

(No Model.)

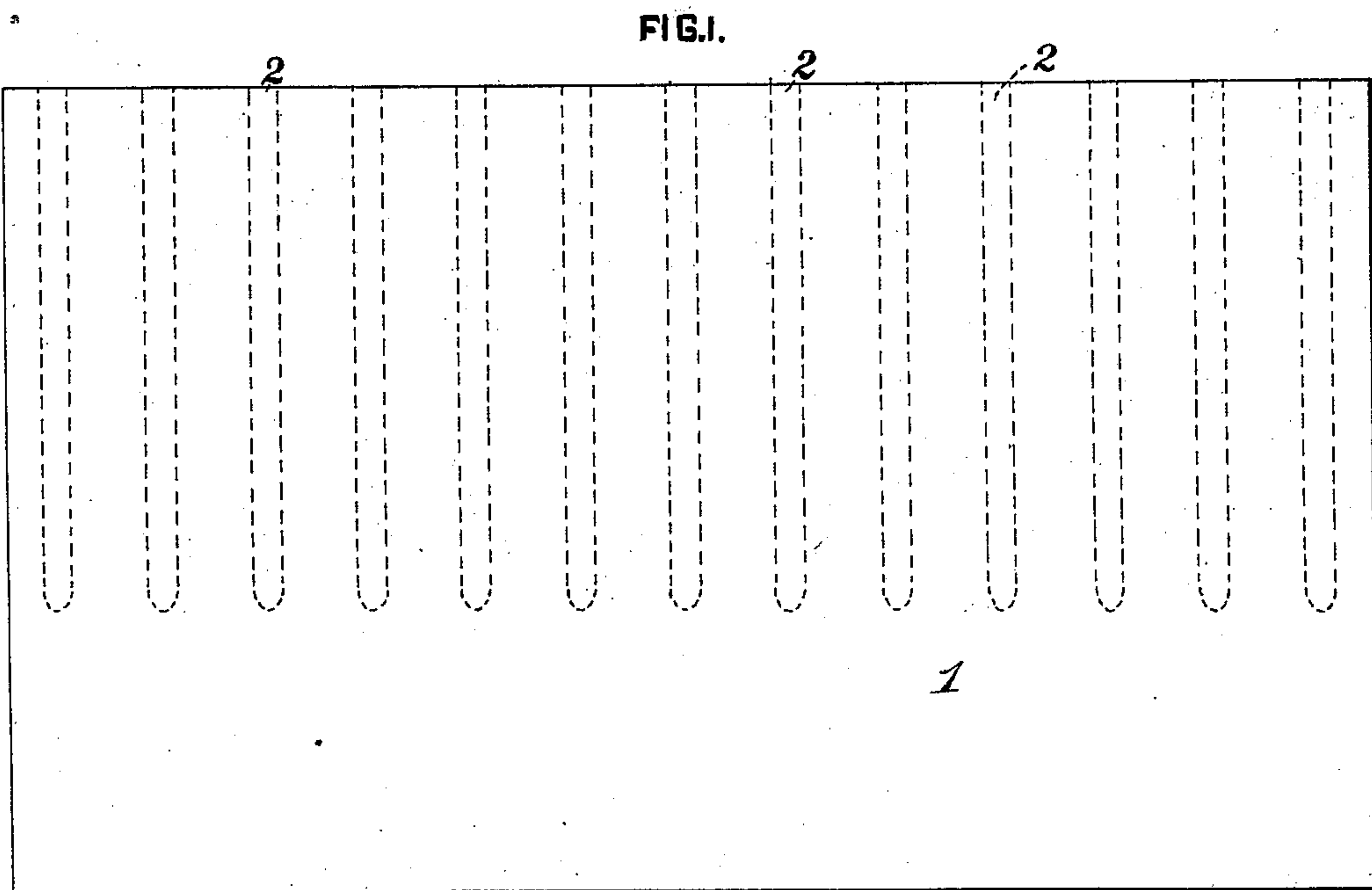
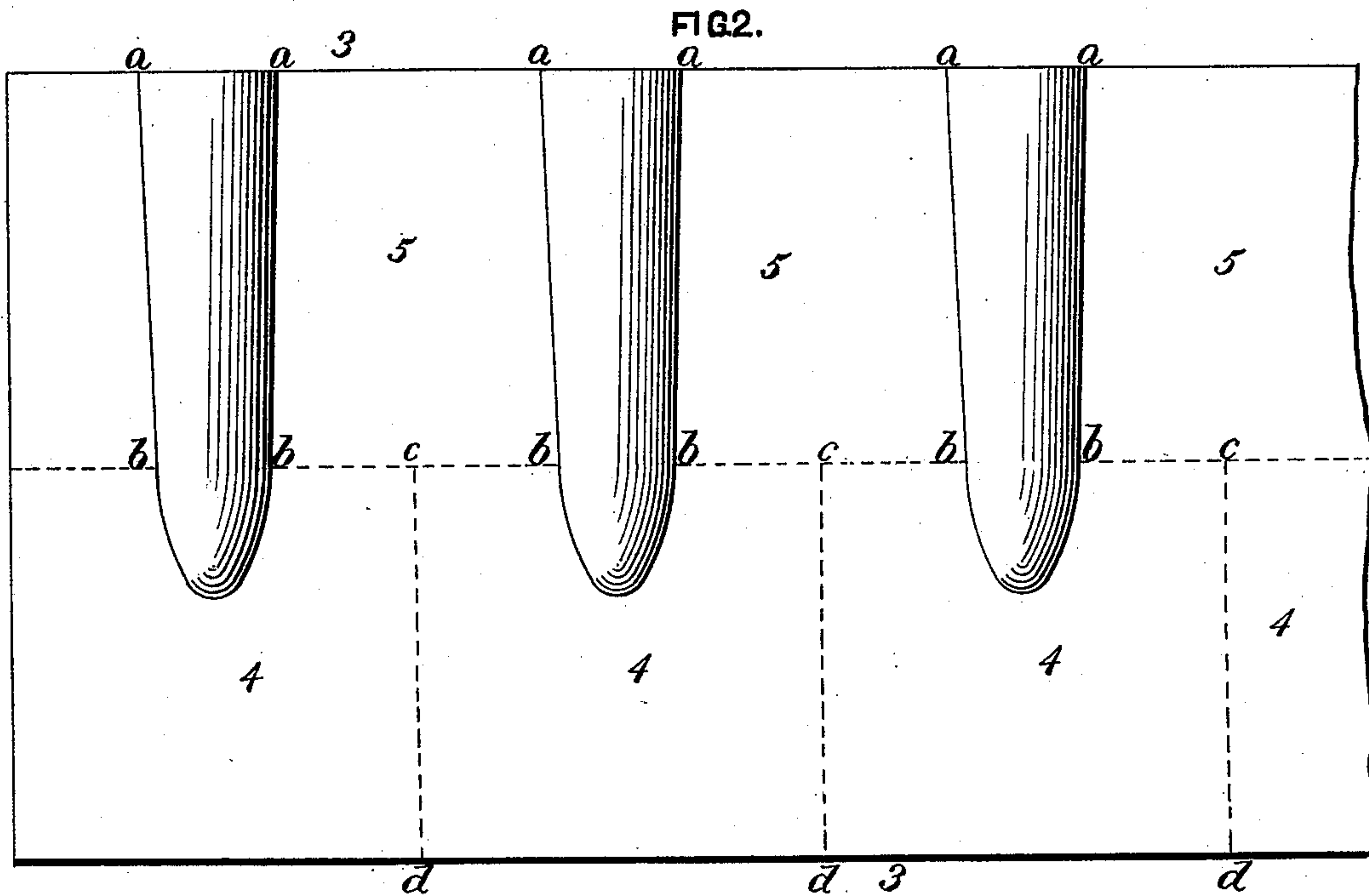
2 Sheets—Sheet 1.

J. M. & H. A. REED.

MANUFACTURE OF SHOVEL BLANKS.

No. 392,134.

Patented Oct. 30, 1888.



WITNESSES:

*Robert Wilson.*  
*F. E. Gaither.*

INVENTOR,

*John M. Reed.*  
*Harry A. Reed.*  
by *Samuel S. Walcott.*  
Att'y.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 3.

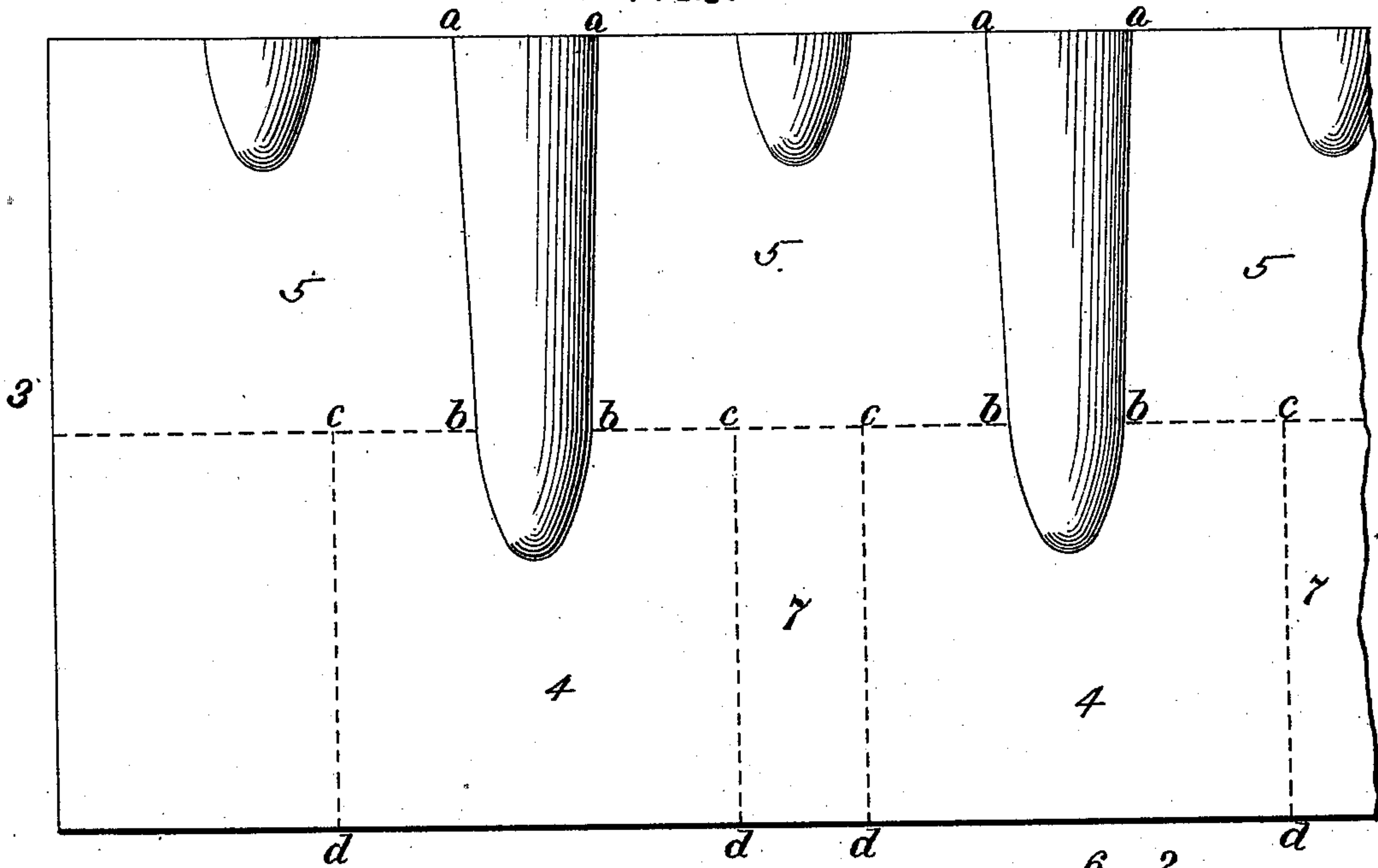
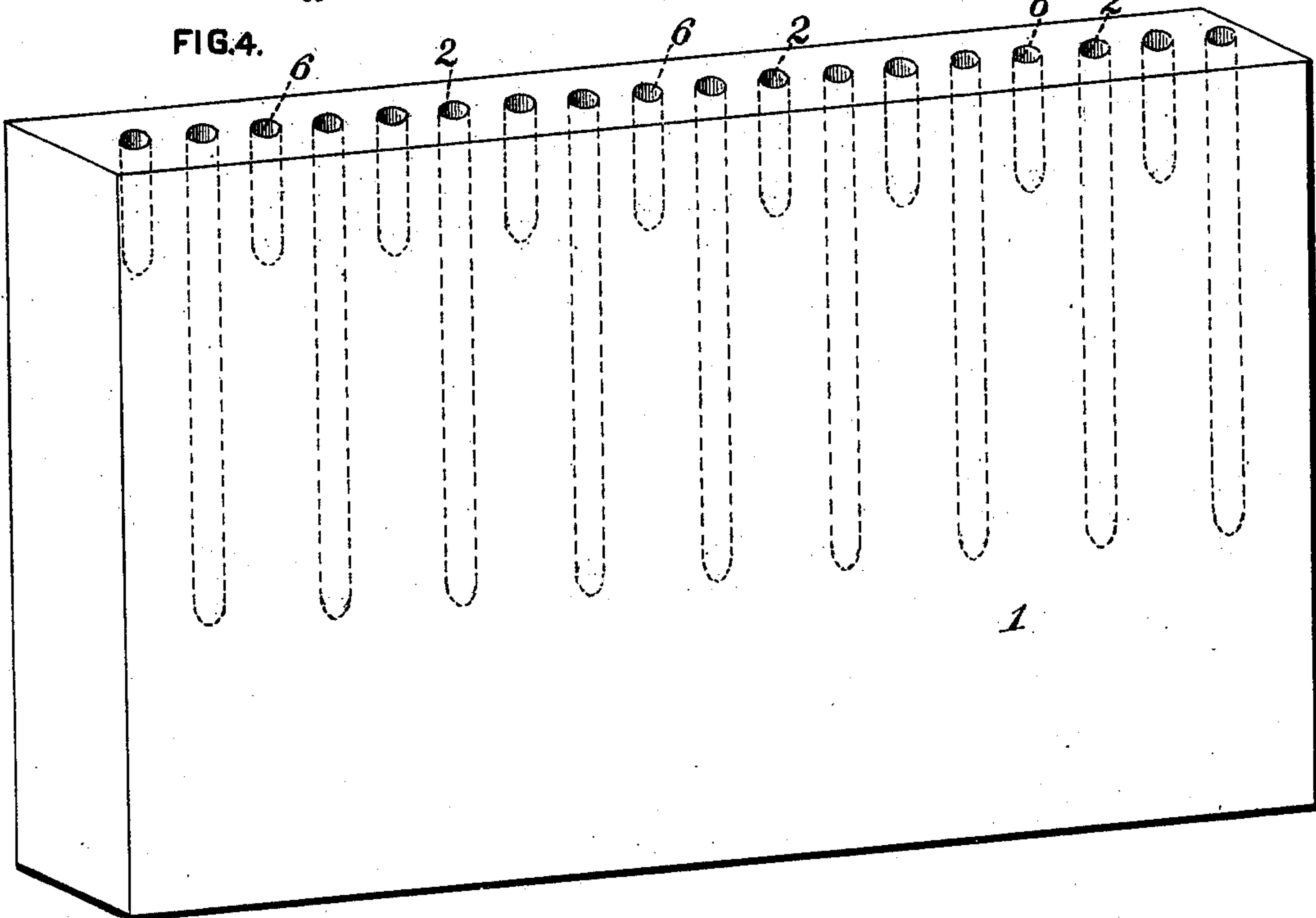


FIG. 4.



WITNESSES:

Robert D. Wilson.  
J. E. Gaither.

INVENTOR,

John M. Reed.  
Harry A. Reed.  
by Daniel S. Wolcott  
Att'y.



# UNITED STATES PATENT OFFICE.

JOHN M. REED, OF BEAVER FALLS, AND HARRY A. REED, OF PITTSBURG,  
ASSIGNORS OF ONE-THIRD TO GILES B. BOSWORTH, OF PITTSBURG,  
PENNSYLVANIA.

## MANUFACTURE OF SHOVEL-BLANKS.

SPECIFICATION forming part of Letters Patent No. 392,134, dated October 30, 1888.

Application filed July 30, 1888. Serial No. 281,402. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN M. REED, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, and HARRY A. REED, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, citizens of the United States, have invented or discovered a certain new and useful Improvement in Manufacture of Shovels, of which improvement the following is a specification.

The invention described herein relates to certain improvements in the art of manufacturing shovels and like implements. The usual practice in manufacturing such implements consists in rolling out a plate or bar of suitable thickness and then stamping out a series of "blanks," as they are termed, each blank being provided with a tang. The blank is then heated and the tang split, and a hole formed in the edge of the blank between the two parts of the tang. The blank thus prepared is then by subsequent operations broken down, reduced, and formed into a finished shovel, the two parts of the split tang and the hole in the edge of the blank being shaped into straps and a socket for securing the handle in place. The greatest difficulty encountered in the above-described operation is the proper splitting of the tangs, a considerable percentage of blanks being destroyed by defective splitting.

The object of the invention herein is to provide for the partial formation of the straps at a stage in the operation where there is no liability of destroying the blank; and it is a further object of said invention to materially lessen the steps now employed in such manufacture by avoiding the breaking-down operation now effected in each blank.

In general terms, the invention consists in the several steps or operations, all as more fully hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a perspective of a slab, ingot, or, billet illustrative of the first step in our invention. Fig. 2 is a view of a plate produced by rolling the ingot shown in Fig. 1, and Figs. 3 and 4 are similar views of a modified form of ingot and plate.

In the practice of our invention we produce, by rolling, casting, or other suitable means, an iron or steel slab, ingot, or billet, 1, of a suitable width—*e. g.*, about equal to the combined length of the blade and straps in a finished shovel. In one edge of this slab, ingot, or billet we punch or otherwise form a series of transverse holes, 2, which are located at such a distance apart—dependent upon the thickness of the slab, ingot, or billet—that in the elongation incident to the rolling down of the slab, ingot, or billet to approximately the thickness of the finished shovel the centres of two adjacent holes, or rather slits—as such will be the shape of the holes after the slab or billet is rolled—will be separated by a distance equal to the width desired in the blank to be produced.

After the holes 2 have been formed in the slab, ingot, or billet, as above described, said ingot or billet is reduced to a thickness desired by passing the same longitudinally through suitable rolls, thereby forming a plate, 3, as shown in Fig. 2. In order to prevent the walls of the holes being welded together in the rolling operation, a little slack or oxide of iron may be introduced into said holes prior to rolling. The plate is next cut along the lines *a b*, *b c*, and *c d*, thereby dividing said plates into a series of blanks, 4, of approximately the size of a shovel, each provided with two straps, the cuts *a b* being made within the edges of the slits formed in rolling the slab or billet, and the cuts *b c* intersecting the cuts *a b* at a point a little above the bottom of the slits, such remaining portions of the slits below the cuts *b c* being subsequently formed into sockets for the ends of the handles.

It will be observed that in the above-described method the portions 5 of the plates between two adjacent slits and above the lines of cut *b c* are practically waste; hence in lieu of spacing the holes 2 in the slab, ingot, or billet so that the centers of the slits formed in the rolling operation are separated by a distance approximately equal to the width of the blank to be produced, as above described, we prefer to so arrange said holes that the edges of the slits shall be separated in the rolled



plate by a distance equal to the width of a blank, and by making the holes 2 of a depth somewhat greater than the length of the blank desired the dimensions of the portions 5 of the plate will be approximately equal to the body portion of a blank. In addition to increasing the distance between two adjacent holes 2, as above stated, holes 6 are punched in the slab, ingot, or billet at a point midway between two adjacent holes 2, as shown in Fig. 3, said holes being made of a depth approximately equal to that required in the socket of the finished shovel.

The slab, billet, or ingot having the holes 2 and 6 alternating, as shown in Fig. 4, is reduced by a series of longitudinal passes between suitable rolls to a plate, as shown in Fig. 3, having a series of alternating long and short slits, the latter being located midway of the portion 5 of the plate lying between two adjacent long slits. This plate is now divided by shearing or cutting the same along the lines *a b*, *b c*, and *c d* into a series of blanks, 4 and 5, the former being provided with straps or divided tangs and slits adapted to form sockets, and the latter being provided with slits only adapted to form sockets.

It will be observed by reference to Fig. 4 that in increasing the distances between the holes 2 for the formation of the blanks 5 the portion of the plate 3 from which the body of the blanks 4 are cut is correspondingly increased in length, so that in cutting up the plate, as above described, there will be a waste portion, 7, between two blanks 4 of a width approximately equal to the width of the slits formed by the holes 2. As these portions 7 of the plates are of a thickness approximately equal to twice the thickness of the tangs or straps on the blanks 4, we propose to reduce the same by rolling or other suitable means to approximately the thickness of the tangs on the blanks 4, and then by shearing the same form two straps or tangs, one or both of which can be welded or riveted to the walls of the socket in the blanks 5, thereby forming a shovel-blank with a socket and one or two straps, as desired.

It will be observed that in the above-described method there is practically no waste, and that the heating and loss of blanks incident to the tang-splitting operation are entirely avoided, the "embryonic straps," as they might be called, being formed at a time when

there is no liability of injury to the blanks or material forming the same.

A further advantage incident to my improved method is that the slab, ingot, or billet can be rolled so that the blanks cut therefrom need be subjected only to the final shaping and finishing operations in order to complete the shovel, thus avoiding the separate breaking down of each blank and thereby effecting a considerable saving in the labor, time, and cost of manufacturing shovels or other like articles.

For convenience of definition the slab, ingot, or billet herein shown and described is termed a "single width," slab or ingot, making it of "double width," and putting a series of holes in each edge would be merely a duplication of the invention, as when longitudinal severance of the plate produced by rolling such double slab or ingot were made each half would be a single-width plate.

We claim herein as our invention—

1. As an improvement in the art of making shovel-blanks, the method herein described, consisting in punching or otherwise forming a series of holes at regular intervals, as shown, in one edge only of a single-width slab, ingot, or billet, reducing said slab, ingot, or billet in thickness, and elongating it, thus forming a plate of uniform or approximately uniform thickness and transforming the holes into slits, and then severing the plate upon the lines *a b*, *b c*, *c d*, substantially as shown, to form a series of shovel-blanks, substantially as set forth.

2. As an improvement in the art of manufacturing shovel-blanks, the method herein described, consisting in punching or otherwise forming a series of alternating long and short holes at regular intervals in one edge only of a single-width slab, ingot, or billet, reducing said slab, ingot, or billet in thickness, and elongating it, thus forming a plate of uniform thickness and transforming the holes into long and short slits, and then severing the plate upon the lines *a b*, *b c*, *c d*, to form a series of shovel-blanks, substantially as set forth.

In testimony whereof we have hereunto set our hands.

JOHN M. REED.  
HARRY A. REED.

Witnesses:

W. B. CORWIN,  
DARWIN S. WOLCOTT.