No. 881,819. PATENTED MAR. 10, 1908.

W. M. McINTOSH.

KEY BOLT AND AUTOMATIC LOCK THEREFOR.

APPLICATION FILED JAN. 7, 1907.

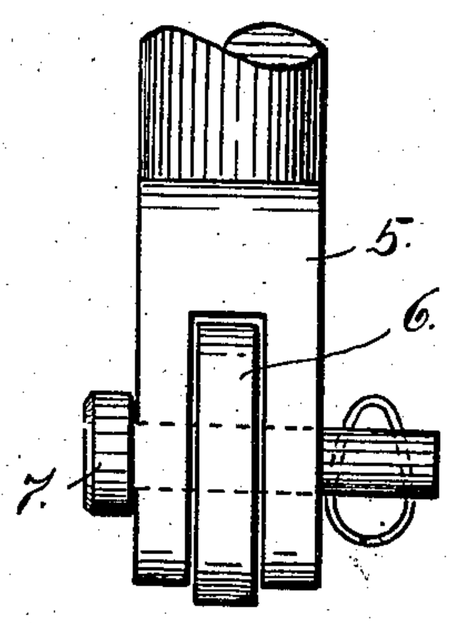

Fig. 1.

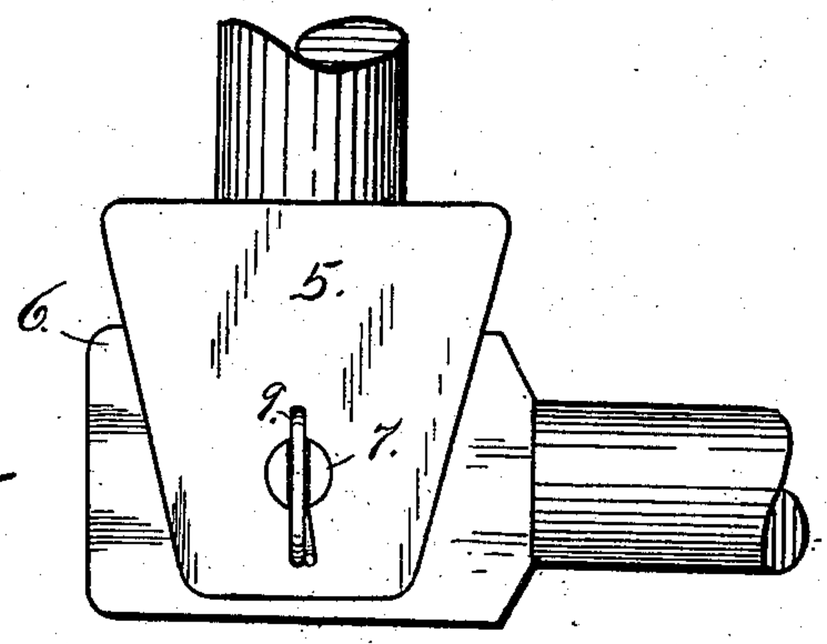

Fig. 2.

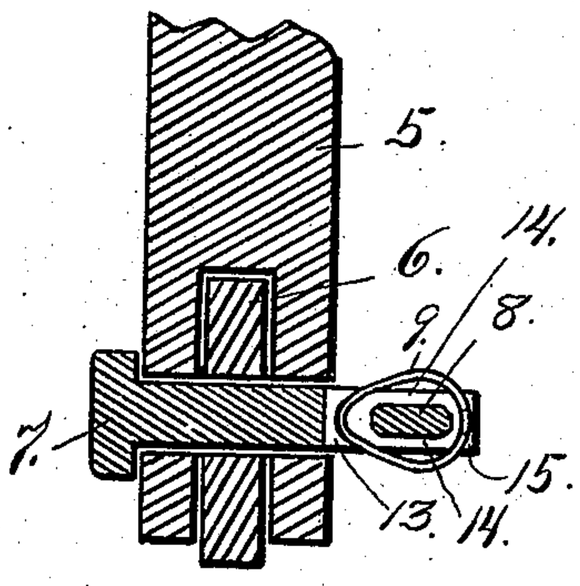

Fig. 3.

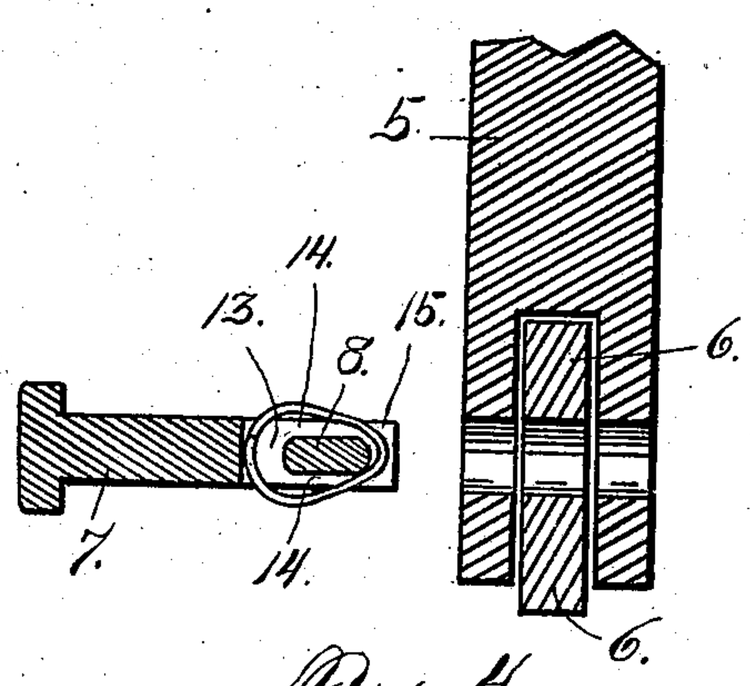

Fig. 4.

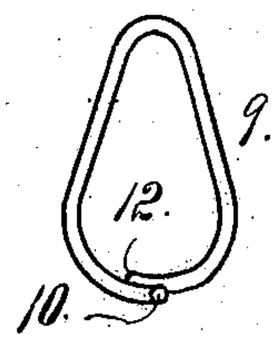

Fig. 5.

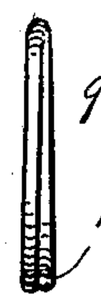

Fig. 6.

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UNITED STATES PATENT OFFICE.

WILLIAM M. McINTOSH, OF DENVER, COLORADO, ASSIGNOR OF ONE-FOURTH TO HARRY B. SEATON AND ONE-FOURTH TO FRANK MACKE, BOTH OF DENVER, COLORADO.

KEY-BOLT AND AUTOMATIC LOCK THEREFOR.

No. 881,819. Specification of Letters Patent. Patented March 10, 1908.

Application filed January 7, 1907. Serial No. 351,060.

To all whom it may concern:

Be it known that I, WILLIAM M. McINTOSH, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Key-Bolts and Automatic Locks Therefor; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in key bolts and means for automatically locking the key bolt in place.

My improved device consists of a spring ring located in a slot formed in the key bolt and surrounding a web of the bolt, the said ring being so constructed that the bolt may be inserted and removed while the ring is in place and when inserted, securely locks the bolt against removal except by design.

My improvement is designed to take the place of the ordinary bolt and locking cotter inserted in the end thereof. As is well known the cotter must be applied after the bolt is inserted and must be removed before the bolt can be removed. In this respect my improvement possesses a very important advantage since the locking devices or improved cotters may be applied to the bolts before they are inserted, and never need be removed since the bolt may be detached without removing the spring ring.

While my improved device as shown in the drawing and hereinafter described consists of a heart-shaped ring divided to allow its extremities to overlap or pass each other for yielding or spring purposes, it is evident that the construction may be modified or changed and that I am not limited to precise detailed construction except so far as required by the state of the art and the scope of the appended claims.

Having briefly outlined my improved device I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a fragmentary elevation of a key bolt and locking device provided with my improvements, the bolt being shown in connection with two connected parts. Fig. 2 is a view of the same looking in the direction of arrow 2 in Fig. 1. Fig. 3 is a sectional view showing the locking device in position to permit the removal of the bolt. Fig. 4 is a sectional view showing the bolt and its locking device detached from the parts to be connected, the locking device, however, being shown in position for insertion. Fig. 5 is a detail view of my improved locking device or automatic cotter. Fig. 6 is another view of the same.

The same reference characters indicate the same parts in all the views.

Let the numerals 5 and 6 designate two members to be connected by a bolt 7 which is provided at one extremity with a web 8, the bolt being slotted or grooved at the end to form the web and at the same time prepare the bolt to receive the heart-shaped spring rim 9 which is divided at its larger extremity, its two ends 10 and 12 being thrown out of alinement to allow the ring to yield in response to pressure from the opposite sides during the insertion or removal of the bolt. The groove in the end of the bolt forms an opening 13 which communicates with side slots 14 and an end slot or groove 15. This peculiar construction of the bolt end, allows the key to spring inwardly and conceal itself within the bolt during the insertion or removal of the latter through an opening of the same size or approximately the same size as the diameter of the bolt.

In order to insert the bolt with the automatic spring ring or cotter in place, the ring is turned in the bolt end as shown at Fig. 4 or with its pointed extremity toward the registering openings of the parts to be connected. When the bolt is forced into place the walls of these openings engaging the opposite sides of the spring ring and force these sides inwardly causing the extremities 10 and 12 to slip past each other to the desired extent. As soon, however, as the bolt is fully inserted, the ring by virtue of the tension to which it has been subjected, resumes its normal position, thus locking the bolt securely in place. When the bolt has been inserted the spring ring may occupy the position shown in Figs. 1 and 2. When it is desired to remove the bolt, the locking ring should be so placed that its smaller extremity points in the direction of the travel of the bolt during the removal of the latter. As

the bolt is withdrawn through the openings of the connected parts, the opposite sides of the ring are forced inwardly in the same manner as during insertion. It is evident that as soon as the bolt has been removed the spring ring or automatic cotter will assume its normal position. The same device may be used an indefinite number of times as will be readily understood.

Having thus described my invention, what I claim is:

1. The combination with a bolt having a web at one end, formed by a transverse groove in the end of the bolt and a transverse opening near the end thereof, of a loosely mounted spring ring applied to the bolt end and surrounding the web, substantially as described.

2. The combination with a bolt having an opening near one extremity, and a transverse groove in the extremity thereof, of a loosely mounted wedge-shaped spring ring applied to the bolt end and surrounding a web formed by the transverse opening and groove.

3. The combination with a bolt provided with a transverse opening at one end and grooved longitudinally on opposite sides between the spring and the end, thus forming a web, a loosely mounted spring ring surrounding the web and adapted to enter the side grooves during the insertion or removal of the bolt, substantially as described.

4. The combination of a bolt provided with an opening at one end and grooved on opposite sides forming a web, a wedge or heart-shaped spring ring applied to the bolt end and surrounding the web, the said ring being free to move in the bolt end whereby its small extremity may be turned in either direction for purposes of insertion and removal, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM M. McINTOSH.

Witnesses:
DENA NELSON,
A. J. O'BRIEN.