United States Patent Office.

CHARLES O. YALE, OF NEW YORK, N. Y.

Letters Patent No. 107,993, dated October 4, 1870; antedated September 24, 1870.

IMPROVEMENT IN ELECTRO-MAGNETIC SAFE-LOCKS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES O. YALE, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Safes, and analogous depositaries for valuables; and I do hereby declare that the following is a full and exact description thereof.

My invention relates to means for connecting from a battery outside to an electro-magnet in or about the lock, so as to unlock the safe by the same means, and thus be always certain that the connections and the entire apparatus are in order at the time of locking.

My invention is applicable to all forms and constructions of batteries, and to all known or practicable arrangements of helices, and analogous apparatus for operating the lock, or the corresponding part which holds the door. The magnet may act directly upon a heavy bolt which holds the door, or it may act upon a secondary and lighter bolt which holds or dogs the main bolt, or it may act upon a third or fourth member, so as to attain great delicacy in its mode of operation.

I have not esteemed it necessary to indicate any of the refinements to which the other parts may be carried, but will represent my invention as applied to the very simplest form of a blocking-bolt, acting as a latch.

The accompanying drawing forms a part of this specification.

Figure 1 is a view of the inside of a door and door-frame (or section on T T, fig. 2.

Figure 2 is a section on the line S S, in fig. 1.

Figures 3, 4, and 5, represent modifications.

Figure 3 shows the safe-door as made with two thicknesses of burglar-proof material.

Figure 4 shows the door as made with only one thickness thereof.

Figure 5 shows it made with five thicknesses.

Figure 6 shows the wire before it is introduced in the previously-prepared holes and channels.

Similar letters of reference indicate corresponding parts in all the figures.

The door of the safe is indicated collectively by the single letter A. It is made up, as usual, of several thicknesses of hardened steel, Franklinite iron, chilled iron, or other hard material. These several thicknesses may be alike, or different in their structure. Some or all may be made in the variously-compounded styles, or with lumps of hard metal or minerals imbeded, or otherwise secured, in softer or different material, so as to make a mass, as a whole, which is very difficult to break or drill through. I have designated these several layers as A^1, A^2, &c.

M M are helices, surrounding the arms or parallel parts of a soft iron horseshoe magnet, indicated by *m*.

The wire, insulated by the ordinary thin coat of fibrous matter, varnish, &c., is represented by *e*. It leads from the helices to two holes, preferably at a considerable distance apart, in the inner lining or sheet of the safe-door.

The holes or passages through which the ends of the wires are led to the exterior of the safe are peculiarly arranged. First, the inner holes are drilled, or otherwise produced, of a proper size to receive the wire and an extra insulator, *b*, which extends only through this inner sheet or thickness A^1 of the door. From this hole a channel leads along laterally between the inner thickness A^1 and the exterior sheet or thickness A^2. After extending along in this way for a considerable distance, say two or more inches, the conducting-wire *e* is passed outward through a corresponding hole in the thickness A^2. The offsets may be increased in number according to the number of thicknesses of the material A^1, A^2, &c. It may be led in the same or a different direction—laterally, or upward, or downward, or obliquely, for the same or a greater or lesser distance between each of the layers. On the exterior thickness, here represented as A^2, it is well guarded by a thimble of glass, or other suitable non-conductor, around the wire; and, if preferred, the whole exterior surface may be blackened over, and made to correspond in appearance with the other portions of the surface of the safe; or, many points on the exterior surface may be provided with precisely similar non-conducting rings or thimbles, with the end of similar wire correspondingly presented. These false wires would aid to deceive a burglar in applying a battery to open the lock surreptitiously.

I do not propose to indicate in detail the means, which may be of any approved character, for securing my lock against being opened by the application of a battery by an unauthorized person.

My invention relates entirely to the insulation and security of the connection against injury to the safe by violence on the one hand, or a loss of effect by the escape of the current on the other. My connection is secured against both these evils.

It will be understood that a series of rings, or beads of glass, or analogous non-conductor, is threaded upon the wire *e* so as to envelope, and keep it entirely out of contact with the metal of the door, not only during its passage through the hole in each thickness A^1 A^2, &c., but also along the channel provided for it between the two thicknesses. These beads are marked b^1 in figs. 2 and 6.

In case of the application of a drill, or a like tool, to bore out the wire and its surrounding insulating material, the drill will traverse only through the hole in the exterior plate A^2 before it will be arrested by the next interior plate. It is impossible for any known

J. ALLONAS.

Thrashing Machine.

No. 107,994. Patented Oct. 4, 1870.

Fig. 1.

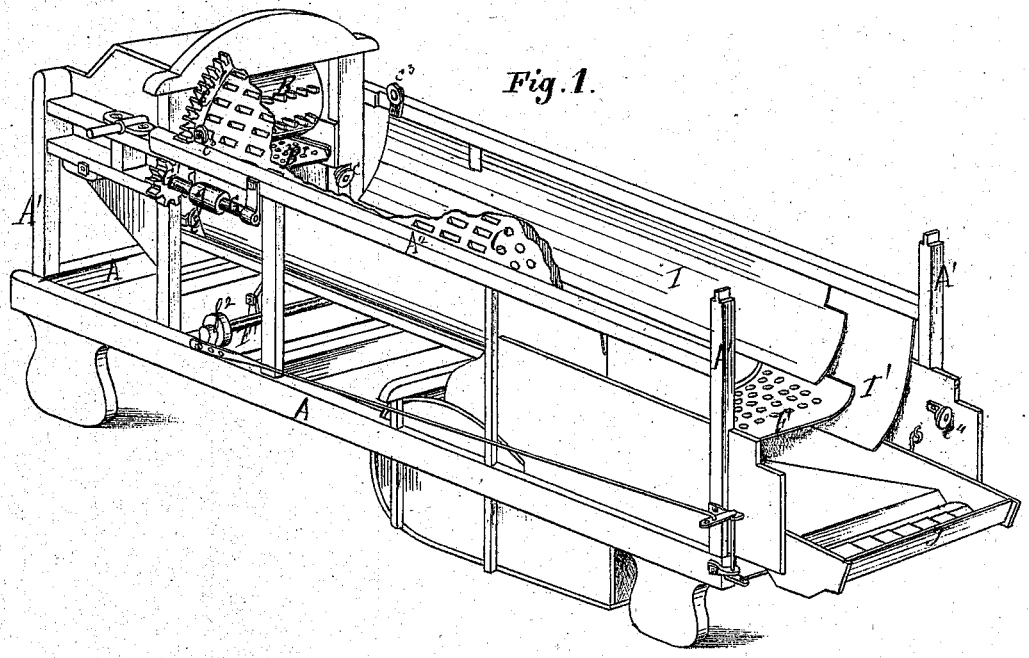
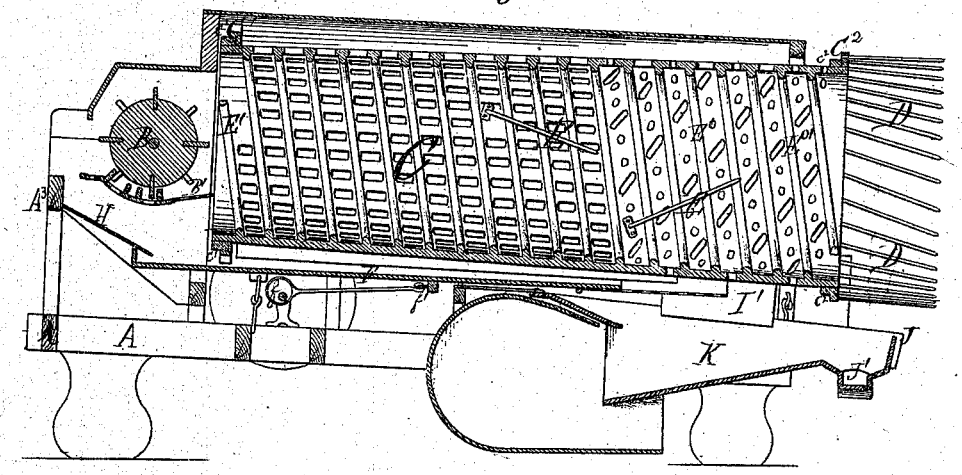


Fig 2.



Witnesses.

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