H. L. LOWMAN.

Shovels and Spades.

No. 155,532. Patented Sept. 29, 1874.

FIG. 1

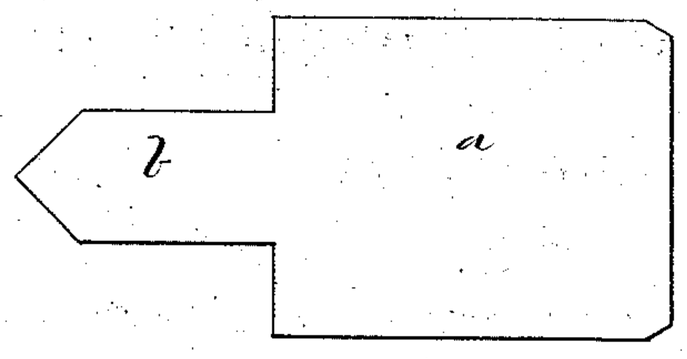


FIG. 2.

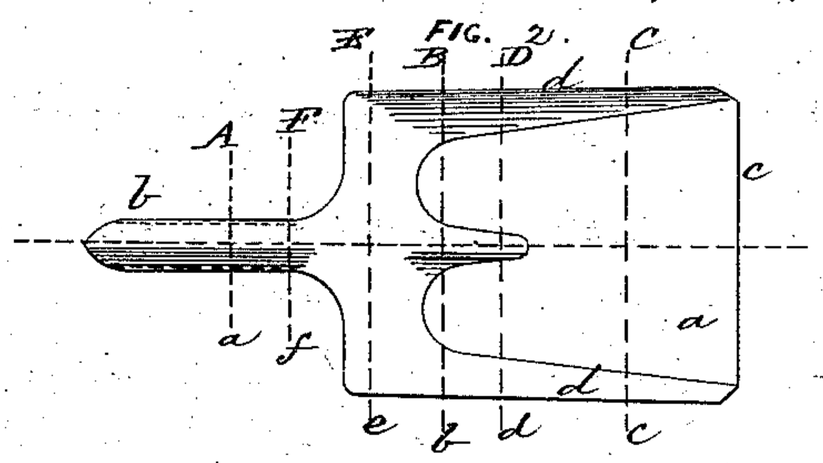


FIG. 3 A a

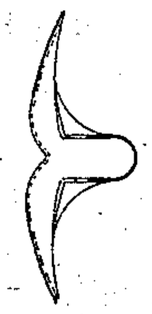


FIG. 4. B, b,

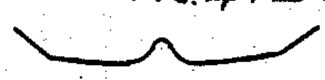


FIG. 7 C, c

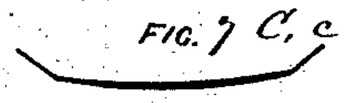


FIG. 5.

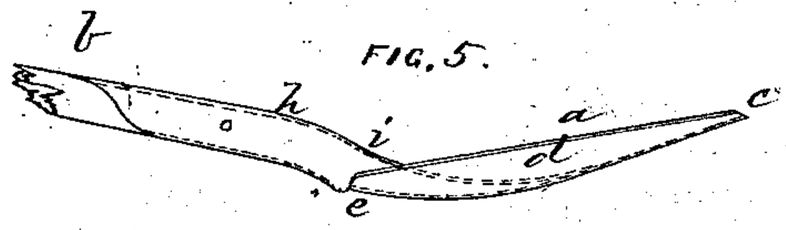


FIG. 8. D, d,

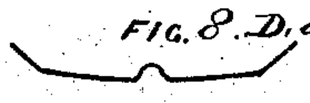


FIG. 6

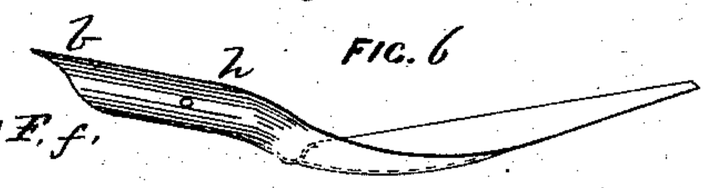


FIG. 10 E, f,

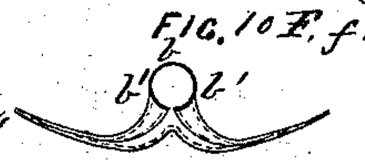


FIG. 9 E, e,

FIG. 14

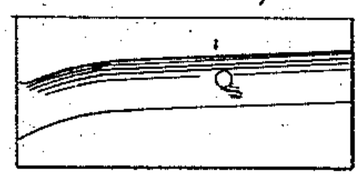


FIG. 13

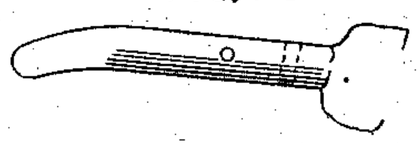


FIG. 11

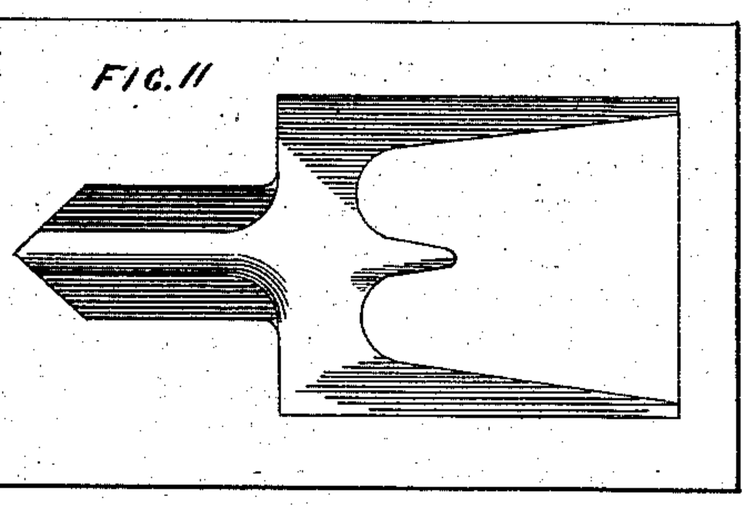


FIG. 15

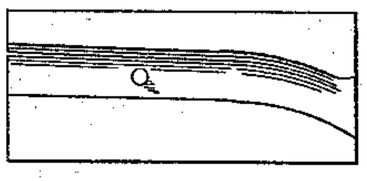


FIG. 12

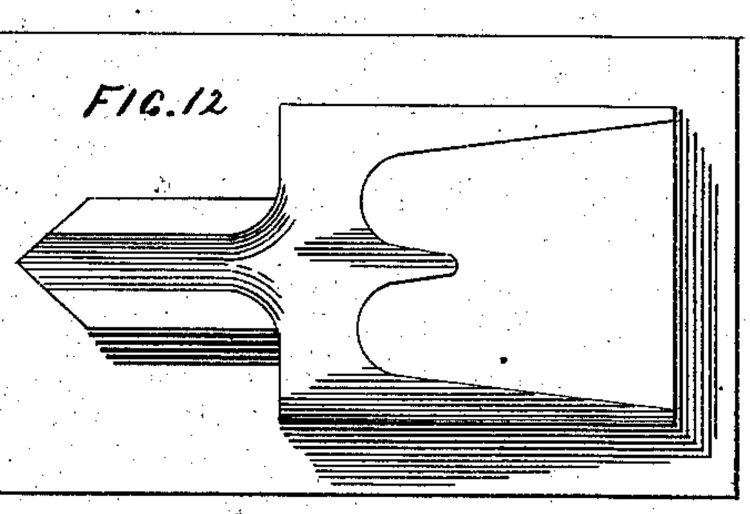


FIG. 16

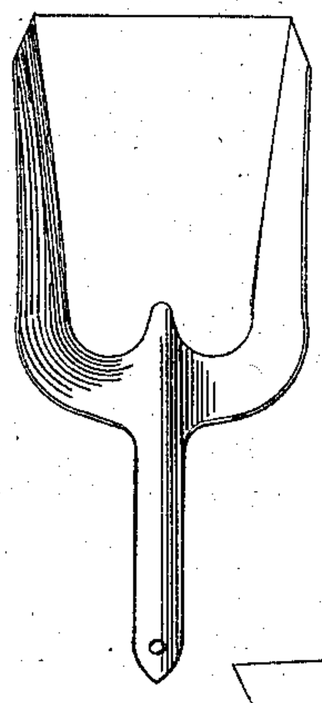


FIG. 17.

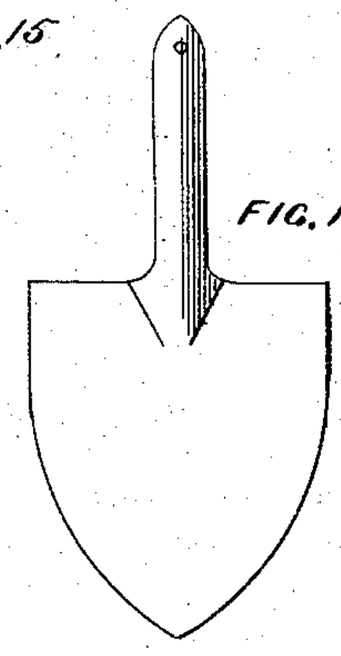
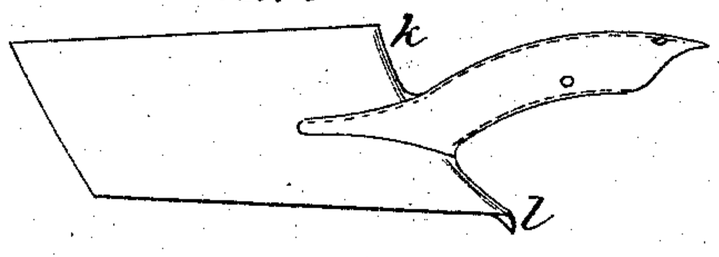


FIG. 18



WITNESSES:

William Scott.

INVENTOR.

H. L. Lowman

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

HARVEY L. LOWMAN, OF BIRMINGHAM, CONNECTICUT.

IMPROVEMENT IN SHOVELS AND SPADES.

Specification forming part of Letters Patent No. **155,532**, dated September 29, 1874; application filed July 24, 1873.

To all whom it may concern:

Be it known that I, HARVEY LESTER LOWMAN, of Birmingham, in the State of Connecticut, have invented an Improvement in Shovels, Spades, Scoops, &c., as a new article of manufacture, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 represents the blank for a shovel cut out of a sheet of metal of the required thickness; Fig. 2, a face view of the blank after it has undergone the first swaging operation; and Figs. 3 and 4, cross-sections of the same, taken at the lines A *a* and B *b* of Fig. 2. Fig. 5 is an edge view of the completed shovel; Fig. 6, a longitudinal, and Figs. 7, 8, 9, and 10, cross-sections, taken severally at the lines C *c*, D *d*, E *e*, and F *f*, Fig. 2; Figs. 11 and 12, the dies for the first swaging operation; Fig. 13, the mandrel, on which the shank is finished, and Figs. 14 and 15 the dies for finishing the shank; Figs. 16 and 17, other forms of shovels; Fig. 18, a spade.

The same letters indicate like parts in the several figures.

My improved shovel, spade, or scoop, as a new article of manufacture, is made of a single thickness, cut in one piece from sheet metal, and wrought to the form required by the two swaging operations. The blank is cut with shears or cutters from sheet metal of the required thickness for the intended shovel, spade, or scoop, as the thickness is not materially reduced by the after operations of swaging. The form of the blank will depend upon the form of the blade of the shovel or other article desired to be produced. If for a shovel, such as represented by Fig. 5 of the accompanying drawings, the blank should be cut of the form represented by Fig. 1, the part *a* being for the blade, and the part *b* for the shank to receive the wooden handle. The blank thus cut out is then subjected to the first swaging operation between two dies or swages, Fig. 11, having its face of the form of the front face of the blade and shank of the shovel when completed, and Fig. 12 having its face of a form the reverse of the face of Fig. 11, less the thickness of the blank after having been so swaged. The form of the blank after the first swaging operation is represented by Figs. 2, 3, and 4, and the form of the blade *a* is completed, as also the upper or front portion of the shank *b*, by this first swaging operation. The shank or socket is afterward completed by a second swaging operation. The part *b*—that is, the half-formed shank or socket—is put upon a mandrel, Fig. 13, and while it is so held, it is subjected to the swaging or bending operation of two dies, Figs. 14 and 15, by which the two edges *b′ b′* of the part *b* of the blank are bent around the mandrel until the two edges meet, or nearly so, which completes the form of the shank or socket. When so completed, the blade of the shovel will be of the form represented by Figs. 2 and 5, with the front edge *c* straight, and the sides *d d* and back edge *e* slightly curved to give the required concavity to the front or working face, while the shank *b* is tubular for a part of its length to form a socket, into which the handle is to be driven, and, if desired, secured by one or more rivets. The shank or socket is circular in its cross-section, as seen at Fig. 10, and straight, or nearly so, in the direction of its length, from the extreme end to the point *h*, within a short distance of the back edge *e* of the blade, in the direction of the length it extends in a convex ridge from *h* to *i*, and from *i* in a concave ridge vanishing into the face of the blade; and laterally, the edges which meet to form the tubular part of the shank by gradual curves run into the back edge of the blade, the sheet metal being bent each way from the central line, spreading laterally in curved planes, as represented in the cross-sections, Figs. 7, 8, and 9.

The general form produced by the bending of the sheet metal at the junction of the blade with the socket part of the shank is such as to present arches longitudinally and transversely, giving a greater amount of strength for the weight of metal than can be obtained by any other mode of construction known.

Figs. 16 and 17 represent other shovels, which differ only in the form of the blade. Fig. 18 represents a spade made in the same manner, except that the back edge *k* of the blade is formed by turning the back edge *l* at right angles, to form the required flat surface for the bearings of the foot. This result is pro-

duced by cutting the blank a little longer than the blade of the intended spade, and forming one of the dies for the first swaging operation a little longer than the other, and with a flange. I prefer to heat the metal for the swaging operation.

It will be obvious, from the foregoing, that the form of the shovels, scoops, spades, or other like instruments may be varied, so long as they are made with the blade and shank of one piece of sheet metal, substantially as described; and although I have above stated that it is made of one thickness of sheet metal, that being preferred, nevertheless it will be obvious that the sheet metal for the blank may be rolled of unequal thickness, giving greater thickness to the parts which will be exposed to the greatest strain when in use.

I am aware that it has been proposed to make grain-shovels of a single piece of sheet metal; but in that case the socket for the reception of the handle was formed by folding the surplus metal derived from the bending in of that part of the piece of sheet metal from which the sides and back are formed, no part of the socket extending beyond the edge of the shovel. I am also aware that scoops have been made formed of a single piece of sheet metal, with the rear portion turned upwardly to form the socket.

I do not wish to be understood, therefore, as making claim, broadly, to a shovel or scoop made of a single piece of sheet metal.

What I claim as my invention, and desire to secure by Letters Patent as a new article of manufacture, is—

A shovel, spade, scoop, or other analogous article, made substantially as described, with the blade and the hollow tubular shank for the reception of the handle extending from and back of the rear edge of the blade, all in one single piece of sheet metal, substantially as described.

H. L. LOWMAN.

Witnesses:
WM. H. BISHOP,
WILLIAM SCOTT.