No. 646,347. Patented Mar. 27, 1900.

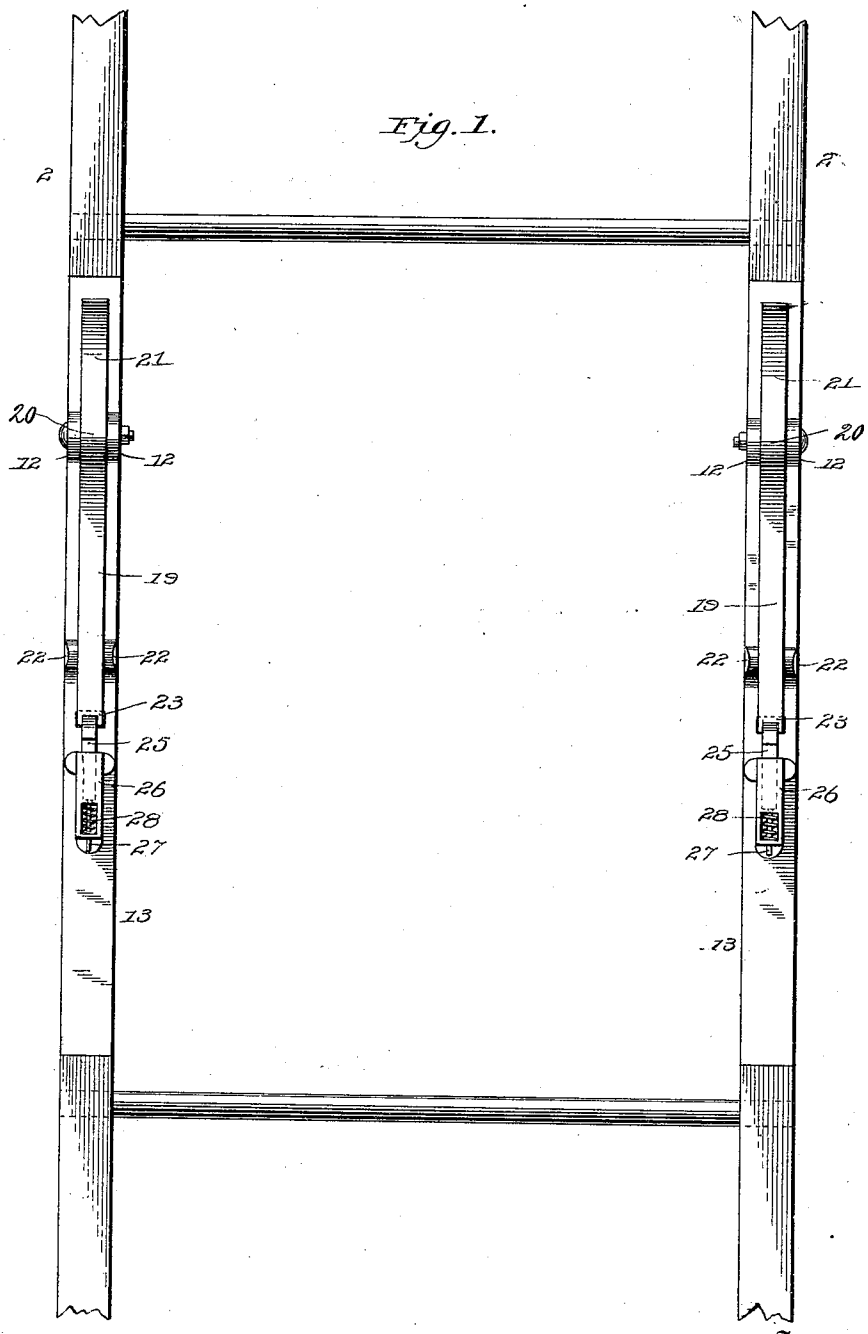
T. H. BETTY.

FOLDING LADDER.

(Application filed Oct. 23, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



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No. 646,347. Patented Mar. 27, 1900.

T. H. BETTY.

FOLDING LADDER.

(Application filed Oct. 28, 1899.)

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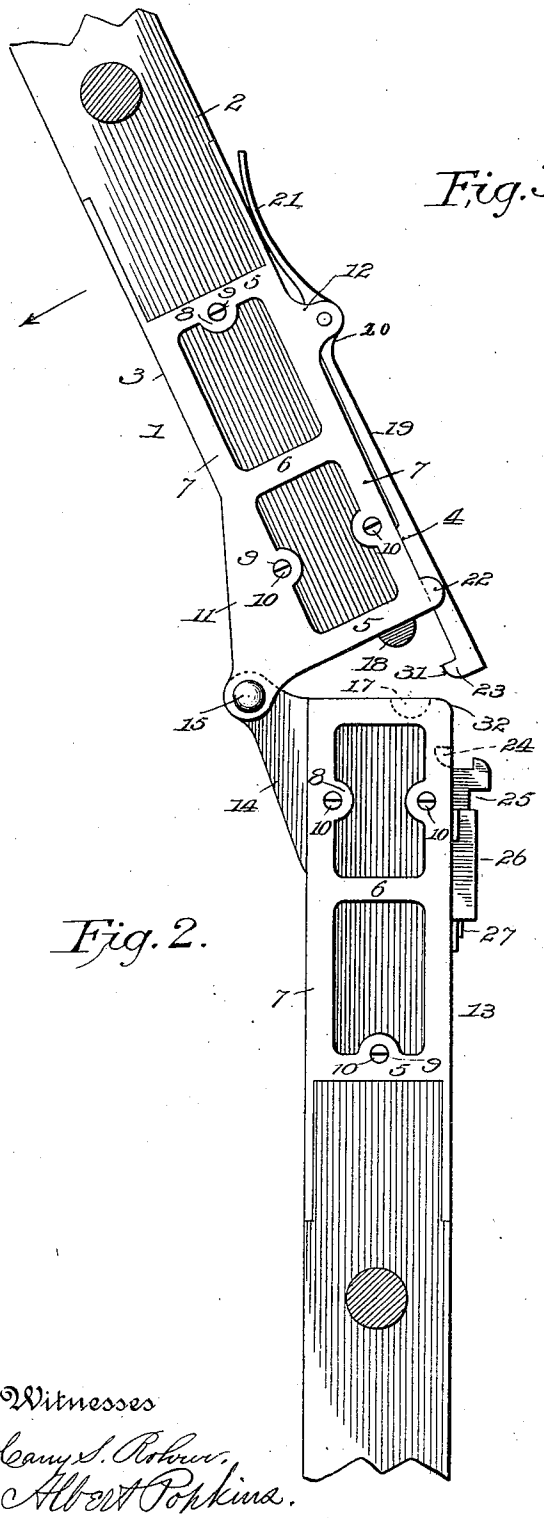
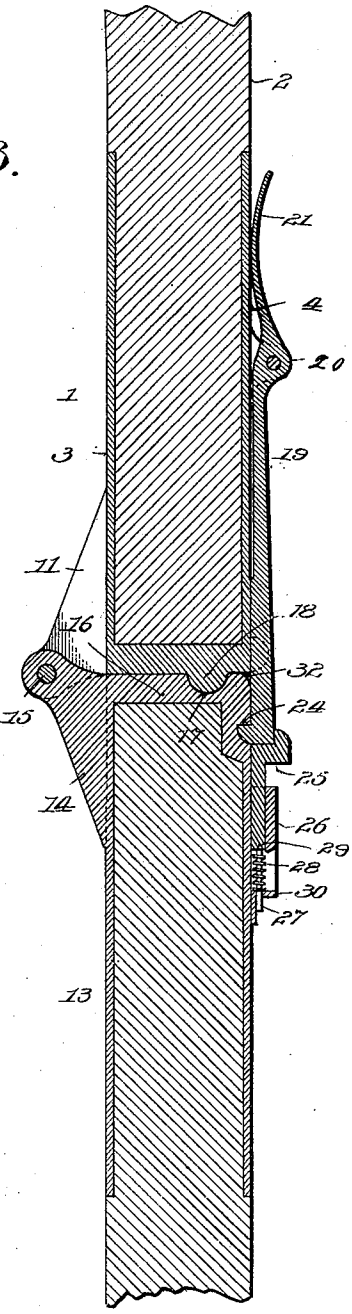


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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FOLDING LADDER.

SPECIFICATION forming part of Letters Patent No. 646,347, dated March 27, 1900.

Application filed October 23, 1899. Serial No. 734,485. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. BETTY, a citizen of the United States, residing at Manchester, in the county of Chesterfield and State of Virginia, have invented certain new and useful Improvements in Folding Ladders; 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 figures of reference marked thereon, which form a part of this specification.

My invention relates to folding ladders; and its primary object is to provide improved means for securing the sections of a folding ladder together, whereby said sections may be readily folded and unfolded and when unfolded will be automatically locked together firmly to prevent the possibility of an accidental disconnection of the sections.

A further object of the invention is to provide means for securely bracing the connecting and locking devices of the ladder-sections to insure a firm and rigid connection between the sections when the latter are unfolded or joined end to end.

The construction of the ladder will be fully described hereinafter in connection with the accompanying drawings, which form a part of this specification, and its novel features will be defined in the appended claims.

In the drawings, Figure 1 is an elevation of a ladder embodying the invention, consisting of two sections broken away at their ends. Fig. 2 is an elevation of one side of the ladder, showing the sections separated and in position to be folded together; and Fig. 3 is a central vertical section through one of the joints of the ladder.

As the connecting and locking devices for the sections at either side of the ladder are duplicates in construction, a description of one will suffice for both.

The reference-numeral 1 designates a socket or casing, preferably of rectangular form in cross-section, within which is secured the lower end of the side bar 2 of one section of the ladder. This socket or casing is preferably a metallic casting comprising parallel sides 3 and 4, connected by transverse bars 5 and 6 and vertical bars 7. The bars 5 and 7 are provided with lugs or ears 8, having holes 9 for screws or other fastenings 10, which secure the end of the side bar to the socket. From the outer surface of the side 3 of the socket, adjacent to the lower end thereof, project parallel ears 11, and near the upper end of the outer surface of the opposite side 4 project parallel ears 12.

13 designates the socket or casing which receives the upper end of the side bar of the lower section of the ladder, said socket corresponding in general structure to the socket or casing 1 and having projecting centrally from the upper end of one of its sides an ear 14, which fits between the ears 11 of the adjacent socket and is pivotally secured thereto by a pin 15. These pivotally-connected ears 11 and 14 are inclined or beveled in opposite directions to constitute longitudinal braces for the ladder-sections at their junction.

The upper cross-bar 16 of the lower socket 13 is formed with a transverse semicircular depression or seat 17 to receive a corresponding semicircular lug 18, depending from the lower cross-bar 5 of the socket 1. This connection of the meeting ends of the two sockets prevents either lateral or transverse play and insures a firm connection between the sections, supplementing the locking devices, which will now be described.

19 designates a latch-bar, of spring metal, curved outwardly at the point 20, where it is pivotally secured between the lugs 12 of the upper socket. The upper end of this latch-bar is curved outwardly to form a rounded fulcrum 21, and the lower end of said bar extends down between guide-lugs 22 and below the upper socket and is formed on its inner side with a catch-lug 23, adapted to fit into a recess 24 in the outer side of the lower socket 13.

25 designates a sliding dog supported within a keeper or housing 26, projecting from the side of the socket 13 and provided with a stem 27, surrounding which is a coil-spring 28, the ends of which abut against the end 29 of the dog and the end wall 30 of the housing, respectively.

The operation of the devices constructed as thus described is as follows: When the two

sections of the ladder are in their unfolded position, the latch-bar 19 engages the recess 24 and is held in such engagement by the spring-dog 25. To disconnect the sections, the dog 25 is depressed out of engagement with the latch-bar and the latter is raised against the tension of its spring-fulcrum 21, after which the upper section may be readily folded down to a position parallel to the lower section. In reuniting the sections the rounded surface 31 of the lug 23 of the latch-bar strikes the rounded corner 32 of the lower socket 13, thus forcing the latch-bar outward until its catch-lug comes opposite the recess 24, when the bar springs inward, having been released from its contact with the rounded corner 32 of the lower socket. In its downward movement the end of the latch-bar strikes the spring-dog 25 and depresses it against the tension of its spring 28 until the lug of the latch-bar enters the recess 24, when the dog is forced upward by its spring to securely engage and lock the latch-bar.

It will be obvious that any desired number of sections of ladder may be connected in the manner described, that the ladder may be lengthened or shortened, as desired, by folding or unfolding the sections, and that when the sections are fitted together end to end they are automatically locked in a firm and reliable manner.

I claim—

1. In a folding ladder, the combination with the ladder-sections, of means for connecting and locking the same together detachably, comprising sockets or casings fitting the ends of the side bars, and hinged together at one side; a spring latch-bar pivotally secured to one of said sockets, and a spring-controlled dog on the other section adapted to engage said latch-bar.

2. In a folding ladder, the combination with the ladder-sections, of means for connecting and automatically locking the same together detachably, comprising sockets or casings fitting the ends of the side bars, and hinged together; a spring-latch pivotally secured to one of said sockets and provided with a rounded catch-lug adapted to contact with a rounded surface on the other socket, and to enter a recess below said rounded surface; and a sliding spring-controlled dog adapted to be depressed by said latch-bar, and to engage the latter to hold it in engagement with said recess.

3. In a folding ladder, the combination with sockets or casings fitting the ends of the side bars and hinged together at one side, of means for automatically locking the sockets or casings together, and means for preventing lateral and transverse play of said sockets consisting of a recess in one of the sockets and a projection from the other socket fitting said recess.

4. In a folding ladder, the combination with sockets or casings fitting the ends of the side bars, and hinged together at one side; of automatic locking devices for said sockets comprising a spring latch-bar pivoted on one side of one of the sockets and having a curved extension at one end, and a catch-lug at its opposite end; and a spring-dog on the other socket to engage said latch-bar.

5. In a folding ladder, the combination with the side bars of the ladder-sections, of sockets fitting said side bars; ears projecting from the sockets beveled in opposite directions to brace the ladder-joint, and hinged together; a spring latch-bar pivotally secured to one of the sockets; a sliding dog on the other socket to engage the latch-bar; and a connection between the meeting surfaces of the sockets consisting of a lug on one of the sockets fitting a recess in the other.

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

THOMAS H. BETTY.

Witnesses:
JOHN W. HALL,
J. A. LIPSCOMB.