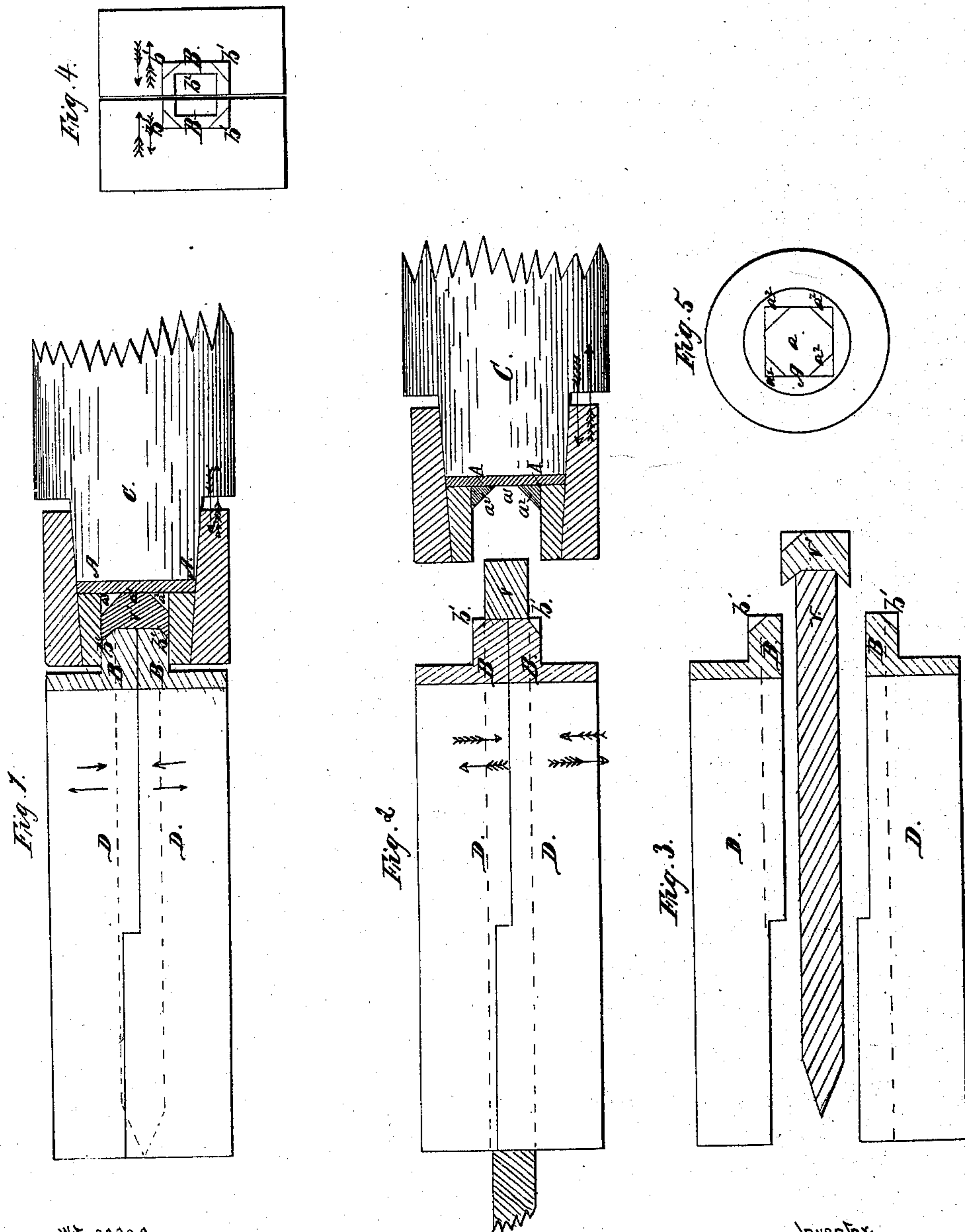


R. BLACKWOOD.  
DIE FOR FORMING SPIKE HEADS.

No. 61,920.

Patented Feb. 12, 1867.



Witnesses

Benjamin  
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# United States Patent Office.

REUEL BLACKWOOD, OF PHILADELPHIA, PENNSYLVANIA.

*Letters Patent No. 61,920, dated February 12, 1867.*

## IMPROVEMENT IN DIES FOR FORMING SPIKE-HEADS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, REUEL BLACKWOOD, of the city of Philadelphia, and State of Pennsylvania, have invented a new and useful Die for Forming the Spur-Head of a Ship's Spike; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 represents the two parts of the die, as closed upon a spike-head therein, the head and the die being shown in section.

Figure 2, the same parts in their relative positions just before the die is closed to form the head on the spike.

Figure 3, the male portion of the die, with the clamp to which it is fixed, as when parted to release the spur-headed spike therefrom.

Figure 4, an end view of the male portion of the die and the clamp, as closed; and

Figure 5, an end view of the female portion of the die and its holder—

Like letters of reference indicating the same parts when in the different figures.

The spikes now generally required in planking ships are made each with a square head, having a downward projecting spur at each of the four corners of its under side, and the corresponding corners of its upper side bevelled off. They are greatly in demand by ship-builders, being much superior to the plain-headed spikes previously used for the purpose, but, being made "by hand," they are more costly, and cannot be easily supplied in sufficient quantities to meet the demand, and besides, they are not generally well made at their spurs.

The object of my invention is to afford a die suitable for producing spur-headed ships' spikes by machinery, and therefore in a more rapid manner and with perfectly constructed spur-heads. It consists, substantially as hereinafter described, in making the female portion of the die to have each of its four inside bottom corners filled out solidly so as to produce an inclined surface thereat, which, with the inside bottom and sides of the cavity, will be substantially a counterpart of the upper surface of a well-made square spike-head, having its four upward salient corners bevelled off as required, and in making the male portion of the die in two longitudinally curved parts, so as to form, when properly adjusted together, a hollow stem which will fit over the iron bar of which the spike is to be formed, and having the exterior of the said projecting part made to fit accurately within the female part of the die, and having, also, the four salient corners of its entering end bevelled off in such a manner that the under side of a well-made spur-head of a ship's spike will represent, substantially, a counterpart thereof, the said die being applied to any suitable actuating machinery whereby the die will be so operated as to form the required bevelled spur-heads on the iron bar used for the spikes.

In the drawings, A is the female portion of the die, and B B the male portion of the same. The female portion A has the transverse area of its square cavity in which the head of the spike is formed made to correspond with the area of the head required on the spike, and its depth about twice the depth or thickness of the said intended head. Its bottom is made flat in its middle portion  $a^1$ , and sloped upward at each of its four corners  $a^2$   $a^2$   $a^2$   $a^2$ , as represented in the drawings. It is intended to be fixed firmly in any suitable manner in a machine "ram-head," C, which has given to it, in any suitable manner, longitudinal motions backward and forward alternately, as indicated by the arrows thereon, by means of a cam or other device whereby a sufficiently strong pressure may be given to it to form the head of a spike, as will hereinafter be explained. The male portion B of the die consists of two like opposite parts, which, when adjusted together, present a projecting end, the exterior of which exactly fits in the square cavity of the part A, and has its four salient corners  $b^1$   $b^1$   $b^1$   $b^1$  bevelled off, as shown in figs. 1, 2, 3, 4, and has also a square hole,  $b^2$ , fig. 4, longitudinally through its centre, adapted in its transverse area to the transverse area of the iron bar of which the intended spike is to be formed. The two parts B B of the die are each fixed firmly on the respective ends of two clamps, D D, each of which has a groove made along in its inner side, so that when the two said grooved sides are accurately adjusted together, with the two parts B B of the die fixed in line on their respective forward ends, as shown in figs. 1 and 2, a square hole will be formed along in between them which will be open at each end. This hole is for receiving and clamping tightly the bar of iron which is to be headed for a spike. The said bar is represented at V, and also by the dotted lines in fig. 2. The clamps D D, with the parts B B of the die attached thereto, are intended to be secured firmly in the machine which is to operate the part A of the die.



as described, and are to be operated by a cam or otherwise, in such a manner that lateral sliding motions will be given to one or both halves of the same so as to cause them to open or separate sufficiently to receive the bar V and then close upon it and hold or clamp it firmly whilst the head is being formed on the bar V, as will now be explained or described.

Operation: The two parts A and B B of the die being secured in any suitable actuating machine, and operated regularly thereby in such a manner that the part B B, with the clamps D D, will be opened and closed alternately, as described, and the part A caused to advance and receive within its cavity the projecting parts of B B when the latter are closed together, and then to recede before the said parts B B begin to be opened or separated, the heading of the spikes may be proceeded with, and is effected as follows: the iron spike bar V is brought to a strong red heat and then immediately placed so as to be caught between the clamps D D and the parts B B of the die, and with enough of the said bar V projecting beyond the parts B B of the die to form the head V' of the spike; and, when so clamped tightly, the part A of the die advances over the projecting end of the bar V and that of the parts B B of the die, and thus compresses the former within the die and producing the spurred and bevelled head V', as shown in fig. 1. Immediately afterward the part A of the die recedes and then the parts B-D B-D become separated, as shown in fig. 3, and allow the now spur-headed bar to be either withdrawn by hand or cut off, sharpened, and dropped, which latter may be easily provided for by constructing the actuating machine accordingly. It will be readily seen that the spur-heads of ships' spikes can be formed in this die in the most perfect and rapid manner.

Having thus fully described the construction and mode of operation of my die for forming spur-headed ships' spikes, and pointed out a suitable mode of working the same by machinery, I wish it to be understood that I do not intend to confine myself to the use of any particular machinery for actuating or operating the said die; but having described the general operating features required in the machine to move the two parts of the die as described, what I claim as new therein of my invention, and desire to secure by Letters Patent, is confined to the following, viz:

I claim a die consisting of the parts A and B-D B-D, constructed substantially as described, and operated by any suitable machinery, substantially as and for the purpose set forth and described.

REUEL BLACKWOOD.

Witnesses:

BENJ. MORISON,

B. F. SHATTUCK.