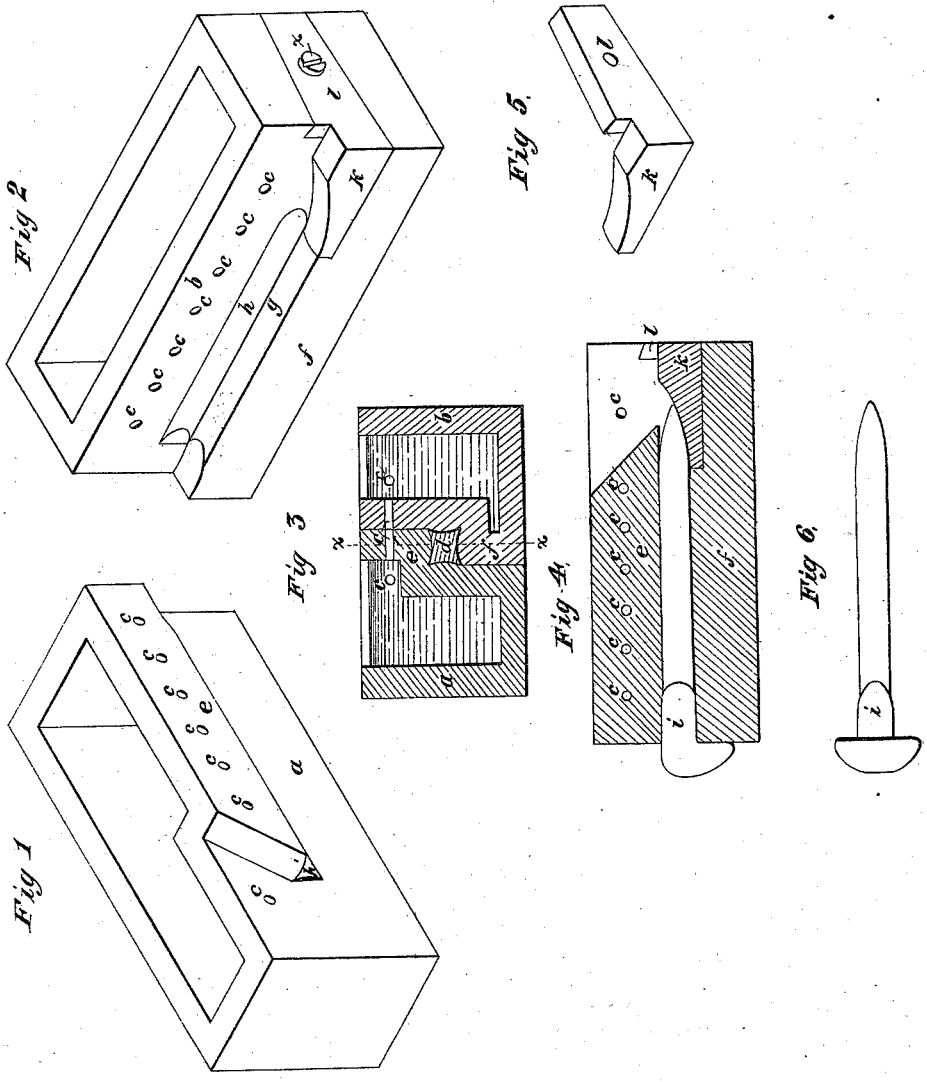
S. Cameron,

Making Spikes,

No. 47,928. Patented May 30, 1865.



WITNESSES

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SAMUEL CAMERON, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN DIES FOR SPIKE-MACHINES.

Specification forming part of Letters Patent No. **17,928**, dated May 30, 1865; antedated May 17, 1865.

To all whom it may concern:

Be it known that I, SAMUEL CAMERON, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Dies for Spike and Rivet Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, forming part of this specification, in which—

Figures 1 and 2 represent a pair of my improved dies, Fig. 1 being the right-hand die, and Fig. 2 the left-hand die, the rear end and inner face of both dies being shown. Fig. 3 is a transverse vertical section of my improved dies when in use and closed, showing the shape of the shank of a spike formed between them. Fig. 4 is a longitudinal vertical section through *x x* in Fig. 3, showing a railroad-spike in the position it occupies when in the matrix formed by the conjunction of the two dies. Fig. 5 is a perspective representation of the removable clip on which the spikes are pointed. Fig. 6 is a representation of a round-head spike made upon my dies.

In the several figures like letters of reference denote similar parts.

My dies are especially designed for the manufacture of railroad-spikes having fluted shanks, although some of the improvements contained therein are applicable to dies for making spikes or bolts with round or square shanks, or for rivets.

The spikes represented in Figs. 4 and 6 have fluted shanks, the object of which is to give the spike a better hold in the wood into which they may be driven with less weight of iron.

It has been found very difficult to construct a machine to manufacture fluted spikes to advantage, owing to the concavity or groove in the shank; but with the use of my dies such spikes may be made as easily as the round or square shanked spike.

Another improvement is in the use of a movable clip at the rear end of one of the dies, upon which the point of the spike is formed by the pointing-die, so that by removing the clip and substituting another in its place different shapes of points may be made, and so that by removing the pointing-clip the projections on the dies for forming the grooves or flutes may be planed, and also that when the front end of the die is ground down to remove the roughness produced by the heading-tool the pointing-clip may be taken out and dressed down, so as to compensate for the reduced length of the die by bringing the face on which the point is formed correspondingly near to the end of the clip, and enable the dies, although thus ground down and reduced in length, to make spikes of the same length as before; also, in so shaping the operative faces of the dies as to make the neck of the spike, for a short distance below the head, square, while the body of the spike below the neck is fluted.

To enable others skilled in the art to construct and use my improvements, I will proceed to describe them more in detail.

The dies *a*, Fig. 1, and *b*, Fig. 2, are made of iron or steel, and instead of being solid, as is usual, are made hollow, having a cavity of the general shape of the outside of the dies, the sides and bottom of the dies being made sufficiently strong to sustain the pressure required to shape the spike. Along the inner or operative face of each die, near to the top, are a row of small holes, *c*, which allow of the escape of the water, which is caused to enter the cavity of the dies in a continuons stream, the water thus overflowing and running down the face of each die. By this means the dies are prevented from becoming overheated much more effectually than by the ordinary method of causing water to run over their exterior surface. The dies *a* and *b* are so set in the machine that when brought together to form a spike their perpendicular faces are in close contact, leaving a cavity of the shape shown at *d* in Fig. 3 for forming the fluted shank of the spike. This cavity is formed by making an overhanging projection, *e*, on the right-hand die, extending from its front end to the place where the point of the spike commences, as seen in Fig. 1, and a corresponding projection, *f*, at the lower part of the face of the left-hand die, extending the whole length of that die, as seen in Fig. 2. The width of these projections *e* and *f* is equal to the extreme width of the spike at its edges. The operative face of these projections is convex, as at *g*, Fig. 2, corresponding exactly with the concavity or flute to be made on the shank of the spike, and extends the whole length of the shank of

the spike, excepting at the point and for a short distance from the front end of the die, if a square neck is desired; if not, the convexity extends all the way to the front end of the dies. A similar convexity, *h*, Fig. 2, and *h'*, Fig. 1, is made on the perpendicular face of each die, which is at right angles to the operative face of the projections *f* and *e*, respectively, by which the flutes on the opposite sides of the shank of the spike are made. By this means the iron rod, first heated to a welding heat and placed on the convex face of the projection of the stationary die *b*, is pressed by the closing of the other die, *a*, into the fluted shape shown in Fig. 3. The cavity of the dies at the front end, where the convexity ceases, is square, which forms the square neck *i* to the spike, as shown in Figs. 4 and 6. The projection *e* does not extend on the right-hand die farther than the place where the spike begins to taper for the point, so as to allow of the passage between the perpendicular faces of the dies, when closed, of the pointing-die. The point of the spike is formed by a cam-die (not shown in the drawings) against the curved face of the clip *k*. (See Figs. 2 and 4.) This clip is of the shape shown in Fig. 5, having a tongue, *l*, at right angles to the operative part of the clip *k*, which tongue *l* enters a groove in the rear end of the left-hand die, *b*, and is secured in place by the set-screw *x*. The clip is supported by the ledge formed by the projection *f* at the rear end of the die *b*. If a point of different shape is required, or if the spike is required to be longer, the clip *k* is removed by unscrewing the screw *x* and replacing it by another clip of the required shape and length of point. The great advantages of this movable pointing-clip are that when the dies are being made or when they require dressing, the clip being removed, the convex surfaces *g h* of the operative part of the dies may be better planed off than if the clip were in the way, and that the clip itself may be dressed down on its curved face, when required to compensate for the reduction in length of the dies, by grinding their chilled end, which is necessary at times, owing to the roughness produced by the heading-tool. The curved convex projections *g h* on the operative faces of the dies for making fluted spikes and the pointing-clip *k* may be used in solid dies as well as in hollow dies and in machines of any construction.

Having thus described my improvement in dies for spike or rivet machines, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The use of dies for spike-machines, made to overlap each other, each having two convex operative faces at right angles to each other, one such face being horizontal and the other perpendicular, for the purpose of making spikes with fluted shanks, substantially as described.

2. The use of a removable clip for forming the point of the spike, so constructed, as hereinbefore described, as that its operative face may be ground down from time to time whenever it may be necessary to dress off the head of the die, so as to compensate for the reduced length of the die, and thereby obviate the necessity of using new dies when the head end of the die becomes worn, substantially as hereinbefore set forth.

3. The use of dies for spike-machines having plane operative faces for a short distance below the head of the spike, and convex operative faces elsewhere, for the purpose of making a fluted spike with a square neck, substantially as described.

In testimony whereof I, the said SAMUEL CAMERON, have hereunto set my hand.

SAMUEL CAMERON.

Witnesses:

FR. RAHN,

A. S. NICHOLSON.