

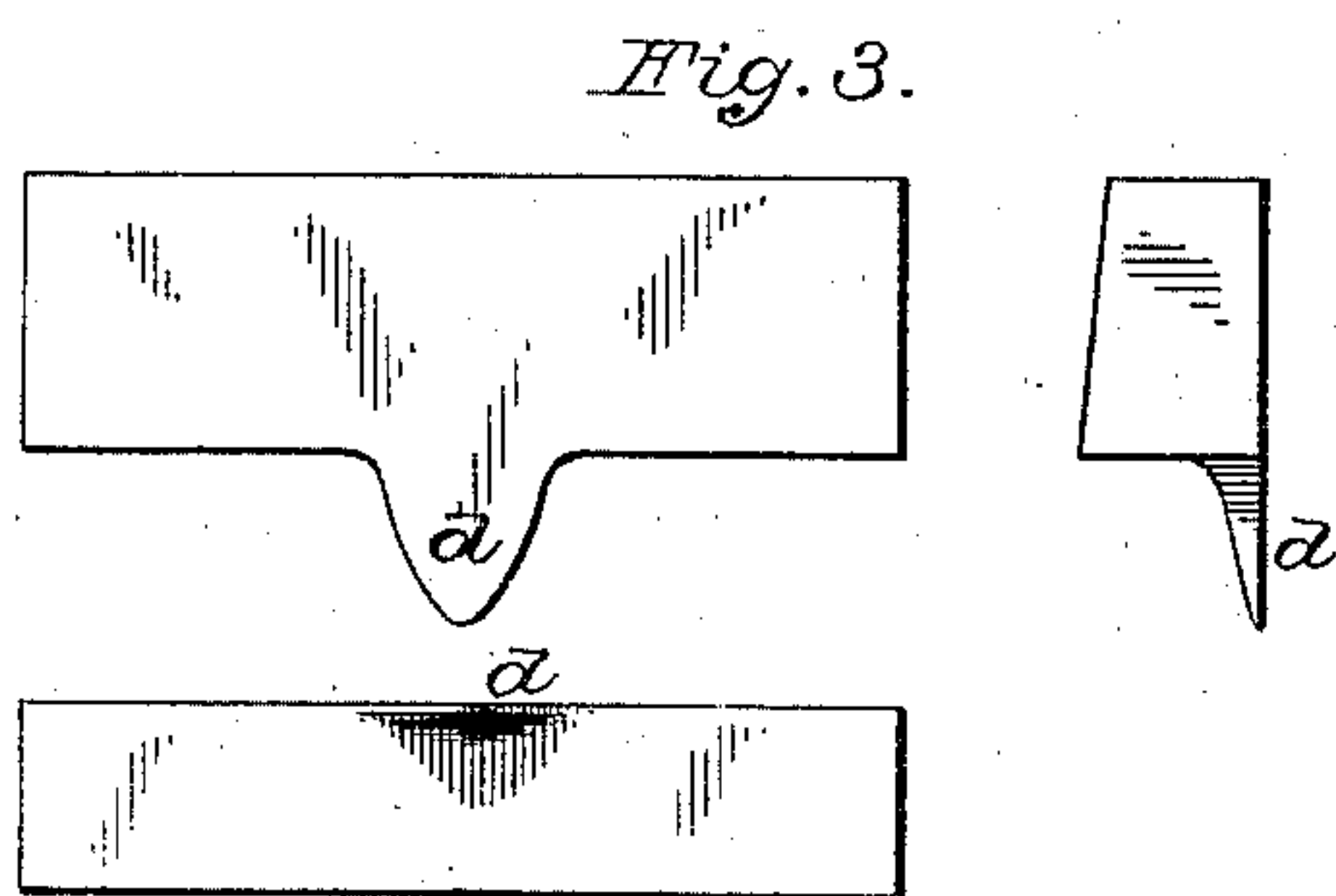
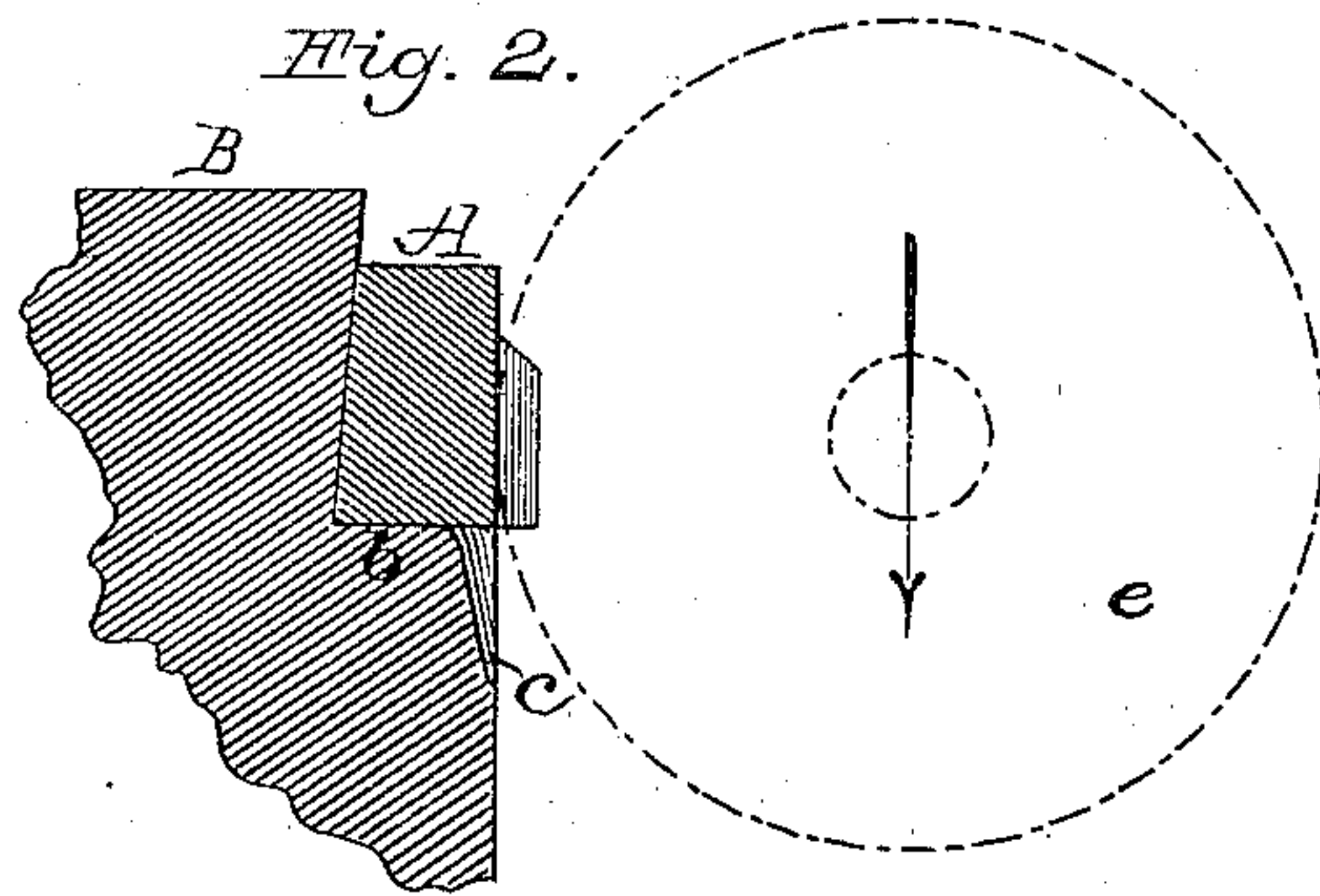
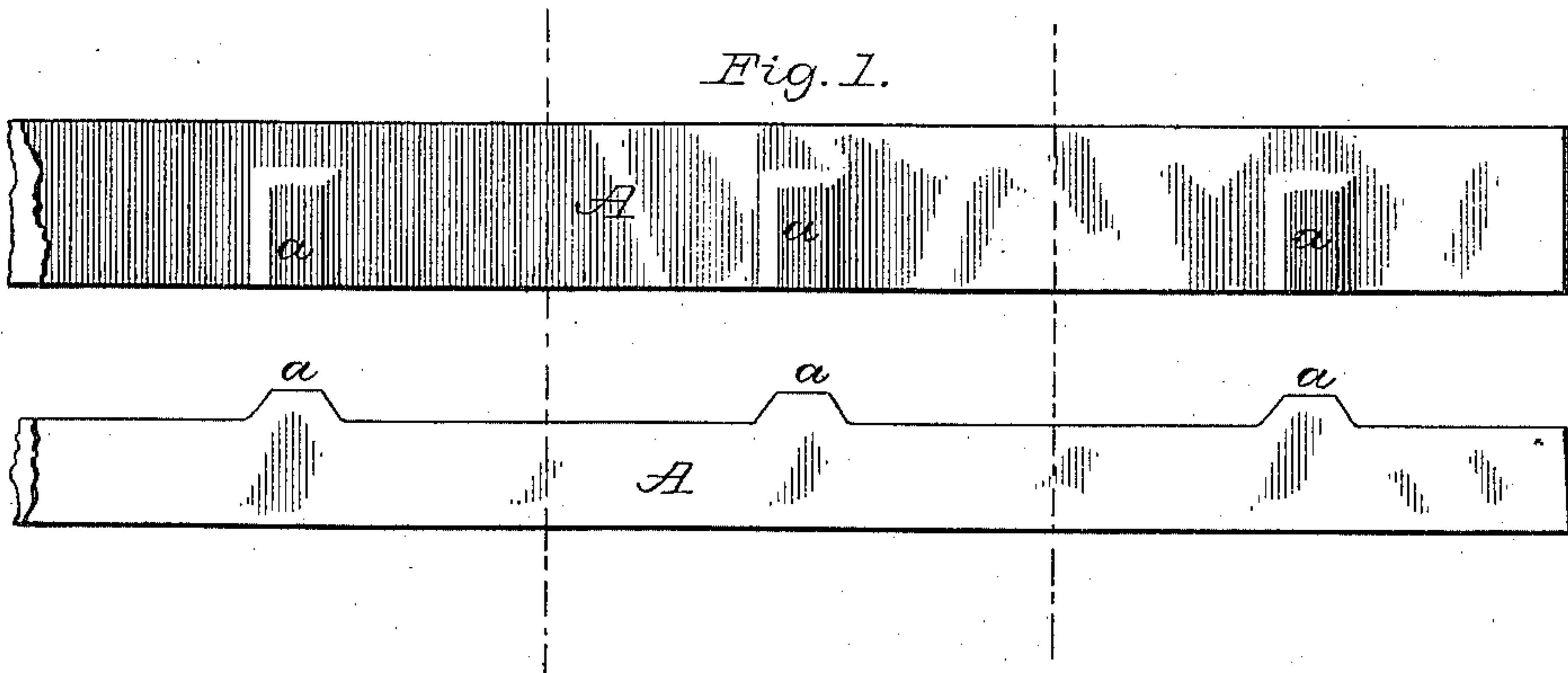
(No Model.)

C. H. PERKINS.

MANUFACTURE OF TOE CALKS FOR HORSE AND MULE SHOES.

No. 312,011.

Patented Feb. 10, 1885.



Attest:

Philip F. Larners.
Howell Bartle

Inventor:

Charles H. Perkins.
By M. C. Mord.
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES H. PERKINS, OF PROVIDENCE, RHODE ISLAND.

MANUFACTURE OF TOE-CALKS FOR HORSE AND MULE SHOES.

SPECIFICATION forming part of Letters Patent No. 312,011, dated February 10, 1885.

Application filed November 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. PERKINS, of the city and county of Providence, in the State of Rhode Island, have invented a certain new and useful Improvement in the Manufacture of Toe-Calks for Horse and Mule Shoes; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

It is well known that toe-calks are provided with one or more spurs or studs, by means of which they are so applied to a partially-heated shoe that while both are being heated up to the welding-point, and prior to the operation of welding, the calk will be firmly retained in place.

My present invention involves a novel method of forming said spurs or studs, which have been heretofore variously developed—as, for instance, said spurs have been forged by hand on an anvil by displacing a portion of the metal from one side and edge of a calk, so as to develop one or more studs or spurs projecting from one edge thereof. Again, a bar of metal has been rolled with a sharp web at one edge, which has been thereafter mainly cut away, leaving at intervals V-shaped portions of the web, which serve as the required spurs or studs. Again, as heretofore practiced by me, a bar of metal has been die-rolled into a series of connected blanks, and so as to develop on one edge thereof a series of V-shaped lugs, which were thereafter elongated by pinching for affording studs or spurs sufficiently sharp and pointed to enable them to be driven into a slightly-heated shoe. Again, the development of lugs on the edges of calks has been heretofore accomplished by first rolling a continuous V-shaped edge, and then by die-rolling to form V-shaped lugs at regular intervals upon said V-shaped edge. Another variety of calk having a single spur upon the end thereof has heretofore been formed by first pinching out a lug at one end of the calk, as a prolongation thereof, and then by means of dies developing said lug into a spur projecting at right angles from the end of the calk. In developing integral tips, as well as calks upon horseshoes, an integral mass of metal at

the toe of the shoe has been heretofore drawn out at right angles to the plane of the shoe, so as to project upwardly or downwardly, according to whether a “tip” or a “calk” was desired.

In the practice of my invention I use tools, dies, and machinery more or less closely approximating to such as have heretofore been employed in the manufacture of toe-calks, and differing therefrom only so far as is requisite for producing the results desired by me; but it is to be understood that the particular means employed constitute no part of my present invention.

The object of my present invention is to produce toe-calks in what I deem their best form, and of superior quality, with great economy, having reference not only to comparatively inexpensive and durable tools, minimum waste of metal, and rapidity in manufacture, but also in the matter of labor.

Broadly stated, my invention consists, mainly, in forming a toe-calk, stud, or spur by first producing upon one side of a calk-blank one or more crosswise lugs, and then forcing a portion of the metal in each lug beyond the adjacent edge of the blank, and thereby developing a projecting stud or spur. These calk-blanks, with their crosswise lugs, may be produced by various means without departure from the main feature of my invention—as, for instance, they can be made singly from small masses of low steel directly from a crucible, or from short lengths of bar metal, the shaping and compressing in either case being performed by means of compressing-dies variously operated. For obtaining the best economic results, however, I produce said blanks by the well-known process of die-rolling, and in the form of a bar consisting of a series of connected calk-blanks, each having its one or more crosswise lugs. The subsequent cutting of said bar for the separation of the blanks is of course essential for the ultimate production of toe-calks; but so far as that operation relates to my invention it is immaterial whether the cutting occurs after the calks are otherwise finished or before, or simultaneously with the development of the crosswise lugs into spurs or studs, although retaining the calks in bar form until other-

wise finished results in economy in the matter of handling.

As hereinbefore indicated, it is not new to form a series of connected calk-blanks by die-rolling; but I believe it to be broadly new in the manufacture of toe-calks to in any manner first form crosswise lugs on one side of a calk-blank and then to force a portion of the metal in each lug beyond the adjacent edge of the blank for developing a projecting spur or stud.

The forcible displacement of a portion of a lug to form a stud or spur can best be effected by the wiping action of a roller crosswise of the blank and lengthwise of the lug; but it is to be understood that the stud or spur may be variously shaped, and various kinds of tools may be employed in forming it, without departure from the main feature of my invention. If the stud or spur be wedge-shaped and it have a chisel-edge, it will serve a good purpose; but in its best forms it is pointed, and for producing it I employ a matrix-die, into which the metal is forced, and by which the exact form of the stud is determined.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 illustrates in side and top view a portion of a bar of metal embodying a series of novel toe-calk blanks. Fig. 2 illustrates in lateral section a die in which the stud or spur is formed, and also in dotted lines a roller co-operating with said die. Fig. 3 illustrates in front, top, and end views one form of toe-calk as produced by me in accordance with my present invention.

Referring to Fig. 1, it is to be understood that the bar A contains as many calk-blanks as there are lugs *a*, these latter being in this instance so located with reference to each other that should the bar be cut at points indicated in dotted lines each resulting piece would be of proper length for a calk, and it will be seen that each piece would have one lug centrally located on one side thereof. It is to be understood, however, that more than one lug can be thus provided for in each piece, and that the bar may also be so cut that its single lug may be located otherwise than centrally thereon without departure from my invention. It will be seen that these lugs are substantially rectangular in outline, and extend from one edge or top of the bar crosswise to about two-thirds of its width, and their bulk may be varied according to the dimensions of the stud or spur to be developed therefrom. In producing this calk-blank bar a pair of die-rolls is employed having a substantially rectangular pass corresponding in form with the body of the bar; but one of said rolls is provided in a well-known manner with recesses or dies, within which the lugs *a* are formed during the passage of the bar through the rolls. The development of these lugs into studs or spurs can obviously best be accomplished while the blanks are still in their

connected or bar form; but, as hereinbefore indicated, the bar may first be cut into separate blanks, or the cutting may be performed simultaneously with the development of the studs or spurs without departure from my invention. The die B is wholly open at one side, and has a seat at *b*, conforming to the sectional contour of one side and one edge of a calk-blank, and in its front face below said seat it has a concave and pointed matrix, *c*, into which a portion of the metal of each lug is forced, thereby imparting a desirable form to the stud or spur *d*. The operation of thus forcing the metal into the matrix *c* may, as hereinbefore stated, be accomplished by mechanism of various kinds without departure from my invention, it being obvious that a wiping action crosswise of the blank and in line with the lug is only requisite for flattening the lug and forcing a portion of the metal therein beyond the adjacent edge of the blank, and this operation can be performed by the use of powerful tools, even when the blank is cold; but for obtaining the best results I prefer that the blank be at such heat as will afford a fair degree of ductility, and in practice I utilize, as far as possible, the remainder of the heat involved in the preliminary rolling operation.

The best mechanism known to me for co-operating with the die B is a plain-faced roller, *e*, as indicated in dotted lines, mounted in a frame, and arranged in a manner well known, to be vibrated to and fro crosswise of the blank, and in such proximity to the blank and die as to flatten or reduce the lugs and force a portion of each beyond the adjacent edge of the blank and into the matrix *c*.

It is to be understood that while I use the matrix-die as described for obtaining studs or spurs in their best form, I do not preclude myself from employing a die with a plain front face in lieu of the matrix, so that the roller *e*, in making precisely the same movements as with the matrix-die, will force a portion of the metal of each lug beyond the edge of the blank, and develop a wedge-shaped stud by compressing and elongating the projecting portion of the metal between said roller and the plain front face of the die.

It will be seen that I am enabled to locate the studs or spurs flush with one side of the calk, and also that they are of greater strength than when formed from a part of a rolled web, and also that no waste of metal is involved in their production.

It is to be understood that the wearing edge of the calks is sometimes flat, as shown, and sometimes sharp; but such variations in form and the methods of producing them are wholly independent of my present invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The method of forming studs or spurs on toe-calks, substantially as hereinbefore described, which consists in first producing a crosswise lug on the side of a calk-blank, and

then forcing a portion of the metal in said lug beyond the adjacent edge of the blank, and thereby forming a projecting stud or spur.

2. The method of manufacturing toe-calks, substantially as hereinbefore described, which consists in die-rolling a connected series of calk-blanks, each having on one side thereof one or more crosswise lugs, and then forcing

a portion of the metal in each lug beyond the adjacent edge of the blank and into a die, to thereby forming a projecting stud or spur at the edge of the calk.

CHARLES H. PERKINS.

Witnesses:

WALTER ALDRICH,

WILMARTH H. THURSTON.