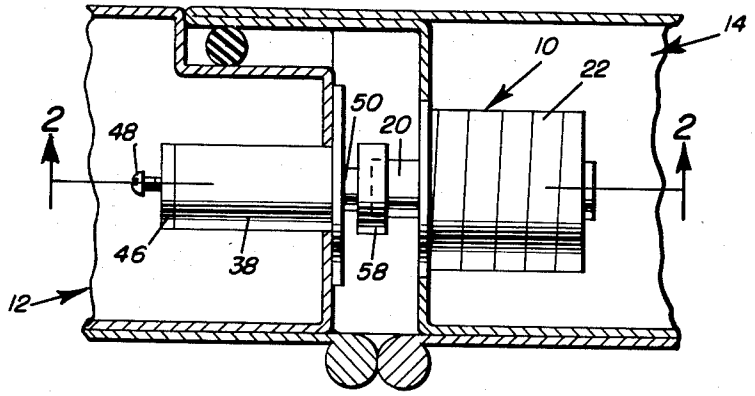


Fig. 2

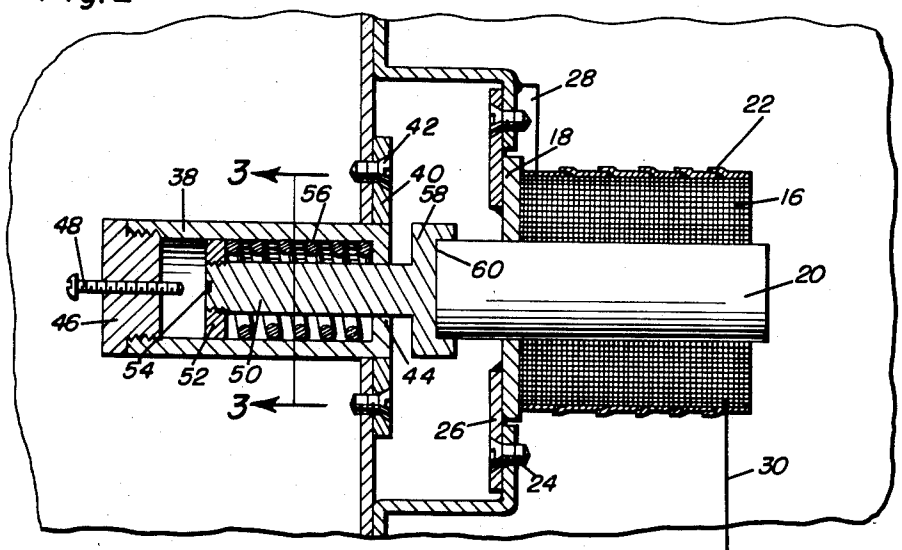


Fig. 4

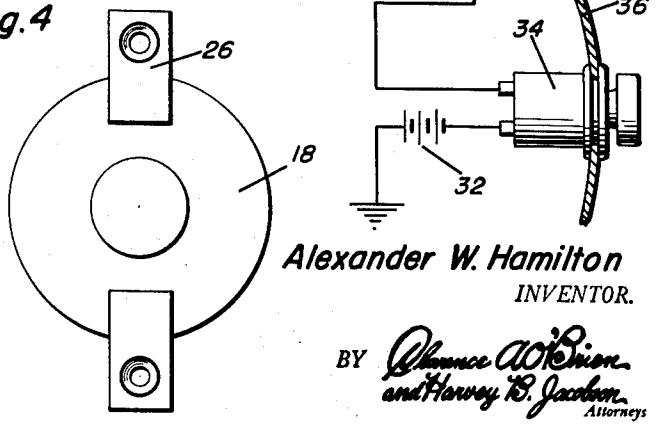
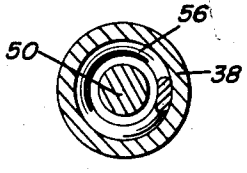


Fig. 3



Alexander W. Hamilton
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

United States Patent Office 2,727,772 Patented Dec. 20, 1955

2,727,772

ELECTROMAGNETIC LOCK

Alexander W. Hamilton, Hopewell Township, Washington County, Pa.

Application November 5, 1953, Serial No. 390,292

1 Claim. (Cl. 292—144)

This invention relates to a magnetic lock and more specifically provides a magnetic lock for use in conjunction with closures such as car doors, bus emergency doors, house doors and windows or the like.

An object of this invention is to provide a magnetic lock having an electromagnetic coil surrounding a core for attracting a block or abutment of magnetic material on the door or closure.

Another object of this invention is to provide a magnetic lock wherein the abutment or block is spring loaded wherein the abutment will retract upon de-energizing the electromagnetic coil.

A further object of this invention is to provide a magnetic lock wherein an electromagnetic coil retains the electromagnetic core in locking engagement with an abutment on the door.

A still further object of this invention is to provide a magnetic lock which is simple in construction, easy to install and operate and inexpensive to manufacture.

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

Figure 1 is a top plan view of the magnetic lock of this invention in operative position between a door closure and a door frame;

Figure 2 is a longitudinal, vertical section taken substantially along the section line 2—2 of Figure 1 showing the details of construction of the magnetic lock;

Figure 3 is a transverse, vertical section taken substantially along section line 3—3 of Figure 2 showing details of the retraction spring for the abutment block; and,

Figure 4 is an end elevation view looking at the magnetic coil.

Referring now specifically to the drawings, it will be seen that the numeral **10** generally designates the magnetic lock of this invention for use in retaining a closure **12** in closed relation in a closure frame **14**.

The magnetic lock **10** includes a coil **16** mounted upon an end washer **18** and surrounding a core **20** of magnetic material. The electric coil and wire **16** is covered with successive windings of insulating tape **22** for protecting the coil wires making up the coil **16**. The end washer **18** is mounted in the door frame **14** by suitable fastening members **24** and attaching lugs **26** which are secured to the end washer **18**. A ground wire **28** is used to ground the coil **16** to the door frame and an electrical supply wire **30** is connected to an electrical source **32** through a switch **34** which in this instance is mounted upon the dashboard **36** of an automobile.

As shown in Figure 2, the metallic core **20** has a portion extending beyond the confines of the end washer **18** and the core **20** is welded or brazed to the washer **18** wherein the core **20** is stationary in relation to the coil **16**.

Now referring specifically to the left hand portion of Figure 3 it will be seen that a cylindrical member **38** having an outwardly projecting flange **40** secured to the door **12** by suitable fastening means **42** with the cylindrical portion **38** extending through an aperture in a portion of the door **12** wherein the tubular portion **38** is recessed into the interior of the door **12**. The cylindrical or tubular portion **38** has an inwardly extending flange **44** partially enclosing the end of the tubular member **38** and a screw threaded plug **46** is inserted into the other end of the tubular member **38** thereby enclosing the tubular member **38** thereby forming a socket member. An adjustment screw **48** is threadedly engageable with a threaded aperture in the plug **46** and extends into the bottom of the tubular member **38** for a purpose described hereinafter. A bolt or rod member **50** is slidably positioned in the tubular member **38** and is engaged by the inwardly extending flange **44** for guiding movement thereof. A screw threaded washer **52** is secured to the inner end of the rod **50** and closely and slidably engages the interior of the tubular member **38**. The inner end of the rod **50** includes an indented portion **54** for engaging the adjusting screw **48**. A coil spring **56** is disposed between the flange **44** and the washer **52** for urging the rod **50** inwardly of the tubular member **38**. An enlarged head or abutment **58** is secured to the outer end of the rod and includes a socket or recessed portion **60** for engaging the projecting end of the core **20** when the magnetic lock is energized.

It will be understood that when the door **12** is closed and the electric coil **16** energized, the core **20** will attract the head **58** which is of magnetic material thereby engaging the end of the core **20** in the recessed portion **60** and maintaining the door **12** in closed position.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claim.

What is claimed as new is as follows:

An electromagnetic lock for securing a door in closed position in a frame, said lock including: an electromagnet mounted in the frame, said electromagnet comprising a winding and a fixed core projecting therefrom, a cylinder mounted in the door and having an opening in one end, a removable screw plug closing the other end of said cylinder, a bolt mounted for longitudinal reciprocation in the cylinder in spaced, concentric relation thereto and extending slidably through the opening, said bolt being operable to projected position by the electromagnet and comprising a socketed head on its outer end for the reception of the core, a washer threaded on the inner end portion of the bolt and slidable in the cylinder, a coil spring encircling the bolt and engaged with the washer for retracting said bolt, and a screw threaded for adjustment through the plug and engageable with the inner end of the bolt for limiting the movement of said bolt under the influence of the coil spring.

References Cited in the file of this patent

UNITED STATES PATENTS

1,958,940	Cavanaugh et al.	May 15, 1934
2,219,186	Hornfeck	Oct. 22, 1940
2,659,114	Anderson et al.	Nov. 17, 1953