No. 713,527. Patented Nov. 11, 1902.

H. J. STONE.

RAILROAD OR OTHER SPIKE.

(Application filed June 17, 1901.)

(No Model.)

FIG. 1

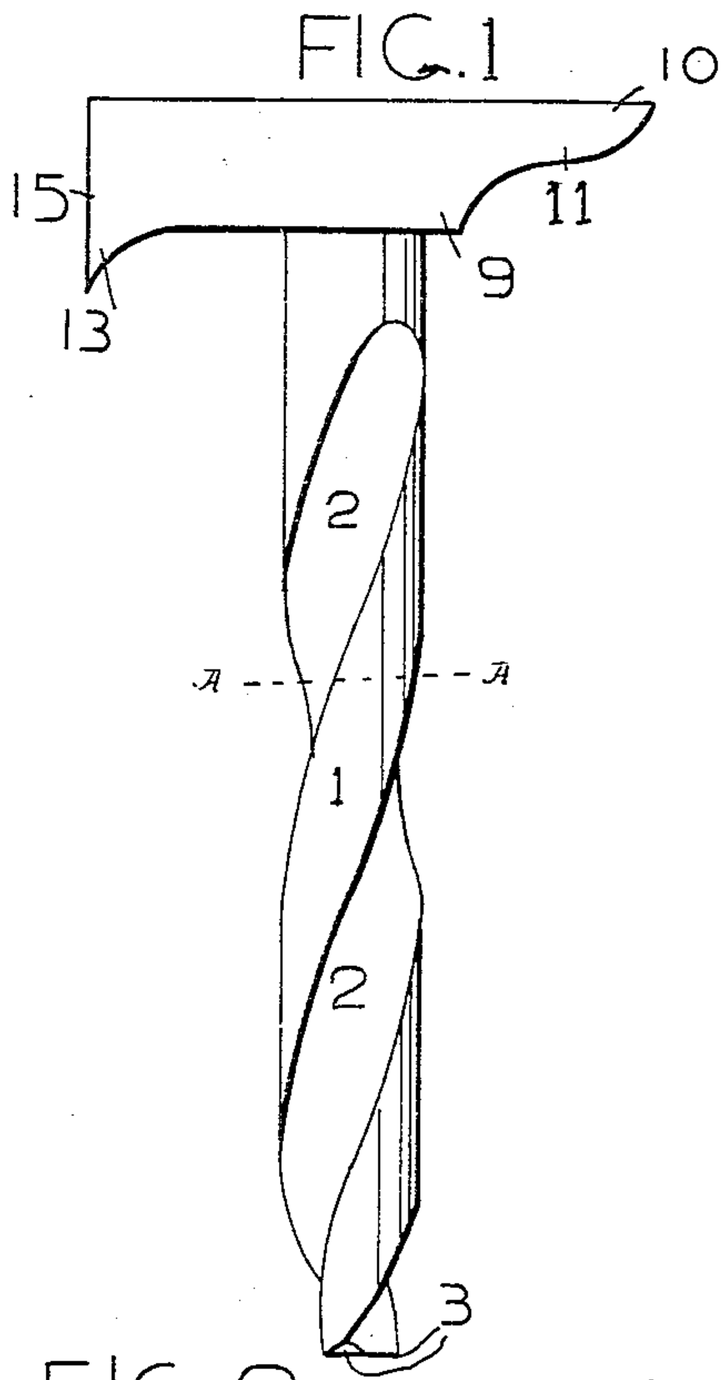


FIG. 9

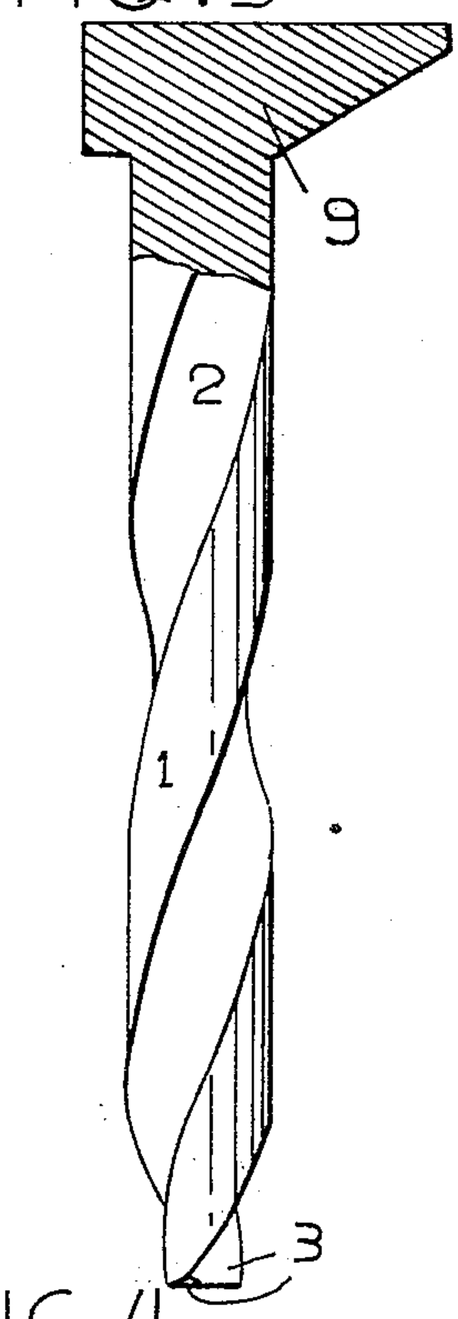


FIG. 6

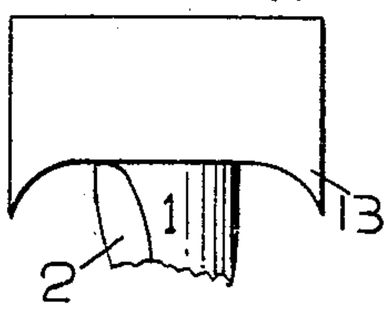


FIG. 7

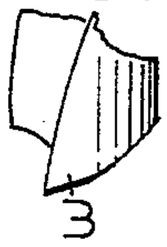


FIG. 2

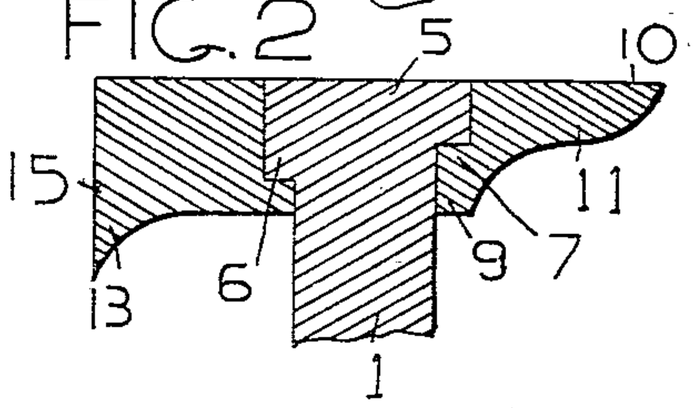


FIG. 10.

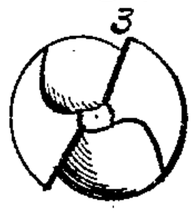


FIG. 4

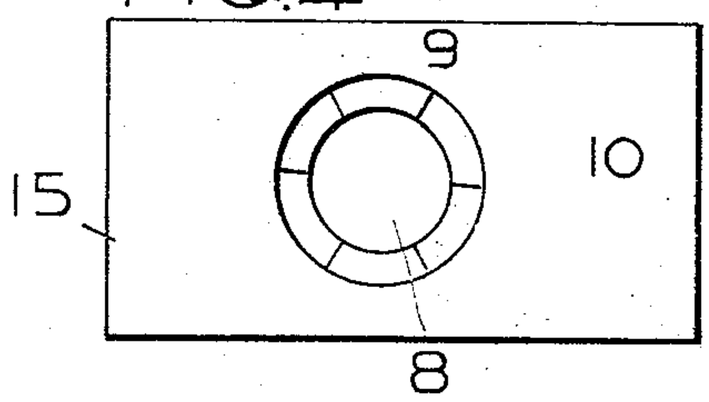


FIG. 3

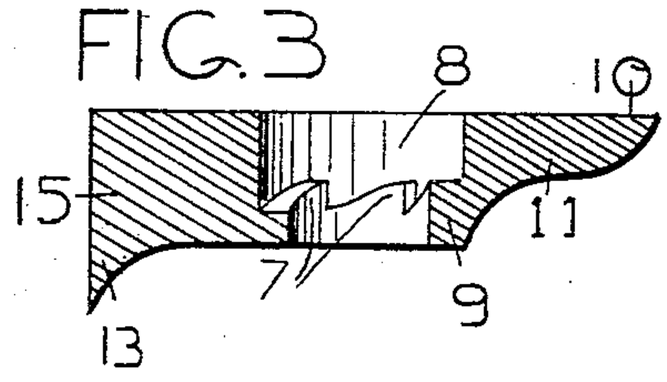


FIG. 5

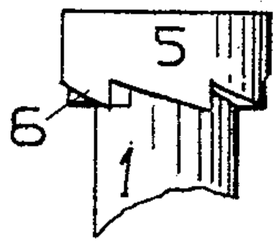
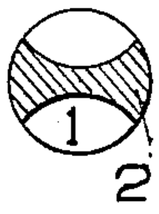


FIG. 8



WITNESSES:

E. W. Horne

M. J. Begley.

INVENTOR.

H. J. Stone

BY

Francis M. Wright

ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY J. STONE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, OF TWO-THIRDS TO J. W. MACAULAY, OF SAN JOSE, CALIFORNIA.

RAILROAD OR OTHER SPIKE.

SPECIFICATION forming part of Letters Patent No. 713,527, dated November 11, 1902.

Application filed June 17, 1901. Serial No. 64,951. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. STONE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Railroad or other Spikes, of which the following is a specification.

My invention relates to improvements in spikes for railroad or other purposes, the object of my invention being to provide a spike which will have greater holding force for the same size than those heretofore in use.

In the accompanying drawings, Figure 1 is a side elevation of my improved spike. Fig. 2 is a longitudinal section of the locking-head of said spike. Fig. 3 is a similar view, the spike being removed. Fig. 4 is a plan view of said locking-head. Fig. 5 is a side elevation of the head of the spike. Fig. 6 is a rear view of the locking-head. Fig. 7 is a view of the point of said spike. Fig. 8 is a cross-section in the line A A of Fig. 1. Fig. 9 is a side view, partly in section, of a modification. Fig. 10 is an end view of the point of the spike, showing the construction of the twin cutters.

Referring to the drawings, 1 represents the shank of the spike, cylindrical in form. In said shank are cut two threads or spiral grooves 2. The bottom of each groove is in cross-section a continuous concave curve, as shown in Fig. 8. Each thread is of such a pitch as to make but a single turn in the whole length of the shank. Each thread terminates in a cutting edge the rear of which is rounded off into the outer cylindrical surface of the shank, the two cutting edges corresponding to the two threads being diametrically opposite to each other, as shown in Fig. 10. The head 5 of the spike is made cylindrical in form, and on the under surface of said head are formed locking-teeth 6, adapted to engage similar teeth 7, formed in the bottom of a cylindrical socket 8 in the locking-head 9, in which socket the head 5 fits snugly. Said locking-head 9 may be of any size and is formed with a lip 10, curved on its under side, as shown at 11, to rest upon the curved flange of the rail, and on the back side of said head are two projections 13, which when the spike is driven down are adapted to embed themselves firmly in the railroad-tie. One way in which the present railroad-spikes become loose is that by the outward pressure of the rails, particularly in a curve, the tops of the spikes are pressed laterally away from the track and against the wood and cut into the wood of the tie. The projections 13 on the back of locking-head being embedded in said tie tend to prevent this rearward movement.

In operation when the compound head is placed upon the tie in proper position the points or projections on the back end are pressed into the tie to hold it while the spike is being driven. The spike is then driven through the compound head into the tie by blows, and in its downward movement it turns, by reason of the thread 2, making a complete revolution, so that in its final position when driven home into the tie the lip of the locking-head lies upon the flange of the rail in the proper position to hold same firmly to the tie.

The teeth 6 7 prevent the head from turning relatively to the spike and they are also advantageous in the following respect: Rails are apt to become loose by the partial withdrawal of the spike, caused by the spring of the rail after the train has passed thereover. The passage of a train causes the rail to spring, and when the train has passed over the rail springs up again, drawing with it the spike and partly pulling it out of the tie unless said spike is embedded in the tie with sufficient firmness. The teeth permit the trackman, in case the rail wears into the tie, which would loosen the compound head, to strike the head 5 of the spike, which will turn and take up one notch or more in the compound head, which is stationary, but which draws the tie up to its proper place against the rail.

An important feature of my invention consists in the extension of the rear end of the compound head, which may extend any desired length. This lateral extension resting upon the tie prevents the bending of the spike.

In the modification shown in Fig. 9 the head is made integral with the spike, and in this case the head may be made of the usual form.

It has been found by actual tests of this improved spike that much greater force is required to withdraw it from the tie than with the common spike. Thus while the common four-inch railroad-spike came out entirely at a pull of eleven hundred and forty-seven and one-half pounds a double-threaded spike of the same size constructed according to my invention started under a pull of two thousand and sixty-seven and one-half pounds. Moreover, while the common spike came out without any further pull the improved spike required a pull up to the last point and required nearly one hundred pounds more to finally withdraw it.

It is found that a spike of this character cannot be unscrewed. An important feature of the invention is that the action of the spike upon the wood is different from that of a common-cut nail or railroad spike, for while the latter forces a certain proportion of the wood downward the improved spike only displaces it laterally, leaving two solid cores from the point to the head. Another important feature resides in the shape of the point of the spike, which comprises cutting-points on both sides, the rear of the points being rounded off, and thereby permitting the spike to enter freely and displacing the wood laterally, whereas the point of the common twist-drill, which this resembles, cuts into small particles the iron or wood into which it penetrates.

I am aware that it has been proposed to make a twist-drill with a point having cutting edges on both sides in line with each other, the rear of the edges being rounded off; but this feature alone is not sufficient to permit the spike to be driven into the wood at a single blow and to turn itself when so driven. In order that this can be done, it must be necessary that the thread should make a single turn only for the whole length of the spike. It is necessary to provide the spike with a thread of a very slow pitch in order to permit the spike to be driven in by a blow and at the same time turn itself in the wood. A further difference is that the twist-drill above referred to if used with a wooden tie would tear or cut the fiber of the wood, while my improved spike does not cut the fiber, but only displaces it. This difference is due to the pitch of the thread. I am also aware that it has been proposed to make a railroad-spike the thread of which makes a single turn in the whole length of the spike; but this construction again was ineffective, on account of the form of the point of the spike, said point being a chisel-edge extending the whole width of the spike. With such a point the spike will not turn itself when driven by a blow, since the cutting edge tears or cuts the wood instead of displacing it.

In order to provide a spike which can be driven in at a single blow and will turn itself once around when so being driven in and which will only displace the wood instead of cutting it, so that the wood binds tightly in the two grooves of the thread and exerts a powerful resistance against removal, it is necessary, first, that the spike should have a point formed with two cutting edges in line with each other on opposite sides of the center, the rear of each cutting edge being rounded off, and, secondly, the spike should have two threads, each of which should have a single turn in the whole of the length thereof. If either of these properties is absent from the spike, it will not do the work required.

It will be understood instead of two projections 13 on the rear side of the spike-head a single projection in the center may be used, if desired, to better allow a pinch-bar to grasp the compound locking-head in case the spike has to be drawn.

I claim—

1. A spike for railroads comprising a shank cylindrical in form having cut therein two grooves or threads, the bottom of each groove being a concave curve in cross-section, each thread making only a single turn in the whole length of the stroke, each thread terminating in a cutting edge, the rear of each cutting edge being rounded off into the cylindrical surface of the spike, and the two cutting edges being in line with each other on opposite sides of the center, substantially as described.

2. A spike for railroad or other purposes having a threaded shank and a head, and having also a locking-head entirely surrounding said shank and abutting against the under surface of the head, said locking-head having a lip curved on its under side to rest upon the curved flange of the rail, substantially as described.

3. A railroad-spike having a shank 1 formed with the threads 2 and a cylindrical head 5 and a locking-head 9 having a cylindrical socket 8 in which the head 5 fits snugly, said locking-head being formed with a lip 10 curved on its under side and having on the back side of the head the two projections 13 arranged to embed themselves in the railroad-tie, substantially as described.

4. A spike for railroad or other purposes having a threaded shank and a detachable head, the top of said spike and said head having teeth engaging each other to prevent rotation of said head around said spike, substantially as described.

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

HENRY J. STONE.

Witnesses:
FRANCIS M. WRIGHT,
M. T. BEGLEY.