

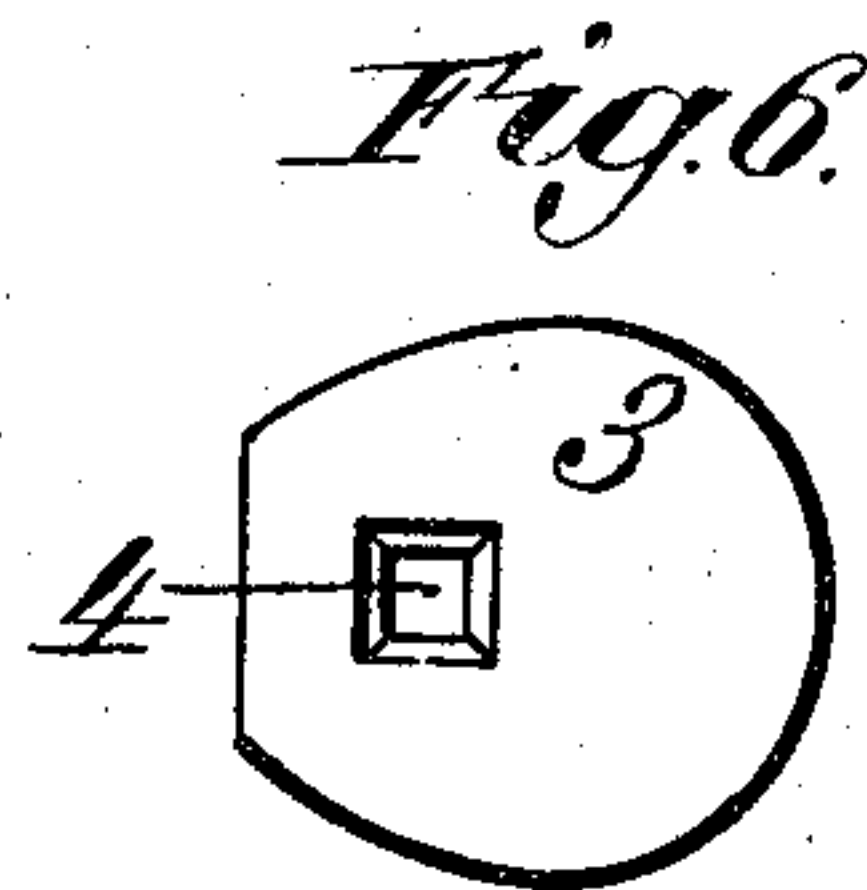
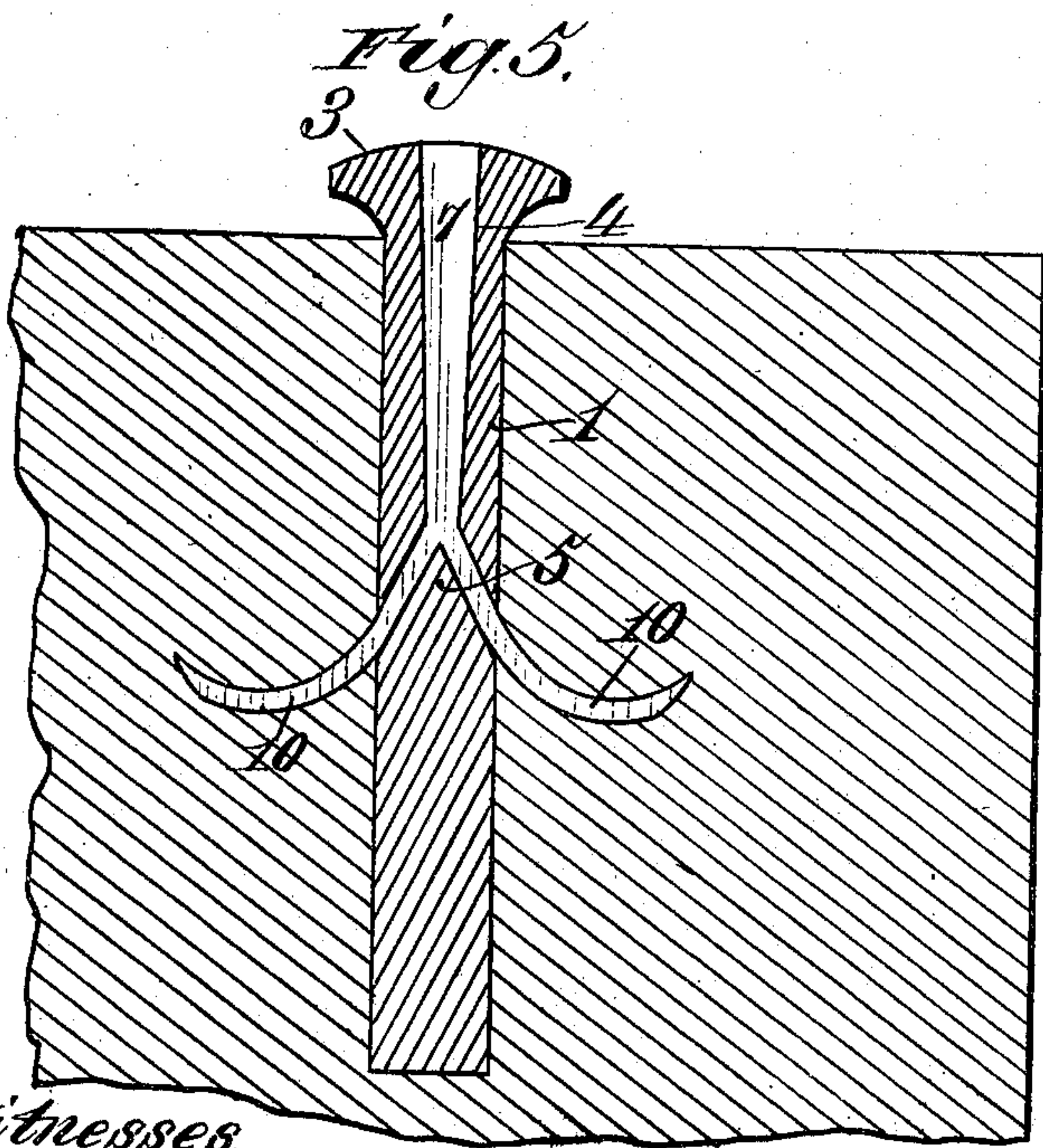
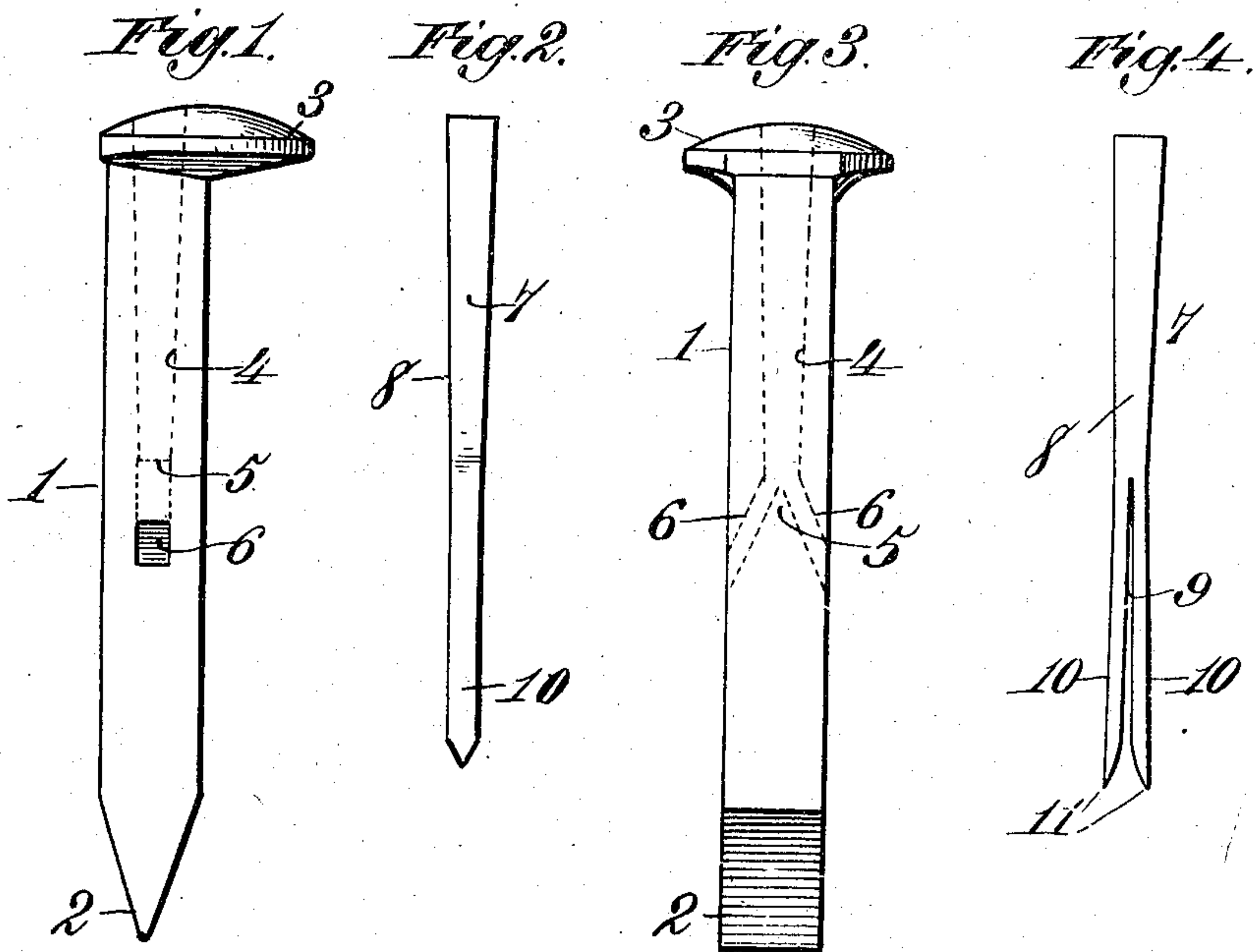
No. 867,429.

PATENTED OCT. 1, 1907.

R. E. L. SIMMERMAN.

SPIKE.

APPLICATION FILED JUNE 1, 1907.



Witnesses.  
Robert Everett,  
J. O. Keeler

Inventor.  
Robert E. L. Simmerman,  
By James L. Norris,  
Atty.



# UNITED STATES PATENT OFFICE.

ROBERT E. L. SIMMERMAN, OF HARTFORD, KENTUCKY.

## SPIKE.

No. 867,429.

Specification of Letters Patent.

Patented Oct. 1, 1907.

Application filed June 1, 1907. Serial No. 376,776.

*To all whom it may concern:*

Be it known that I, ROBERT E. L. SIMMERMAN, a citizen of the United States, residing at Hartford, in the county of Ohio and State of Kentucky, have invented  
5 new and useful Improvements in Spikes, of which the following is a specification.

This invention relates to spikes of that class which are provided with keys for securely anchoring them after being driven home into the timber, railway tie,  
10 or other structure with which the spike is used.

It is well known that spikes have been constructed with central bores extending longitudinally thereof and communicating with opposite outlet openings at a distance above the terminal of the driving point to receive a longitudinally split key which is driven downwardly through the spike and has the legs thereof divergently projected through the outlet openings into the wood of the tie or other structure into which the spike is driven. It is also known that a nail has been  
20 provided with a longitudinal bore having a single outlet to receive a second smaller key nail of soft metal which is also terminally deflected outwardly into the wood or other material into which the primary nail is driven.

The present improved spike is exteriorly of the same  
25 form as an ordinary railroad spike with a bore extending downwardly therethrough to a diverting anvil or angular projection which provides a partition between opposite divergent openings or outlets, the bore tapering towards the anvil or projection and having a wedge-shaped key driven thereinto and formed with a longitudinally split terminal to provide anchoring legs which are deflected outwardly on opposite sides of the spike and serve as anchoring means for the latter. The longitudinally split terminal of the wedge-shaped key is  
35 so proportioned relatively to the remaining part of the said key that when the latter is fully driven into and has the upper end flush with the top surface of the head of the spike, the upper terminal of the split portion of the key will engage the apex of the anvil or projection  
40 at the lower extremity of the bore to prevent the key from being driven downwardly beyond a predetermined extent and to effect a more positive anchorage of the spike by the diverged or outwardly turned legs of the key. Furthermore, by preventing the key from  
45 being driven downwardly into the spike, beyond a predetermined distance, and which is due to the structural proportions of the bore and the key as just specified, the head of the spike will be filled by the key completely to the upper terminal of the bore and thus prevent  
50 weakening of the head structure which might exist if a portion of the upper extremity of the bore was left unoccupied.

Another advantage derived from having the split extremity of the key of a length to permit engagement  
55 of the upper terminal thereof with the apex of the anvil or projection in conjunction with the wedge-

shaped contour of the key is that when the spike is withdrawn the key will be prevented from moving longitudinally through the body of the spike and the diverged legs will be drawn upwardly to facilitate the  
60 extraction of the spike with the least possible injury to the wood or tie in which the spike is driven, and in contradistinction to a spike wherein the split portion is without definite extent and the body of the key of equal diameter throughout its length. When a key  
65 having an indefinite split portion is used and the terminals are diverged after such key is driven into a spike, the extraction of the spike will cause the key to slip longitudinally through the spike and the diverged extremities of the key under these conditions will not be  
70 started until a considerable portion of the spike has been withdrawn and will result in injuriously tearing or mutilating the wood or holding material of the diverged key extremities.

The key in the present construction is of materially  
75 softer metal than the body of the spike, and when driven into place it closely fills the bore and practically becomes a part of the spike owing to its wedge-shape, and incidentally moisture is prevented from seeping through the bore and reaching the wood of the tie or other wood  
80 structure.

In the drawings, Figure 1 is a side elevation of a spike embodying the features of the invention. Fig. 2 is a detail view of the key used with the spike. Fig. 3 is a detail elevation of the spike looking at a different  
85 side thereof. Fig. 4 is a detail view of the key showing the same in a different position from that illustrated by Fig. 2. Fig. 5 is a sectional view showing a portion of a railway tie or other wood structure with the spike and key applied. Fig. 6 is a top plan view  
90 of the spike head.

Similar characters of reference are employed to indicate corresponding parts in the views.

The numeral 1 designates the shank of the spike, which is of usual form and having a wedge-shaped  
95 driving point 2 and a flanged or projected head 3. A bore 4 of angular form, preferably oblong, is formed in the upper extremity of the shank and extends through the head 3, said bore being tapered from the upper to the lower terminals thereof and located centrally with  
100 respect to the shank 1. At the lower terminal of the bore 4 an angular anvil or projection 5 is constructed by the formation of divergent outlet openings or passages 6, the greatest width of the outlet openings or passages being less than the minimum diameter of the tapered  
105 bore 4, and the longitudinal extent of the said bore and of the outlet openings is such that about the lower half of the shank 1 of the spike is left solid to avoid the least deterioration of the necessary driving characteristics of the spike.  
110

The key 7 for anchoring the spike is formed with a wedge-shaped body 8 and a lower longitudinal slit 9



to provide anchoring legs 10, the latter having their ends reduced, as at 11. The slit 9 is of such length relatively to the length of the key that when the said key is fully driven home in the bore 4 the upper terminal thereof will be flush with the upper surface of the head 3 of the spike, and the upper terminal of the slit will be in engagement with the apex of the angular anvil or projection 5, and owing to the tapering contour of the bore and body of the key, the latter will become practically a part of the spike by being jammed within the bore, it being understood that the maximum diameter of the key will be just a trifle greater than the maximum diameter of the bore to insure a jamming adhesion between the key and the wall of the bore. This difference in diameter will not be great enough to necessitate crushing of the upper terminal of the key on to the head of the spike and over the upper terminal margin of the bore. These specific proportions have been adopted to derive the greatest benefit from a locking key of the type specified, and among others may be mentioned that the key strengthens both the body and head of the spike engaged thereby, and is prevented from being driven downwardly beyond a predetermined point, and thus avoid leaving any portion of the bore in the spike head unoccupied. Furthermore, when the legs 10 reach the upper terminals of the outlet openings or passages 6, they are deflected and diverged and caused to turn outwardly, as shown by Fig. 5, within the wood of the tie or other structure in which the spike is driven, the body of the key and the legs completely filling the bore 4 and the opening 6 without crevices, and when the spike is withdrawn the legs 10 are started and caused to move upwardly with the spike without any tendency of the key slipping through the spike and obviating any serious injury to the wood in which the legs have been lodged.

It is well known that the pound on railroad rails of the rolling stock and the general vibration incident to movement of the rolling stock over rails have a tendency to loosen railroad spikes, and to this loosening of the spikes is added the liability of shearing off the heads of the spikes, especially on the low portions of curves. The present spike has been devised to meet and overcome these tendencies, and in this particular connection and as a further advantage, attention is called to the fact that the tapered key and bore, to-

gether with the proportions as to length between the apex of the anvil and the upper terminal of the bore and the length of the slit 9, are effective in preventing the least movement of the spike, because the key cannot slip longitudinally through the body of the spike and the length of the slit is such as to only provide for a practical divergence of the legs 10, and after the said legs 10 have been fully driven and set within the wood of the tie, the key cannot move upwardly or downwardly within the spike.

The improved spike is adapted for general application, but is particularly intended for use in securing railroad rails on ties. One of the most effective uses of the spike is in connection with the low rails of curves, because on these low rails the greatest weight is imposed and consequently the greatest resistance to movement must be present. The spike with the key therein is not only prevented from being accidentally withdrawn or loosened in a vertical direction, but outward movement thereof is resisted through the divergent disposition of the legs 10 which engage portions of the tie on opposite sides of the spike body.

The preferred oblong contour of the bore 4 insures a proper disposition of the key in the spike, or so that the points 11 of the legs 10 will register with the openings or passages 6. It is possible, however, to have the bore of other relative contours.

It will also be understood that modifications in the details, proportions, and dimensions may be adopted without departing from the spirit of the invention.

Having thus described the invention, what is claimed, is:

A spike having a tapering bore extending through the upper portion of the shank and head thereof and communicating at its lower terminal with divergent outlet openings separated by an angular anvil, and a key having a tapering body and a lower split extremity to form legs, the key when driven home into the spike having the upper end thereof flush with the top surface of the spike head and the upper terminal of the slit in the lower extremity engaging the apex of the angular anvil to immovably hold the key against upward or downward movement within the spike.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ROBERT E. L. SIMMERMAN.

Witnesses:

E. W. COOPER,  
JNO. T. MOORE.