(No Model.)

3 Sheets—Sheet 1.

L. MARTIN.

SPIKE EXTRACTOR.

No. 420,603. Patented Feb. 4, 1890.

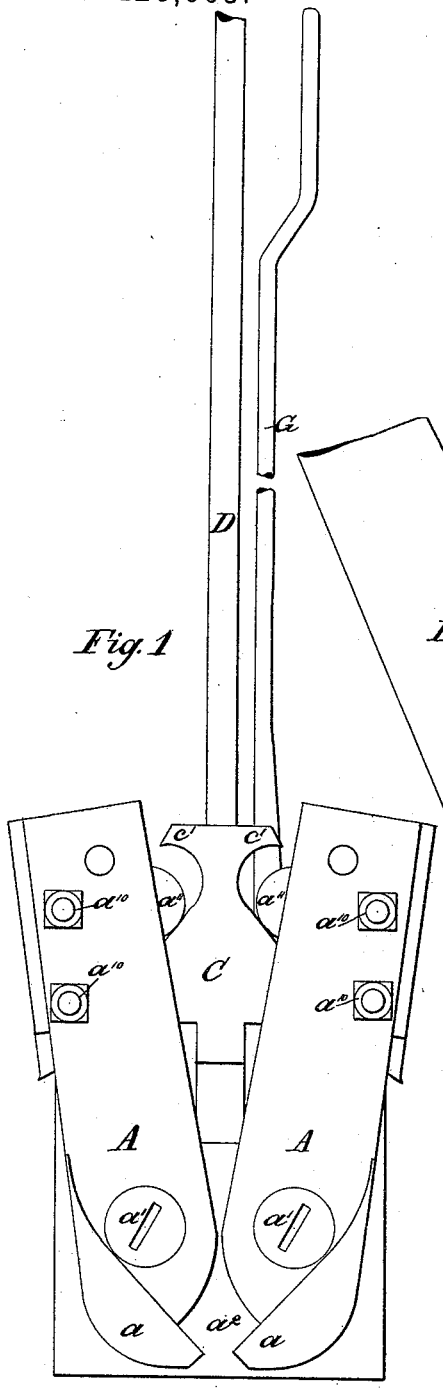

Fig. 1

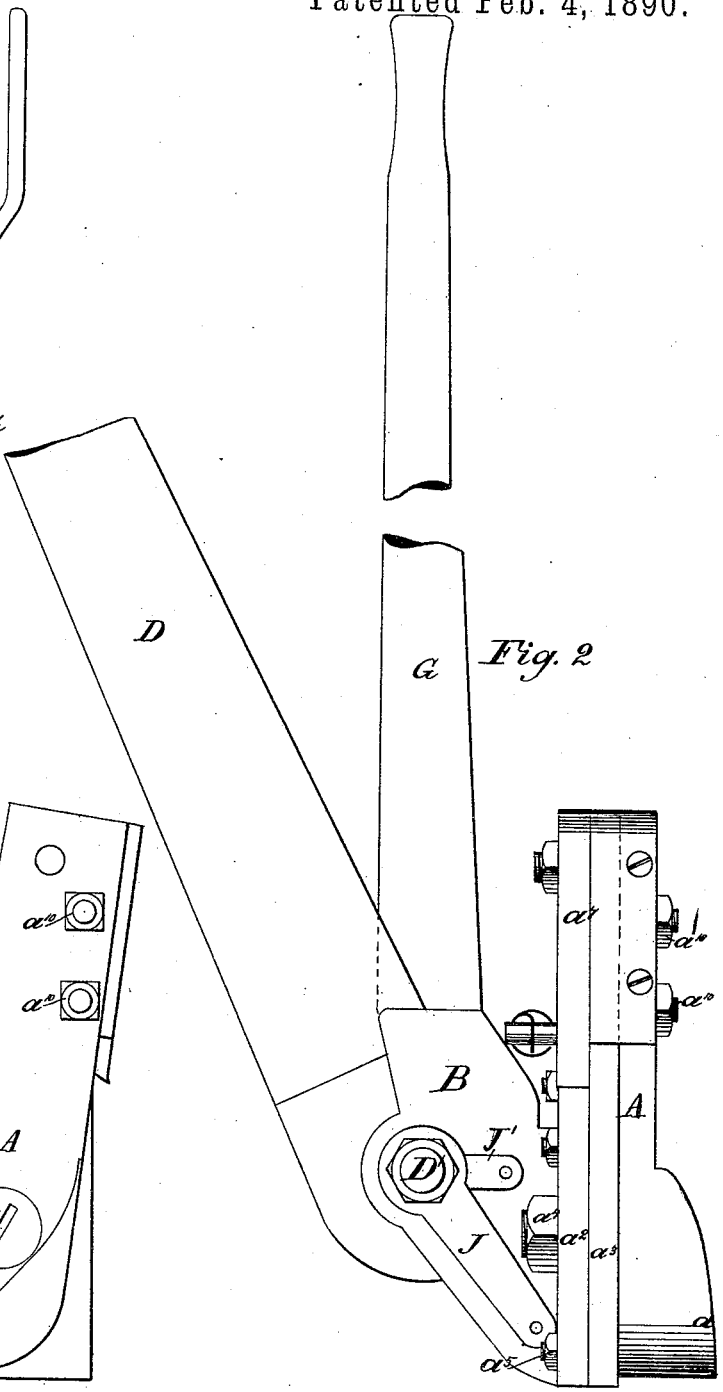

Fig. 2

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(No Model.) 3 Sheets—Sheet 2.

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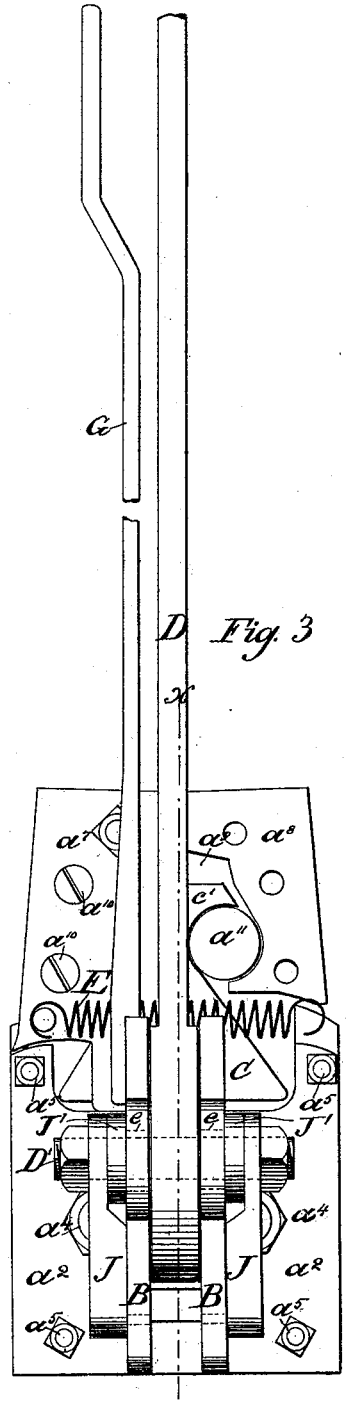

Fig. 3

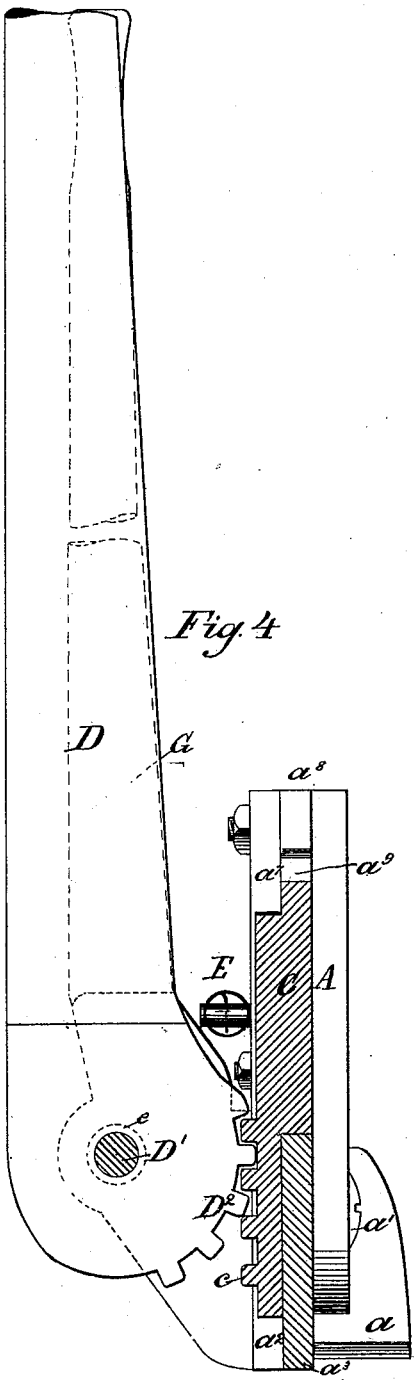

Fig. 4

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(No Model.) 3 Sheets—Sheet 3.

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SPIKE EXTRACTOR.

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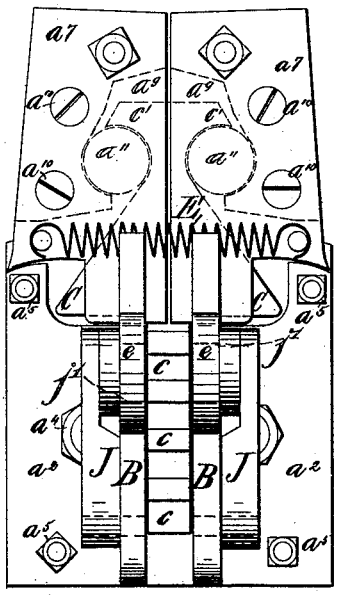
Fig. 5.



Witnesses;
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UNITED STATES PATENT OFFICE.

LEWIS MARTIN, OF NEW YORK, N. Y.

SPIKE-EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 420,603, dated February 4, 1890.

Application filed December 12, 1888. Serial No. 293,378. (No model.)

To all whom it may concern:

Be it known that I, LEWIS MARTIN, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Spike-Extractors, of which the following is a specification.

My invention relates to instruments for extracting, more particularly, railroad-spikes.

I will describe in detail a spike-extractor embodying my improvement, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a front elevation of a spike-extractor embodying my improvement, showing the same in the position it occupies when it has grasped a spike. Fig. 2 is a side elevation of the same. Fig. 3 is a rear view, a certain plate being removed to more clearly disclose certain parts. Fig. 4 is a vertical section taken on the line x x, Fig. 3. Fig. 5 is a rear view with certain parts removed.

Similar letters of reference designate corresponding parts in all the figures.

A designates grippers, which grippers are provided near their lower ends with gripping-jaws a. These grippers are pivoted near their lower ends upon pivots a'. Here shown as bolts, which bolts extend through said grippers, and also through back plates a^2 a^3, and are secured in position by nuts a^4 upon the rear side of the tool. The plates a^2 a^3 are likewise bolted together, as shown, by means of bolts a^5. From the plate a^2 extend rearwardly and at approximately right angles to the faces of said plate bearing-pieces B. These bearing-pieces are shown as formed integral with the plates a^2.

The grippers A, as is shown in this example of my improvement, have secured to them back pieces or plates a^7, which constitute in effect part of the grippers. Between the grippers and said back pieces are spacing-pieces a^8. These spacing-pieces only extend for a short distance inwardly from the side edges of the grippers and the back plates a^7, so that spaces a^9 are formed between the grippers and the back plates a^7. The grippers, back plates, and spacing-pieces are secured together by means of bolts a^{10}. Within the spaces a^9, formed between the grippers and the back plates a^7, are arranged loose rollers or bowls a^{11}.

C designates a cam, which cam is arranged within the spaces a^9. This cam is, as shown, of substantially triangular outline, and when within the cavities a^9 the rollers or bowls a^{11} rest upon the downwardly and angularly extending side edges of the cam. The conformation of the edge walls of the cavities a^9 is such that when the cam C is moved upwardly the rollers or bowls a^{11} will be caused to force the upper portions of the grippers A apart, and will consequently cause the forcing of the gripper-jaws a toward each other to grip the spike. The upper end walls of the cavities a^9 constitute stops, against which the rollers or bowls will be forced by the cam C during its upward movement. By means of these stops the bringing of the gripper-jaws too closely together is prevented, and thereby the unnecessary cutting of the spike is avoided.

Upon the rear sides of the cam C is a rack c, and upon the upper portion of the cam C are guards c', which extend in such direction as to prevent the rollers or bowls a^{11} from passing out of the cavities a^9.

D designates a lever. This lever is fulcrumed upon a pin or bolt D′, which extends through the said lever and also through the bearing-pieces B. I have shown the apertures in the bearing-pieces B through which the bolt D′ extends as somewhat larger in diameter than the said bolt, so that said bolt will not contact with the bearing-pieces B. This feature is illustrated more clearly in Figs. 3 and 4, in which e designates the apertures in the bearing-pieces. Upon the short arm of the lever D and adjacent to the grippers is a gear-segment D^2, which gears with the rack c. When the lever D is rocked in one direction, the segment D^2 causes the elevation of the cam C, and consequently the operation of the gripper-jaws. A spring E, secured near its ends to the plates a^7, operates to rock the grippers in the opposite direction to that in which they are moved by the cam.

G designates an arm rigidly secured near its lower end to one of the bearing-pieces B. This arm is to be grasped in order to maintain the tool in proper operative position until the lever D has been so moved as to cause the gripper-jaws to grip the spike.

The spike having been gripped, the lever and arm are rocked backwardly upon the base of the tool as a fulcrum. The jaws then operate as the short arm of a lever and cause the extraction of the spike.

J designates bracing-pieces, through the upper end portions of which the bolt D′ passes loosely and the lower ends of which have a pivotal connection with the bearing-pieces B. J′ designates other and horizontally-extending bracing-pieces, through which the bolt D′ passes near one of their ends, and the other ends of which are pivotally connected to the bearing-pieces B. When the lever D is rocked downwardly, a pushing strain is exerted upon the bracing-pieces J, while a pulling strain is exerted upon the bracing-pieces J′, by which the bracing-pieces J are prevented from rocking.

It will be seen that by my improvement a very simple and yet powerful spike-extractor is formed, and one, withal, which is very durable and not likely to get out of order.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with grippers provided with jaws adapted to grip a spike, of a cam between said grippers, rollers or bowls between the cam and the grippers upon which said cam acts to force the jaws of the grippers toward each other, and a lever for operating the cam, substantially as specified.

2. The combination, with grippers provided with jaws for gripping a spike, of a cam between said grippers, rollers or bowls between the cam and the grippers upon which said cam acts to force the jaws of the grippers toward each other, stops for preventing a too extended movement of said jaws toward each other, and a lever for operating the cam, substantially as specified.

3. The combination, with grippers provided with jaws for gripping a spike, of a cam between said grippers, rollers or bowls between the cam and the grippers upon which said cam acts to force the jaws of the grippers toward each other, a lever for operating the cam, and an arm for maintaining the tool in proper position during the operation of the cam, substantially as specified.

4. The combination, with grippers provided with jaws for gripping a spike, of a cam between said grippers, rollers or bowls between the cam and the grippers upon which said cam acts to force the jaws of the grippers toward each other, a rack on said cam, and a lever provided with a toothed segment engaging said rack for operating the cam, substantially as specified.

5. The combination, with grippers provided with jaws for gripping a spike, of a cam between said grippers, rollers or bowls between the cam and the grippers upon which said cam acts to force the jaws of the grippers toward each other, a lever for operating the cam, and the bracing-pieces J J′, substantially as specified.

LEWIS MARTIN.

Witnesses:
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