

(No Model.)

2 Sheets—Sheet 1.

J. B. WHITE.

ART OF MAKING HORSESHOES.

No. 330,534.

Patented Nov. 17, 1885.

Fig. 1.

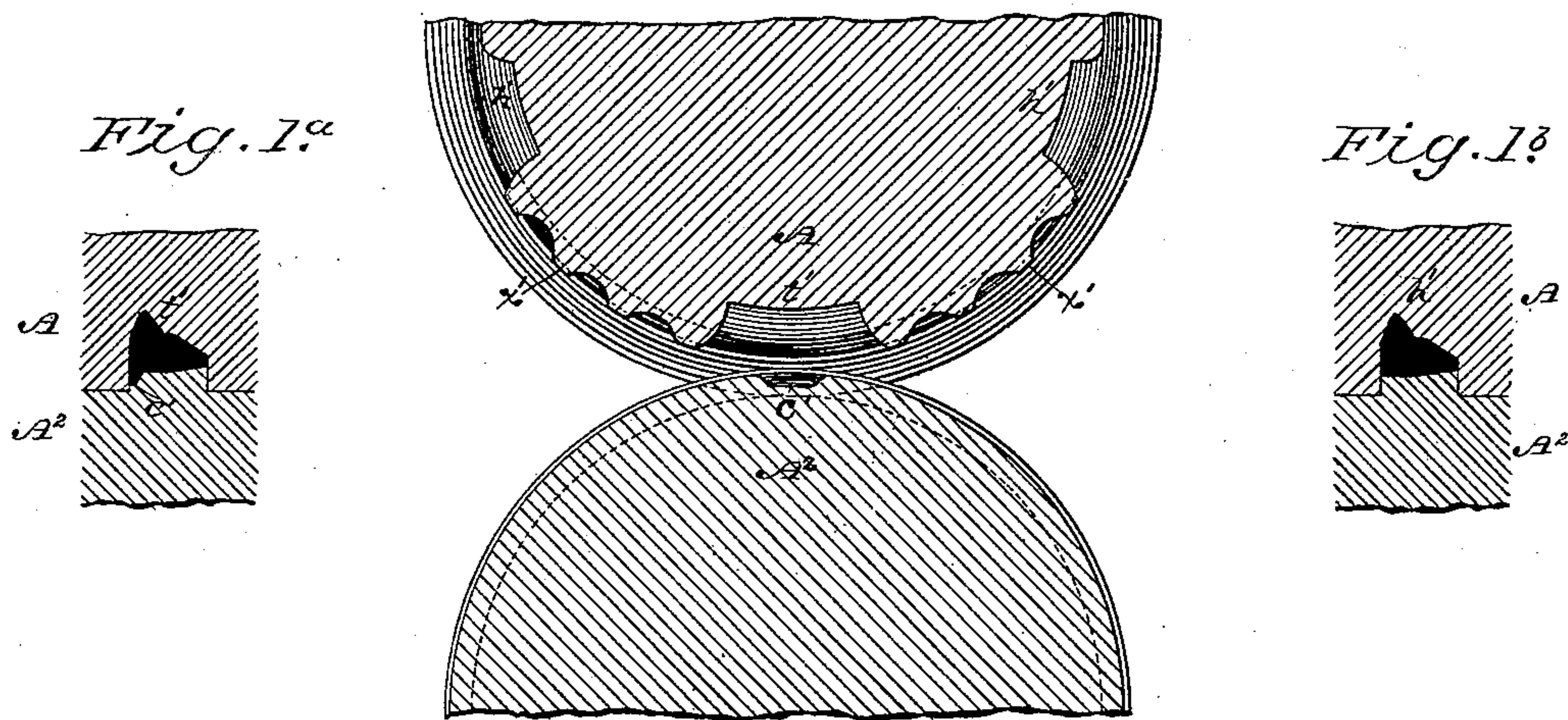


Fig. 2.

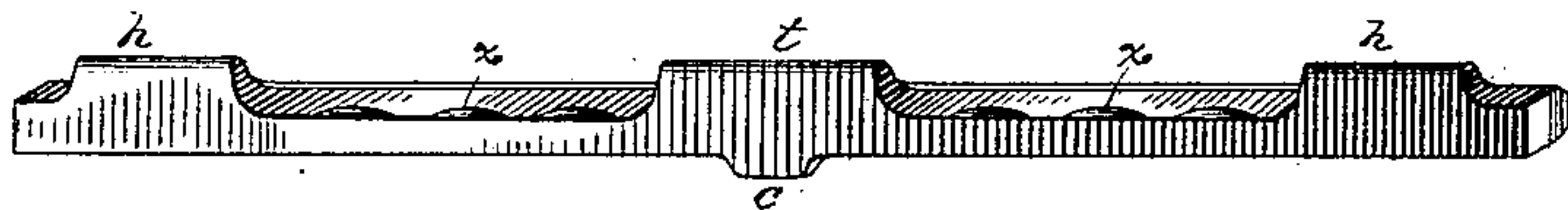


Fig. 3.

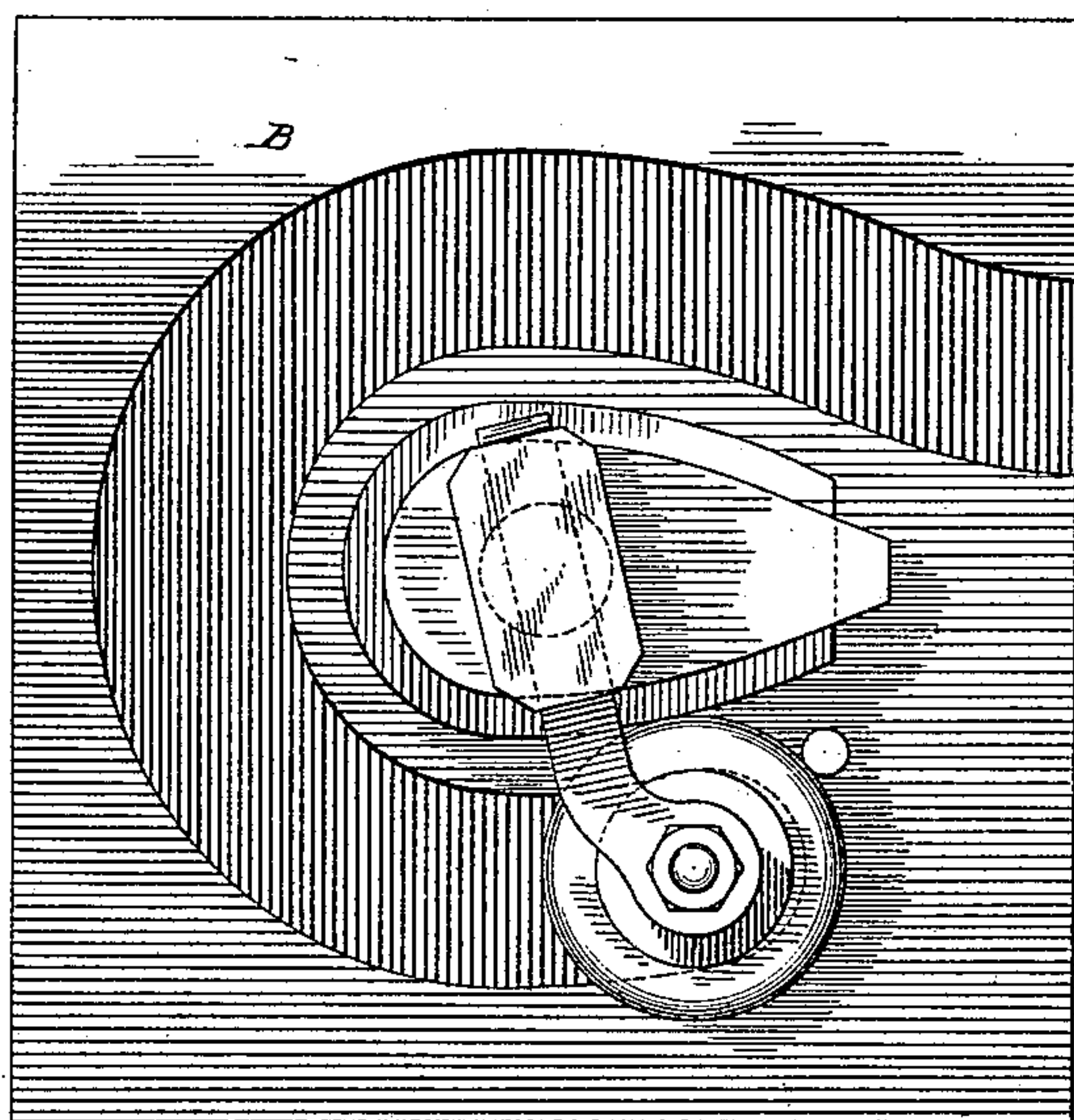
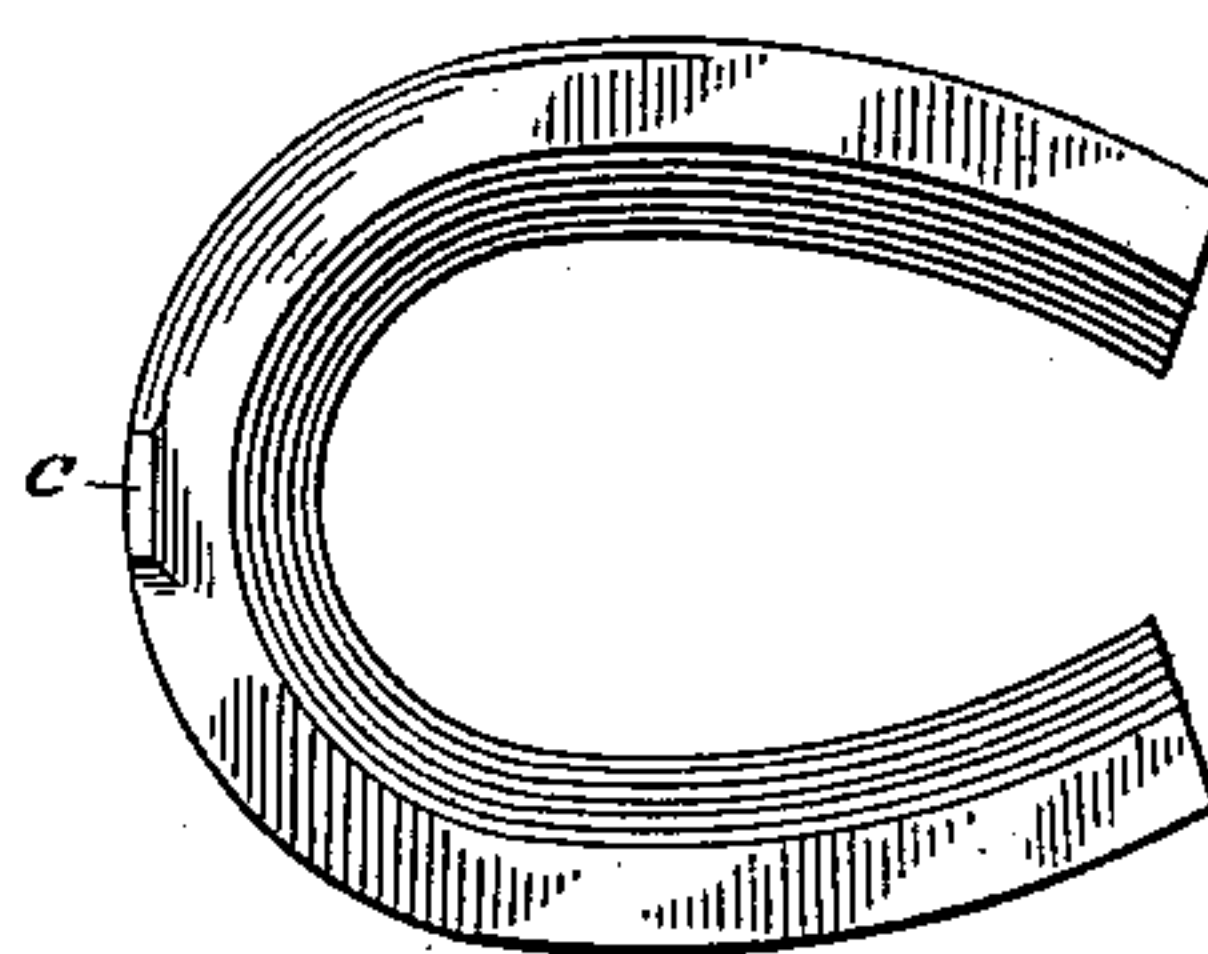


Fig. 4.



Witnesses:

Ed. A. Newman,
Al. C. Newman.

Inventor.

JOHN B. WHITE.
By his Attorney

[Signature]

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2 Sheets—Sheet 2.

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Fig. 5.

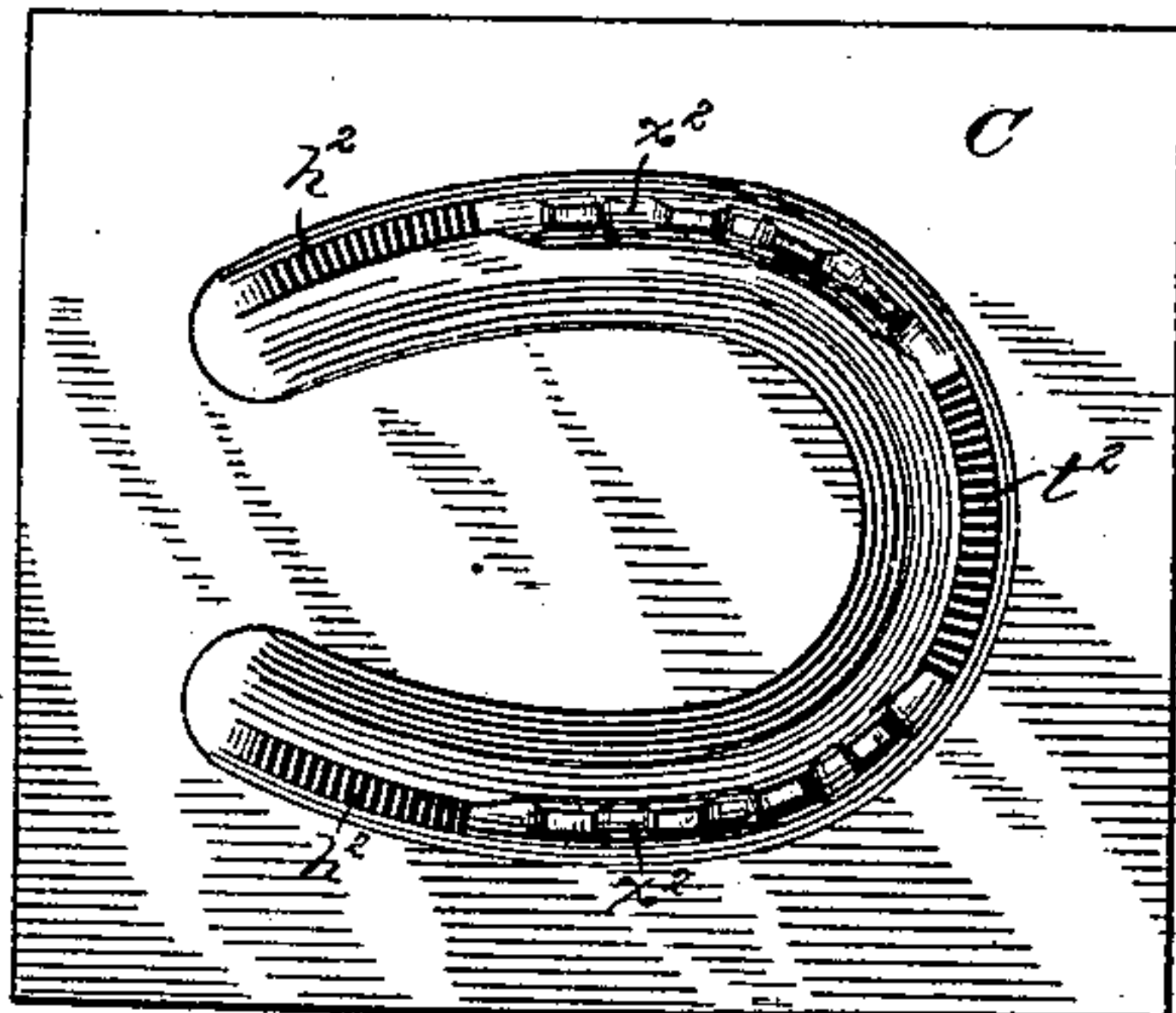


Fig. 6.

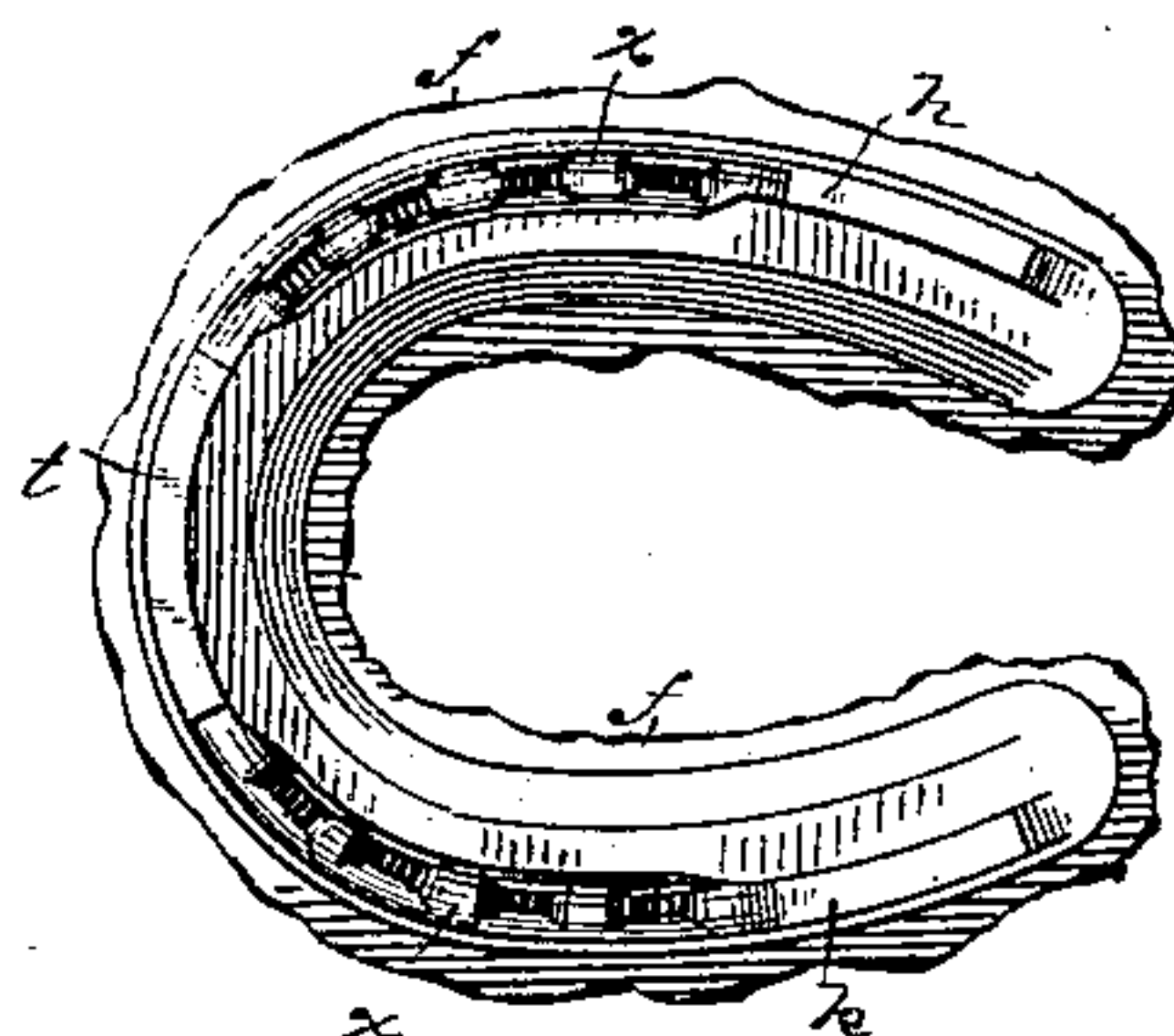


Fig. 7.

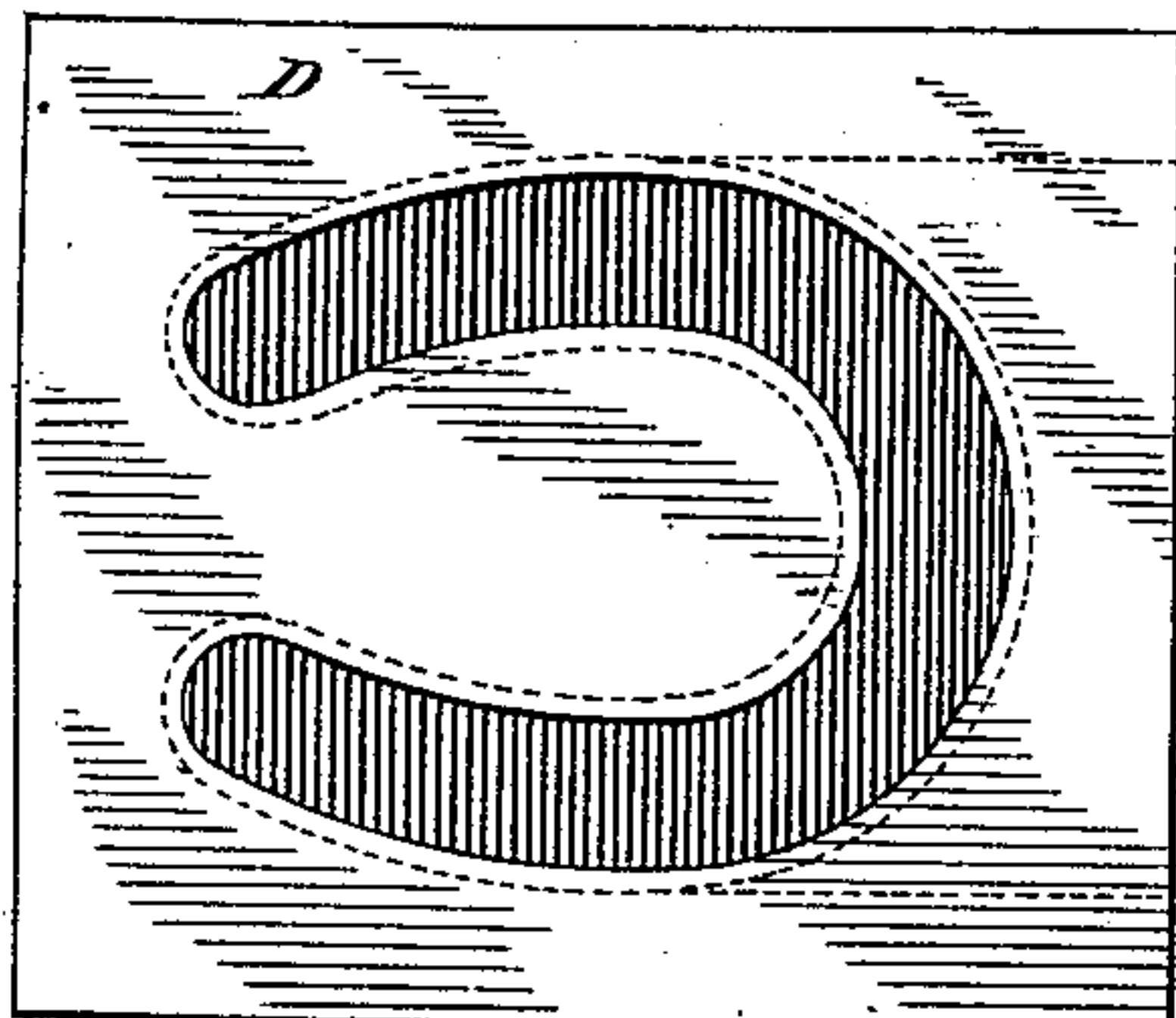


Fig. 8.

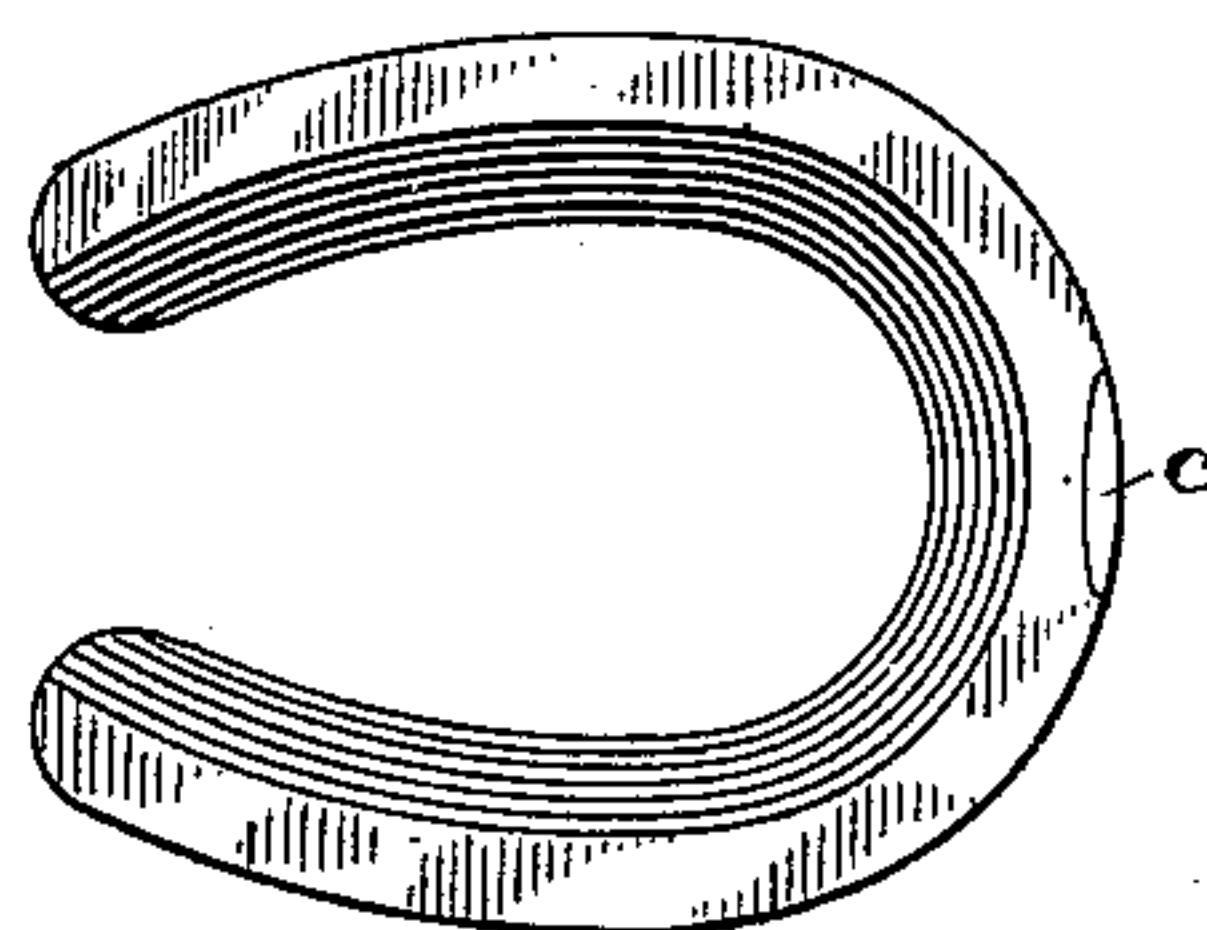


Fig. 9.

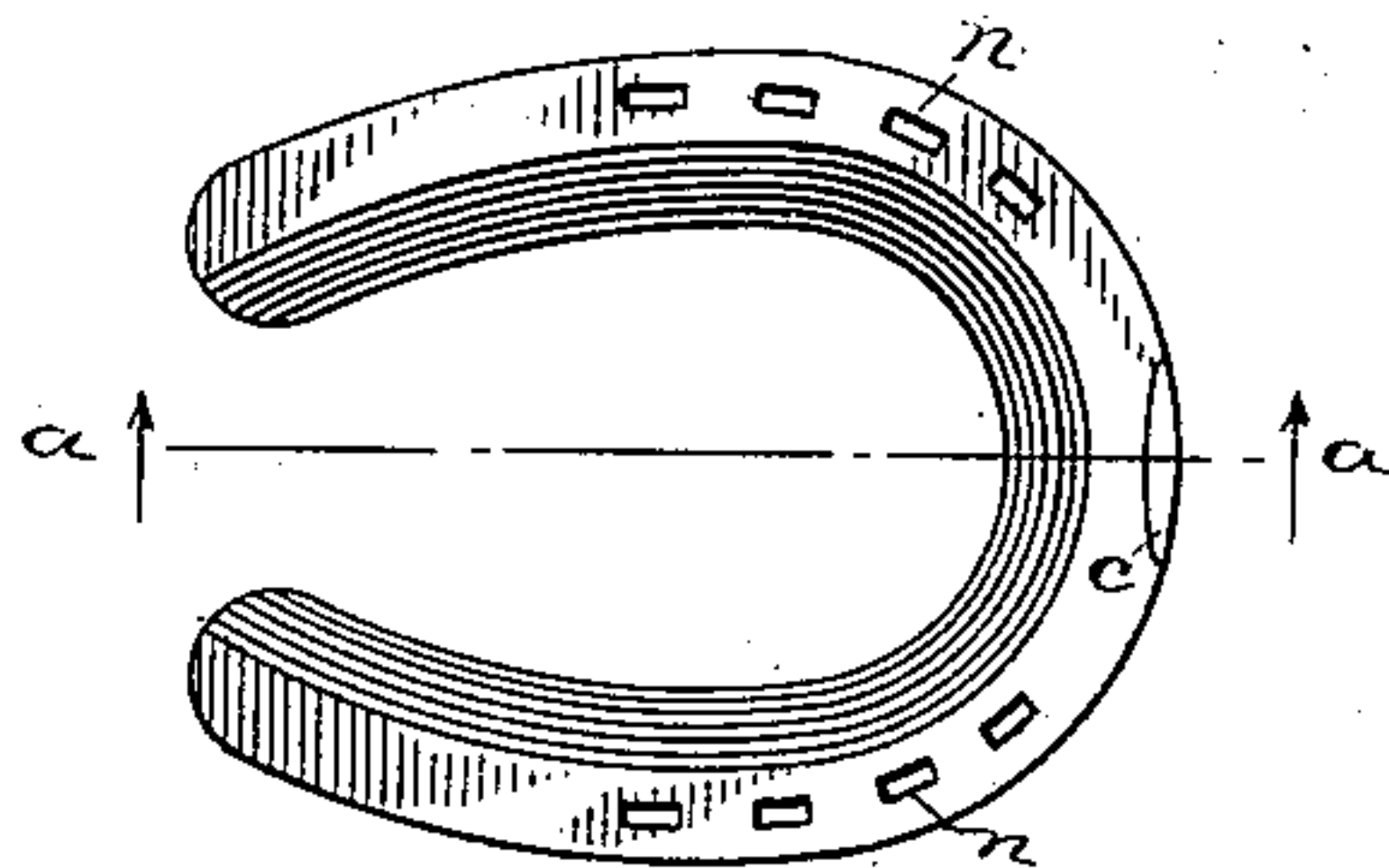


Fig. 10.

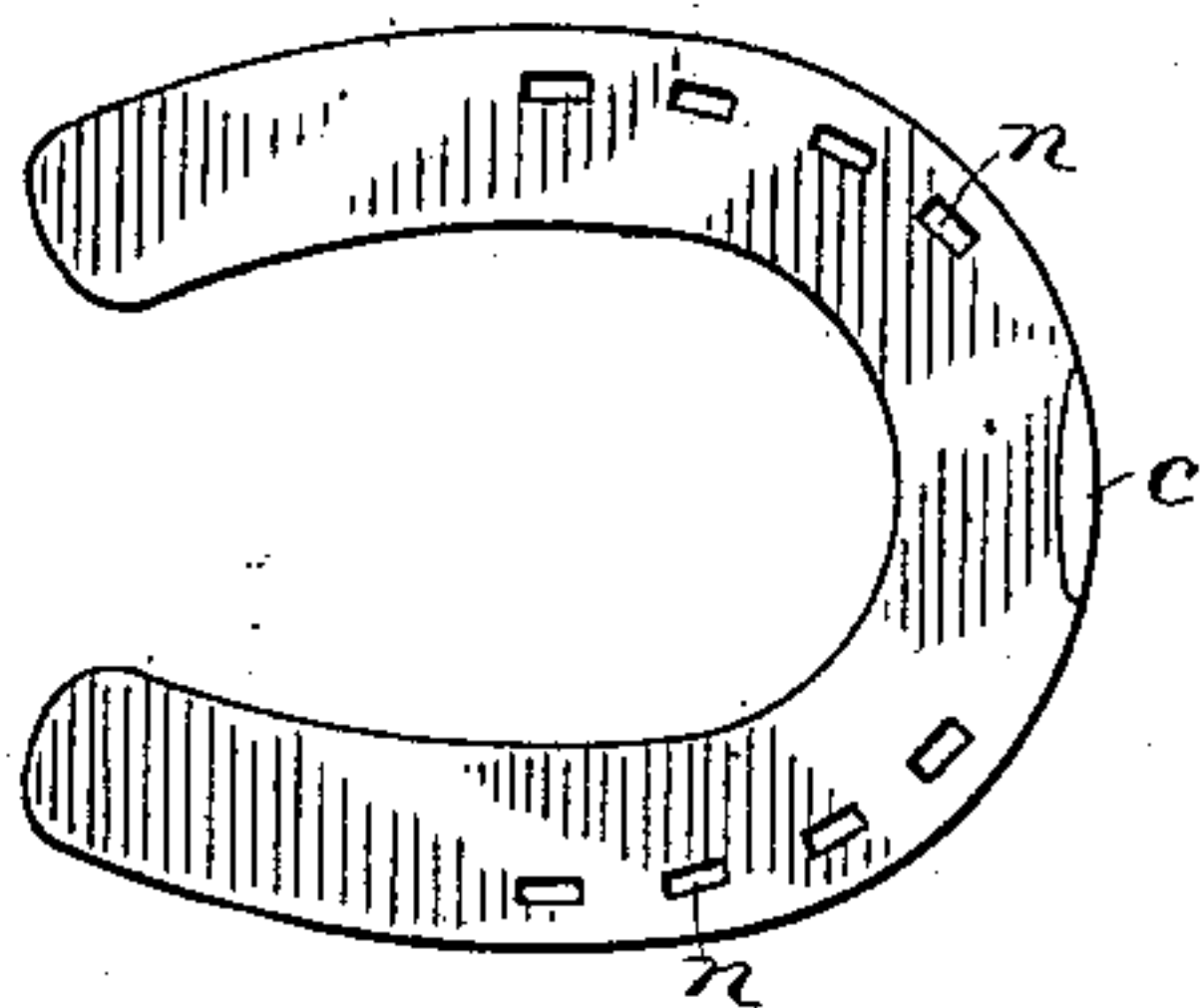


Fig. 9^a.

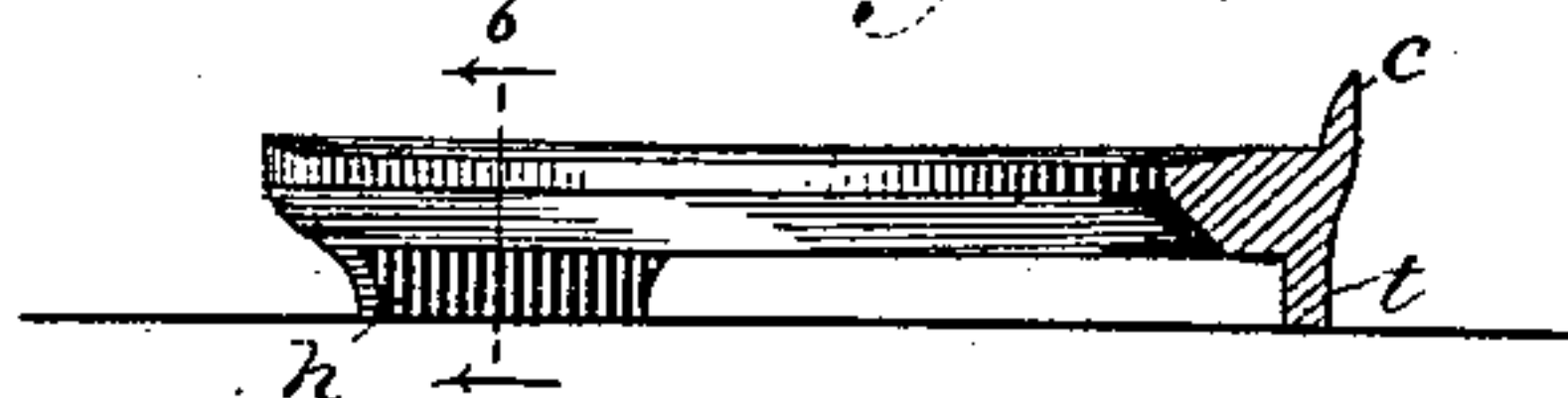


Fig. 9^b.



Witnesses:

Ed. A. Newman.
Al. C. Newman.

Inventor:

JOHN B. WHITE.

By his Attorney

W. L. Ewin,

UNITED STATES PATENT OFFICE.

JOHN B. WHITE, OF BUFFALO, NEW YORK.

ART OF MAKING HORSESHOES.

SPECIFICATION forming part of Letters Patent No. 330,534, dated November 17, 1885.

Application filed April 7, 1885. Serial No. 161,456. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. WHITE, a citizen of the United States, residing at Buffalo, in the State of New York, have invented a new and useful Improvement in the Art of Making Horseshoes, of which the following is a specification.

This invention relate to the manufacture of sharp-calked horseshoes by "machinery" or partly by machinery; and it consists in a novel process, hereinafter described and claimed, whereby I am enabled to produce horseshoes having hard and strong "sharp" calks integral with the body or web of the shoe perpendicular to its sole, and of substantially uniform thickness from the top to bottom, so as to remain effectively sharp until they are wholly worn off.

Two sheets of drawings, bearing fourteen figures, accompanying this specification as part thereof.

Figure 1 of these drawings represents a section through one set of the die projections and recesses of a pair of die-rolls adapted for use in the first stage of my said process, and Figs. 1^a 1^b represent cross-sections of the pass of the rolls as formed at the respective calk-recesses. Fig. 2 is a perspective view of a shoe-blank cut from a blank bar rolled by said rolls. Fig. 3 is a plan view of an illustrative bending-machine, and Fig. 4 is a top view of said blank after it is bent by means of this machine. Fig. 5 is a plan view of a bed-die, representing a pair of swaging-dies to which the bent blank is subjected; and Fig. 6 is a face view of the swaged blank or forging as removed from said dies. Fig. 7 is a top view of the bed-die of a pair of trimming-dies, representing the latter; and Fig. 8 is a top view of the trimmed forging. Fig. 9 is a top view of the shoe (a front shoe) finished by cold-punching. Fig. 9^a represents a longitudinal section thereof on the line *a a*, Fig. 9; and Fig. 9^b represents a cross-section on the line *b b*, Fig. 9^a. Fig. 10 represents a top view of a finished hind shoe made by the same process.

Like letters of reference indicate corresponding parts in the several figures.

In carrying out this invention, a suitable stock-bar of iron is first heated and subjected to the action of a pair of die-rolls, A A², Figs. 1, 1^a, 1^b, having suitable matrical recesses and

projections, which convert the same into a blank bar composed of a series of shoe-blanks, Fig. 2, having calk projections *t h h*, which are broad or thick where they unite with the body or web and taper outward, as indicated most clearly by the cross-sections of the corresponding matrical recesses, *t' h' h'*. (Seen in Figs. 1^a, 1^b.) A shoe blank, Fig. 2, cut from said blank bar and reheated, is next bent edge-wise by means of an ordinary bending-machine, B, Fig. 3, into horseshoe shape. The bent blank, Fig. 4, is then dropped hot into the matrical cavity of the bed-die C, Fig. 5, of a pair of swaging-dies in a drop-press, which dies are adapted to perfect the shape of all the parts of the shoe, as seen in Figs. 9, 9^a, and 9^b, except that they leave it without its nail-holes *n*, Fig. 9, and with a fin or flash, *f*, Fig. 6. More particularly, in this drop-swaging operation the toe and heel calk projections *t h h* are converted from said tapering shape to uniform or substantially uniform thickness from top to bottom, and sufficient thinness throughout to serve as sharp calks, and to remain effectively sharp until wholly worn off. This is effected by matrical recesses *t² h² h²*, Fig. 5, in said bed-die, having substantially parallel sides, as represented by the cross-sections of the respective calks in Figs. 9^a and 9^b; and in so converting the shape of the calk projections their union with the body or web of the shoe is materially strengthened, the surplus thickness of metal at this point being driven partly into the calks and partly into the web, while the metal in the calks proper is efficiently compressed and hardened. The forging, Fig. 6, is now removed from said swaging-dies and adjusted within the aperture of the bed-die D, Fig. 7, of a pair of trimming-dies, which remove its fin *f*, and the trimmed forging, Fig. 8, is withdrawn from the cavity of the same. For an extra quality of shoes, said trimmed forging, Fig. 8, while still sufficiently hot, may be reswaged in said swaging-dies and again trimmed; but this will not ordinarily be required. Finally, the trimmed forging, Fig. 8, is cold-punched, to provide it with the nail-holes *n*, Fig. 9, and is now ready for the hoof or the keg. A hind shoe, Fig. 10, would be produced in precisely the same way, and have identically the same peculiarity as regards

sharp toe and heel calks integral with the body or web of the shoe perpendicular to its sole, and of uniform or substantially uniform thickness from top to bottom, so as to remain effective until wholly worn off; and, apart from this peculiarity, the product may be of any approved pattern, as well as of any of the various sizes of horseshoes and mule-shoes.

I have shown the blank and forging provided in the rolls and dies with a toe-clip, *c*, Figs. 2, 4, 8, 9, 9^a, and 10, by means of corresponding matrical recesses, (represented by *c'*, Figs. 1, 1^a,) but do not limit my process to perfecting the shoes to this extent at the described operations, as the toe-clip is in some cases preferably formed at a distinct operation. Another series of details which may be mentioned are, first, the location of the calk-recesses *t' h' h'* of the die-rolls, Fig. 1, circumferentially in line with the projections *x'*, which form the nail-creases *x* in the blank, Fig. 2, so that the metal displaced by the latter flows into said calk-recesses in the direction of motion, and thus renders the calk projections full and solid; secondly, the bending of the calk projections of the shoe-blank in a horizontal plane at the bending operation illustrated by Figs. 3 and 4; and, thirdly, the swaging of the calk projections in this bent form, as illustrated by Figs. 5 and 6, whereby the calks are effectively arched against the bending strains which they might otherwise be incapable of withstanding, owing to their thinness as sharp calks, and are set in this

arched shape so as to preserve the same and its said advantage. Said constructions and arrangements of parts are consequently preferred.

I do not claim herein a horseshoe having sharp toe and heel calks integral with the body or web of the shoe, perpendicular to its sole, and of uniform or substantially uniform thickness from top to bottom, but claim the same in another specification of even date herewith.

Having thus described my said improvement in the art of making horseshoes, I claim as my invention and desire to patent under this specification—

The within-described process of making horseshoes having sharp toe and heel calks integral with the body or web of the shoe, perpendicular to its sole, and of substantially uniform thickness from top to bottom, consisting in hot-rolling a blank with calk projections that are thick at their union with the body or web and taper outward, hot-bending said blank edgewise, drop-swaging the bent blank in dies having matrical calk-recesses conformed to the finished calks, trimming the forging, and cold-punching the trimmed forging, substantially as hereinbefore set forth.

Dated at New York this 2d day of April, 1885.

J. B. WHITE.

Witnesses:

CHARLES NETTLETON,
CHAS. EDGAR MILLS.