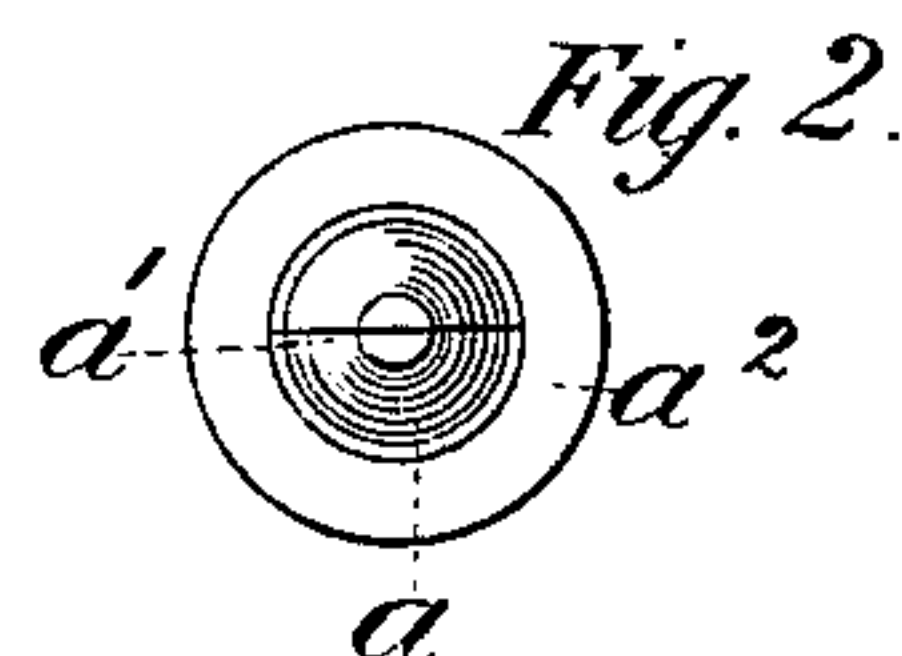
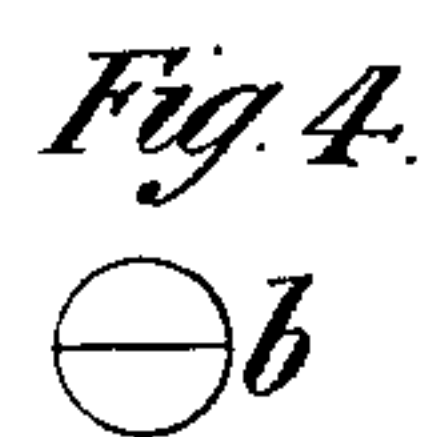
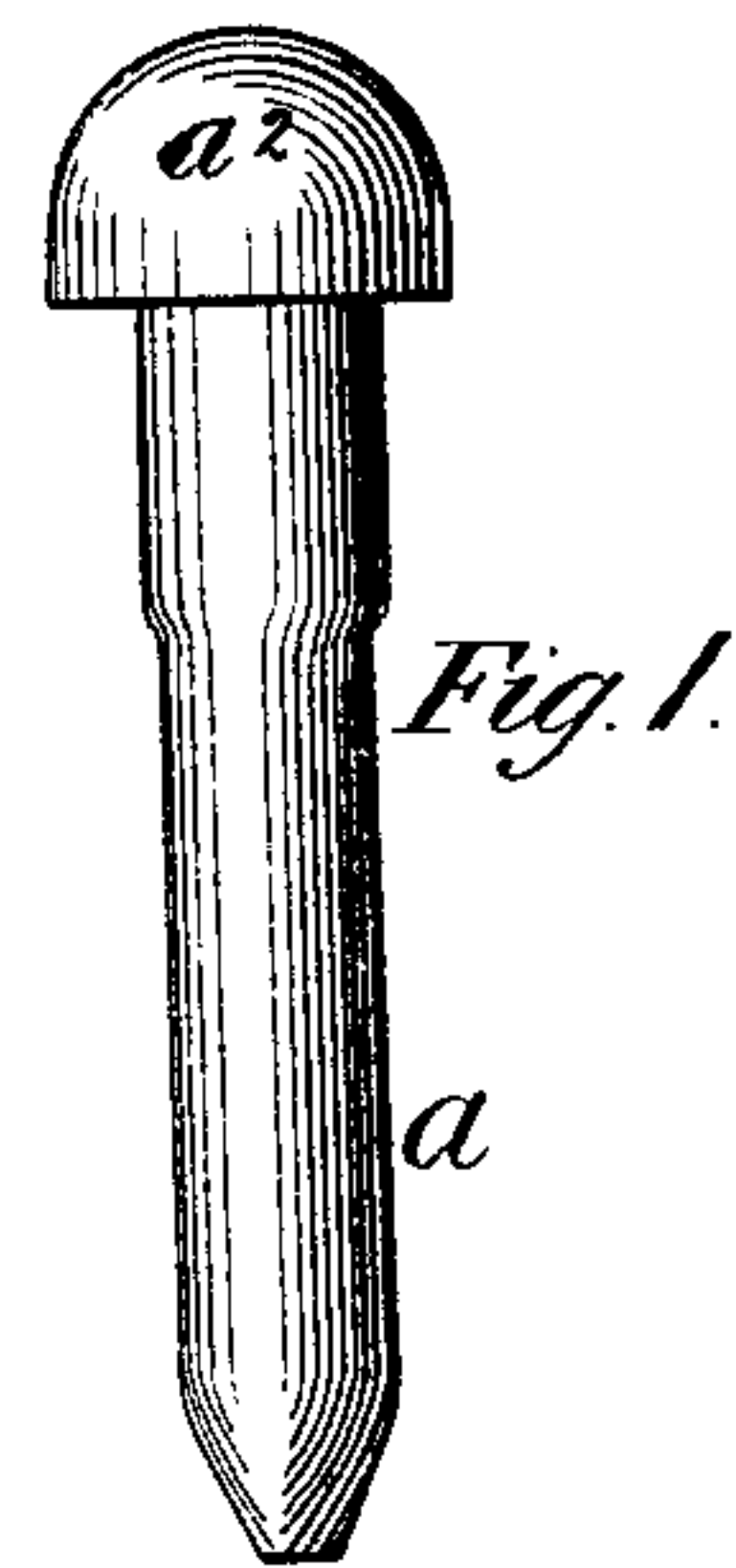
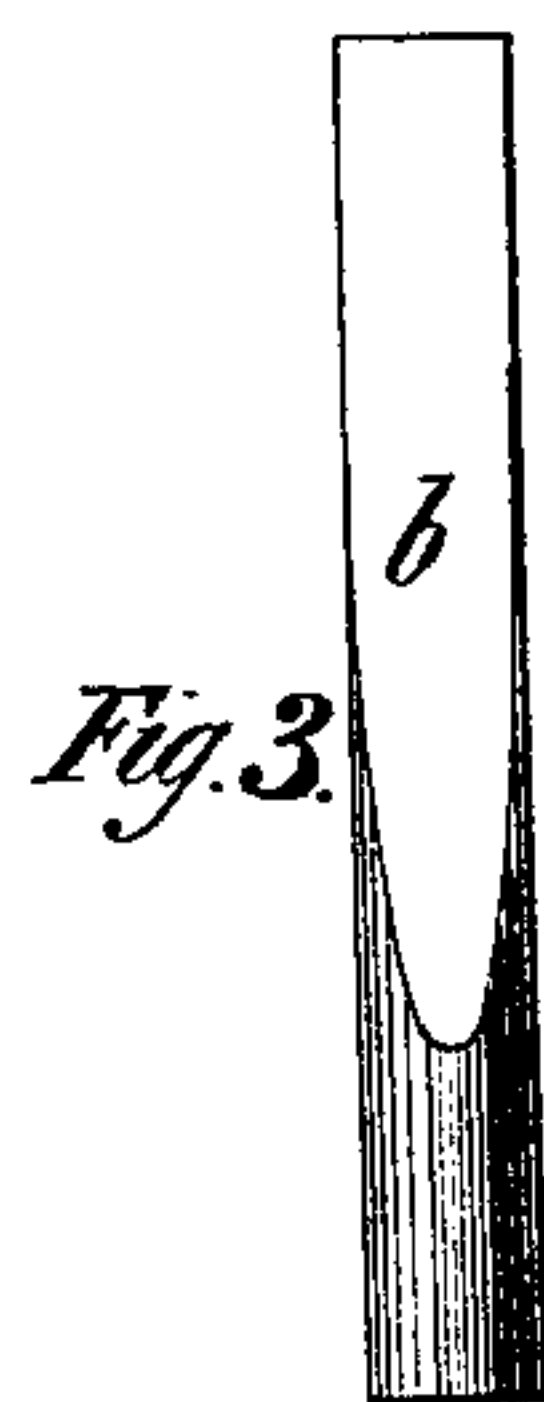
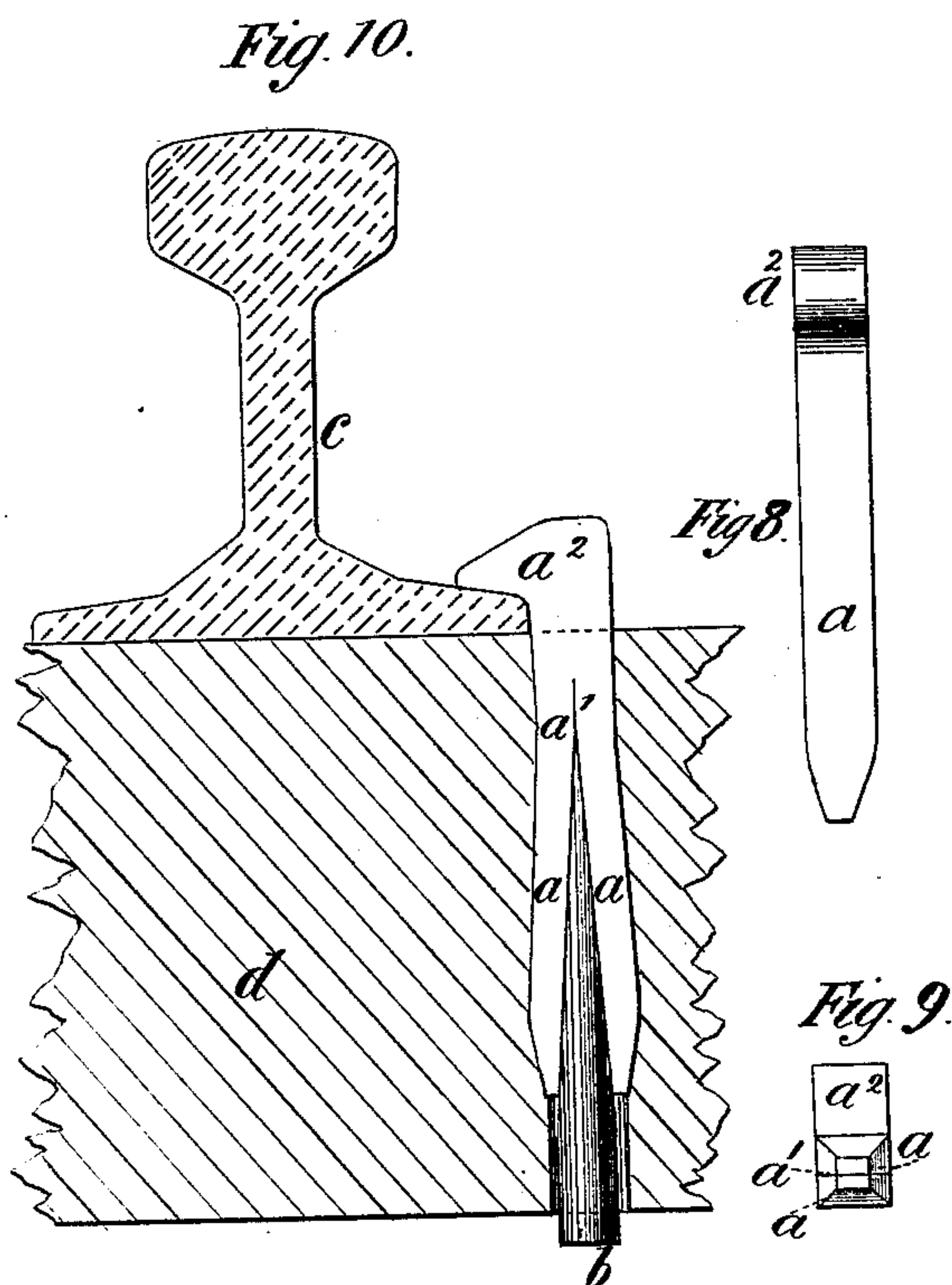
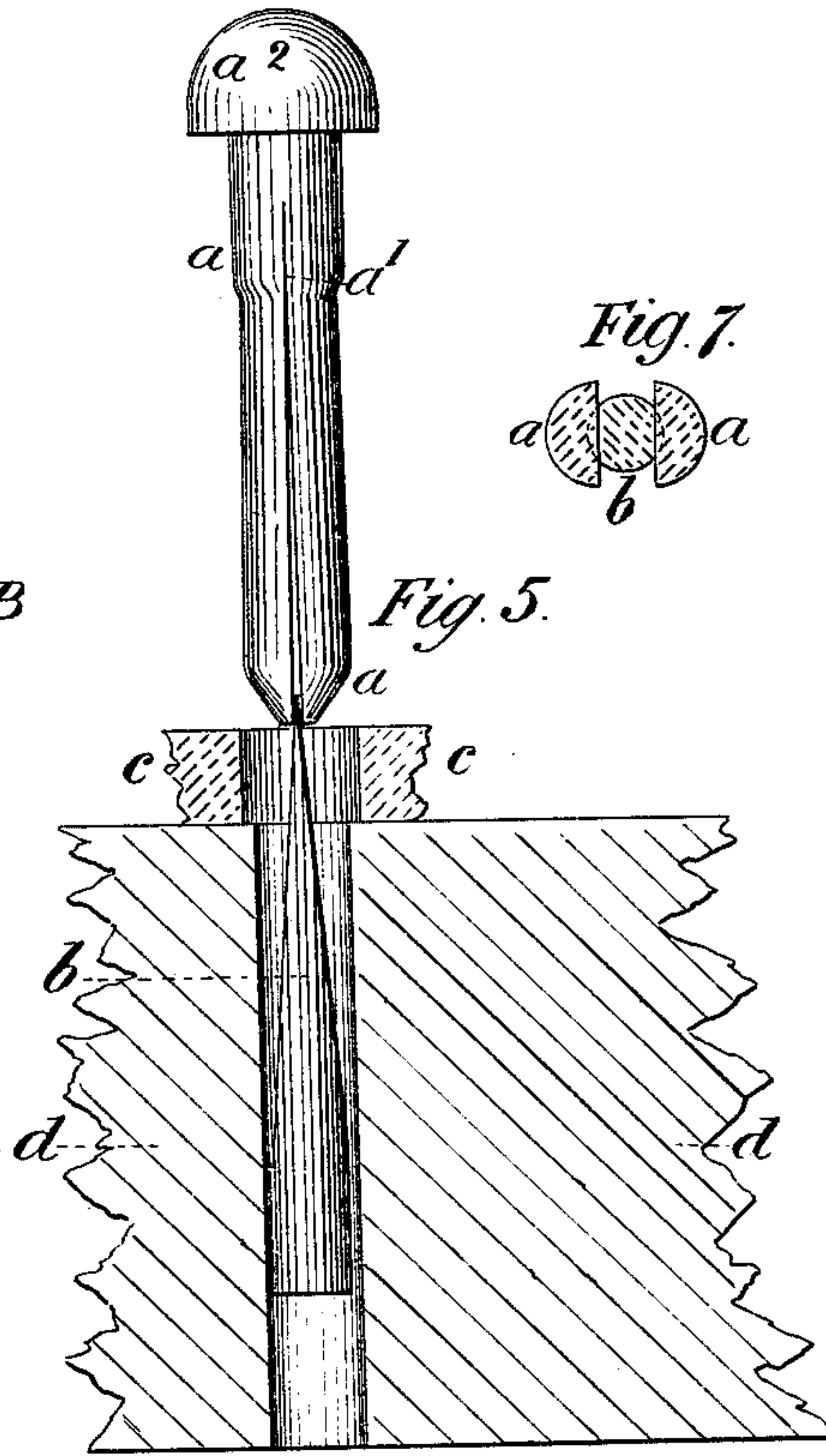
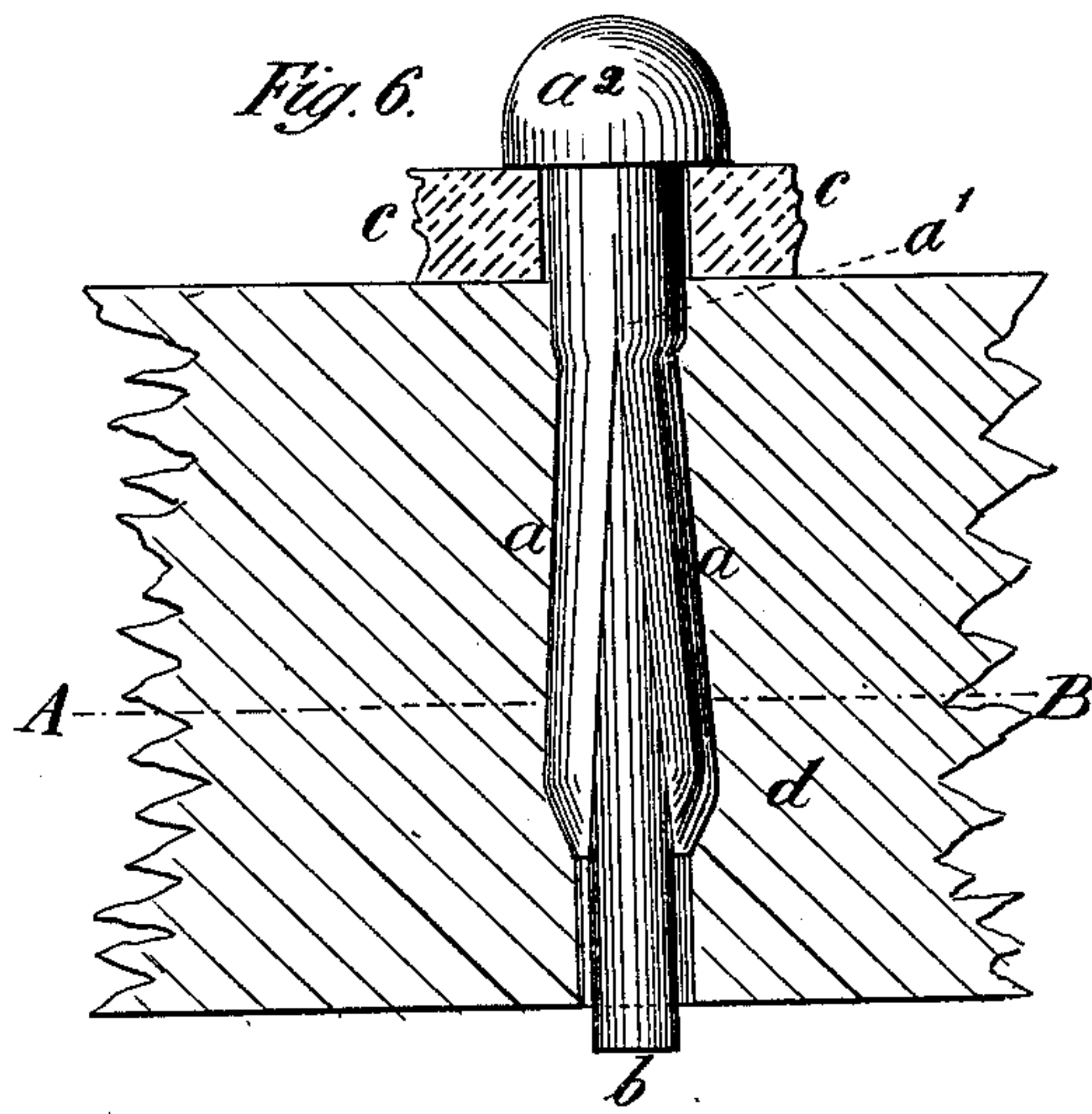


E. LAWRENCE.

Spike.

No. 202,952.

Patented April 30, 1878.



Witnesses:
Pennington Halsted
Charles Earle.

Inventor:
Edwin Lawrence
per John J. Halsted
Atty.

UNITED STATES PATENT OFFICE.

EDWIN LAWRENCE, OF HYDE PARK, ENGLAND.

IMPROVEMENT IN SPIKES.

Specification forming part of Letters Patent No. **202,952**, dated April 30, 1878; application filed November 15, 1877; patented in England, May 5, 1876.

To all whom it may concern:

Be it known that I, EDWIN LAWRENCE, of No. 6 Lancaster Gate, Hyde Park, in the county of Middlesex, England, have invented new and useful improvements in fixing railway and such like bolts, spikes, or dogs, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings. [Patented in England, No. 4,436 for 1875; patent sealed May 5, 1876.]

The object of the invention is to afford increased security in the fixing of railway and other bolts, spikes, or dogs, as they are sometimes called, with facility, for retightening or removing them when required. For this purpose the bolts, spikes, or dogs are split upward in the direction of their length, to receive a wedge-piece, somewhat as has heretofore been proposed to be done; but, according to my invention, the hole for the reception of the bolt, spike, or dog and wedge-piece is not only made entirely through the sleeper or other object or objects to which the fastening is to be made, but the spike or bolt need not extend entirely through such hole, and it has no head or shoulder at that end which enters the bore, and the wedge-piece is retained during the driving of the split spike or bolt or dog onto it by any suitable support, which may be placed temporarily at any suitable distance below the bottom of the sleeper or other object to which the fastening is to be made.

The wedge-piece may have a head or other turned-up part formed to it, by which it may be more readily drawn, if required, to permit of the removal of the spike, bolt, or dog, or, without a head, it may be readily drawn by a suitable drawer.

Referring to the accompanying drawings, Figure 1 shows a side view, and Fig. 2 a lower-end view, looking upward, of one form of bolt or spike as employed by me. Fig. 3 shows a side view, and Fig. 4 an upper-end view, of a wedge-piece to be used therewith. Fig. 5 shows the wedge-piece with its end just inserted in the lower end of the slit a^1 in the bolt or spike, and both in the position of being placed through a hole in a railway-chair, or in the flange of a rail and a hole previously prepared for it in the sleeper, or, it may be, other

plate or substance to be connected to other timber or to other substance. Fig. 6 represents the position of the parts after the bolt or spike has been driven onto the wedge-piece for the purpose of holding together the parts to be connected. Fig. 7 is a horizontal section through the line A B on Fig. 6 of the bolt and wedge when driven home into position. Fig. 8 shows by a side view, and Fig. 9 by an under-side view, looking upward, another form of bolt or spike, which is ordinarily called a "dog-spike" or "dog," which, in this case, is rectangular in section, and is formed with a hooked head, a^2 ; and Fig. 10 shows the same when driven and applied to holding down a rail.

In each of the figures the same letters are employed to indicate corresponding parts.

a represents the bolt, spike, or dog; a^1 , the slit therein for the reception of the wedge-piece; and a^2 is the head of the bolt, spike, or dog. b is the wedge-piece. c represents the part of a railway-chair, or it may be the flange of a railway-rail or other plate, to be secured to a railway-sleeper or other substance.

The bolts may be made of any shape and of any material for attaching together any two or more substances which can be bored through, and which will allow the split spike, bolt, or dog to expand when driven; and the wedge-piece may be made with its sides of any suitable inclination to suit the compressibility of different kinds of timber, or of other substances in which it is to be driven.

The wedge-piece b may be supported in position while the split spike, bolt, or dog is being driven into the hole in the sleeper or other piece of wood, or other substance, by any suitable support, on which it rests, and which support may be so adjusted as to secure the wedge-piece entering into the bolt or spike more or less, as may be desired.

If, in consequence of shrinkage of the timber, or from other causes, the fastening, after it has been driven, may become slack, and the spike, bolt, or dog may require to be tightened, a temporary support may be placed again beneath the wedge-piece, and then the spike, bolt, or dog may be driven farther into the timber or other substance.

In place of the spike or bolt being driven onto the wedge, the wedge may be driven into

the spike or bolt; and it will be understood that other such variations may be made, depending on circumstances or the wish of the operator.

Having thus described my invention, and means which I adopt in putting the same into operation, I would have it understood that I do not claim the use of split bolts or spikes and wedges, generally considered. Nor do I claim a split bolt having a head at one of its ends and a shoulder or lateral projection at its other end, and between which head and shoulder the object or objects to be fastened are held; but

I claim—

A split bolt, spike, or dog, *a*, having the body

of uniform, or nearly uniform, diameter, and a wedge, *b*, applied thereto within a hole extending through the sleeper or other object to which the fastening is to be made, substantially as shown and described, whereby such bolt, spike, or dog and its wedge may be readily forced together, tightened, released, or removed, as may be required, in manner substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN LAWRENCE.

Witnesses:

JAMES F. NAYLOR,
W. H. STONE.