

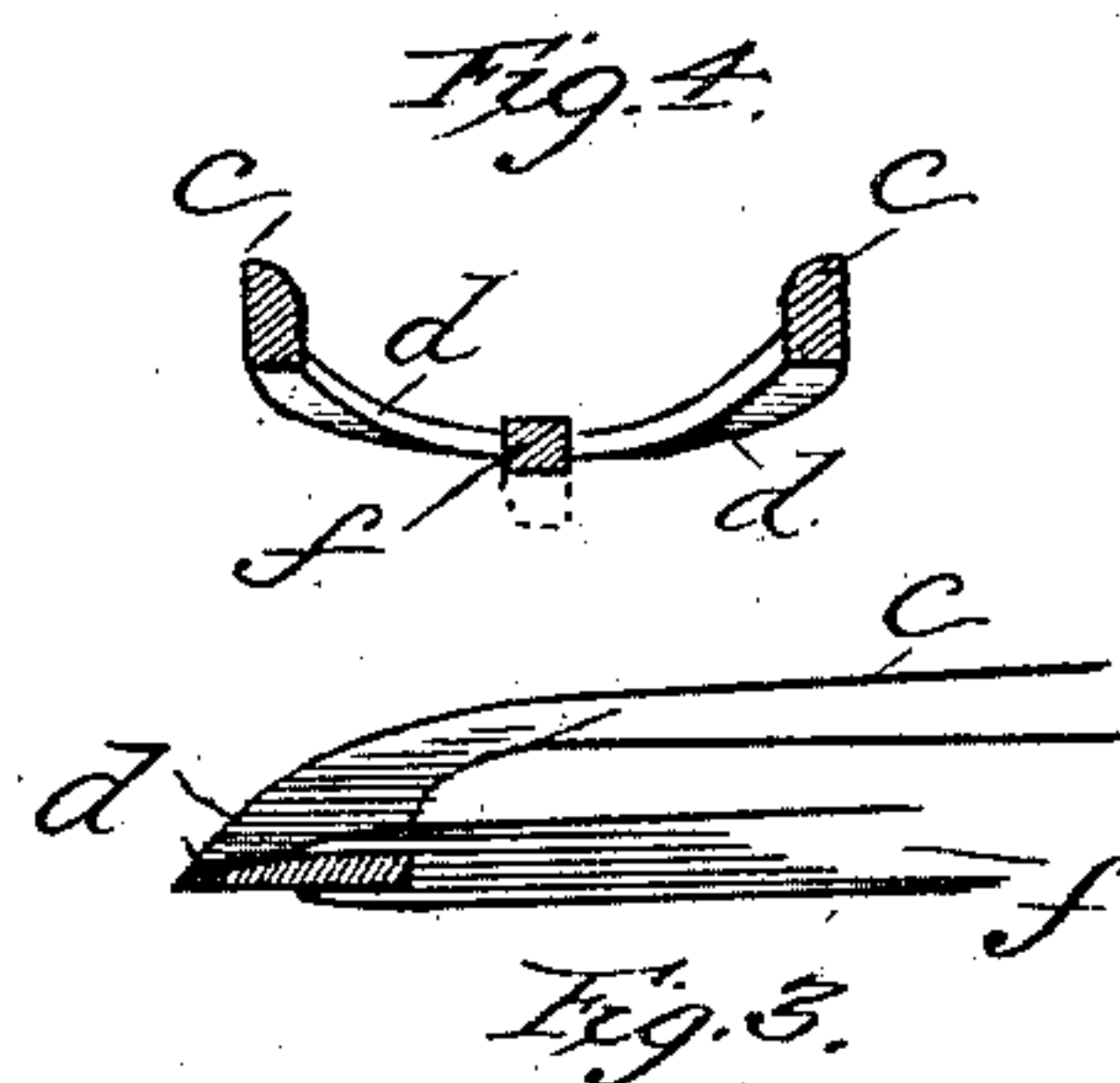
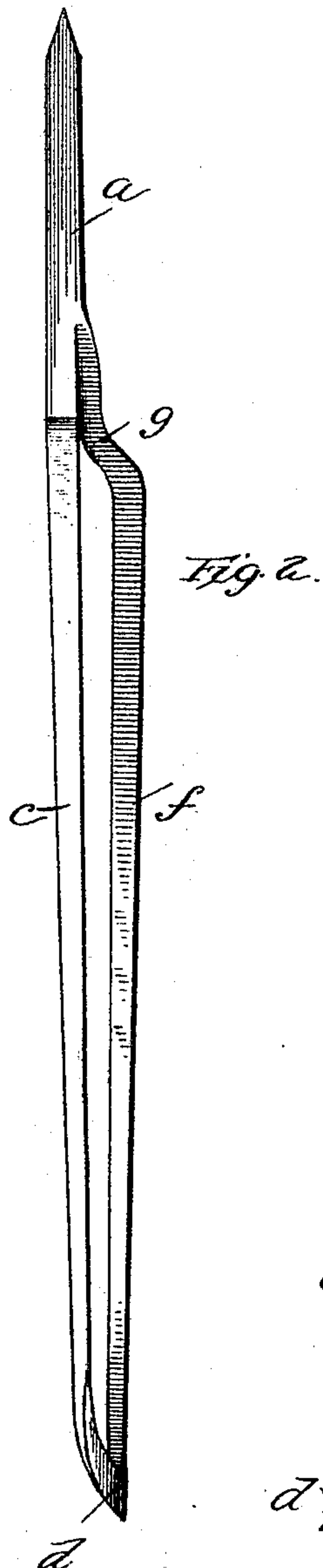
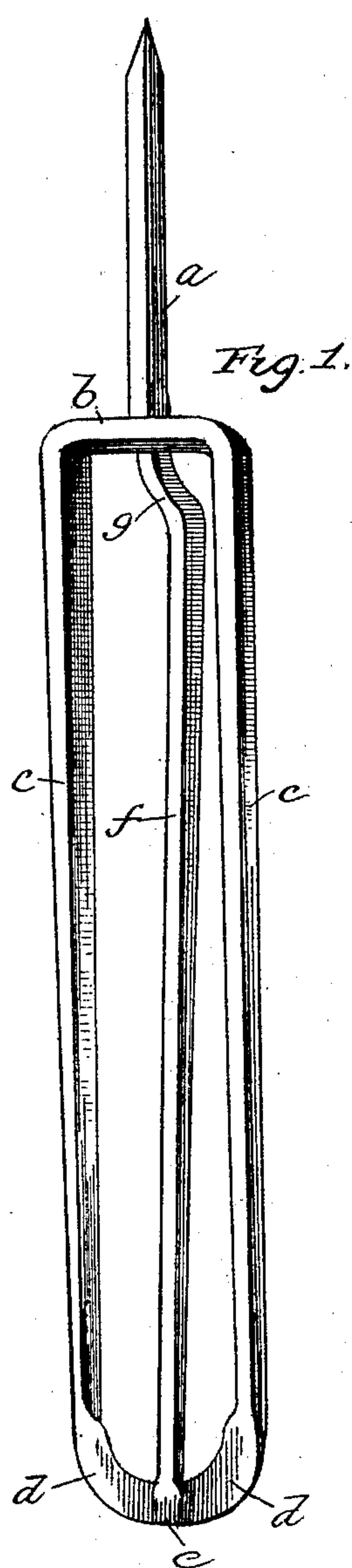
(No Model.)

J. E., J. H. & S. E. KETCHAM.

DITCHING SPADE.

No. 396,659.

Patented Jan. 22, 1889.



Attest
J. E. Middleton

Inventors
Jno. E. Ketcham
Jas H. Ketcham
Squire E. Ketcham
By Ellis Spear-
Atty.

UNITED STATES PATENT OFFICE.

JOHN E. KETCHAM, JAMES H. KETCHAM, AND SQUIRE E. KETCHAM, OF
ANAMOSA, IOWA.

DITCHING-SPADE.

SPECIFICATION forming part of Letters Patent No. 396,659, dated January 22, 1889.

Application filed July 25, 1888. Serial No. 280,967. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. KETCHAM, JAMES H. KETCHAM, and SQUIRE E. KETCHAM, of Anamosa, in the county of Jones and State of Iowa, have invented a new and useful Improvement in Ditching - Spades; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention relates to ditching-spades in that class in which the blade of the spade is formed of bars and in skeleton shape, with a cutting-edge joined to or forming a part of the bars.

Heretofore we have described in an application filed by us in the United States Patent Office of the 22d day of September, 1886, No. 214,222, a ditching-spade in which the cross-bar, directly joined to the tang, was made curved, in order to throw the middle bar into a lower plane, for the purpose of bracing the side bars and increasing the strain of the skeleton blade. In the manufacture and use of this spade we have found it more economical and to produce a better effect to make this cross-bar straight and to produce the bracing effect of the middle bar by a sharp curve near its point of junction with the cross-bar; further, that the junction of the side bars, cutting-edge, and middle bars could be made at a single welding and at a point where absolutely no strain could be thrown in the use of the instrument. These two points constitute our invention and are the subject of the present application.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 shows a perspective view of the construction; Fig. 2, a side view; Fig. 3, a central longitudinal section; Fig. 4, a cross-section.

In the figures, *a* represents the central tang, and *b* the cross-bar welded to the tang and made straight. The side bars, *c*, which may be formed very cheaply and easily by simply bending the cross-bars, are preferably straight. At their forward ends they are flattened and curved toward the center, as shown

at *d d*, and are united at the central point, *e*, to form the cutting-edge. The middle bar, *f*, is also made preferably straight, though of course both it and the straight bars may be slightly curved, but without any special disadvantage. The middle bar has a short upward bend at *g*, so that it is below the plane of the bar *c*, and is inclined in relation thereto, as shown more clearly in Fig. 2. In the manufacture the front end of the middle bar is split, as shown more clearly in Fig. 3, and embraces the lap of the curved ends of the side bars, so that the three parts are united by a single weld, and at the central and forward point, where there can be no strain received from leverage on the spade. The bend in the central bar at *g* obviates the necessity for any bend in the tang, which is in the same plane as the cross-bar, and to which the central bar is connected.

We have described the cross-bar *d* as "straight," using the term to distinguish it from the bar having the ends upwardly curved. We mean that it is straight on this upper face. It may of course without material change be slightly curved toward or from the forward end of the spade.

We claim as our invention—

A skeleton spade consisting of side bars, *c*, formed of a single bar bent centrally to provide the cross-bar *b*, with its ends approximately parallel to form the sides *c c*, said sides being flattened and curved at their lower ends and united to form the cutting-edge, and the central bar, *f*, extending and inclining from said cutting-edge rearwardly, provided with a bend, *g*, at its top, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN E. KETCHAM.
JAMES H. KETCHAM.
SQUIRE E. KETCHAM.

Witnesses:

ALEX. G. WILLIAMS,
W. H. POST.