(No Model.) 2 Sheets—Sheet 1.

J. F. ROBINSON.

MACHINE FOR ROLLING HORSESHOE BLANKS.

No. 458,498. Patented Aug. 25, 1891.

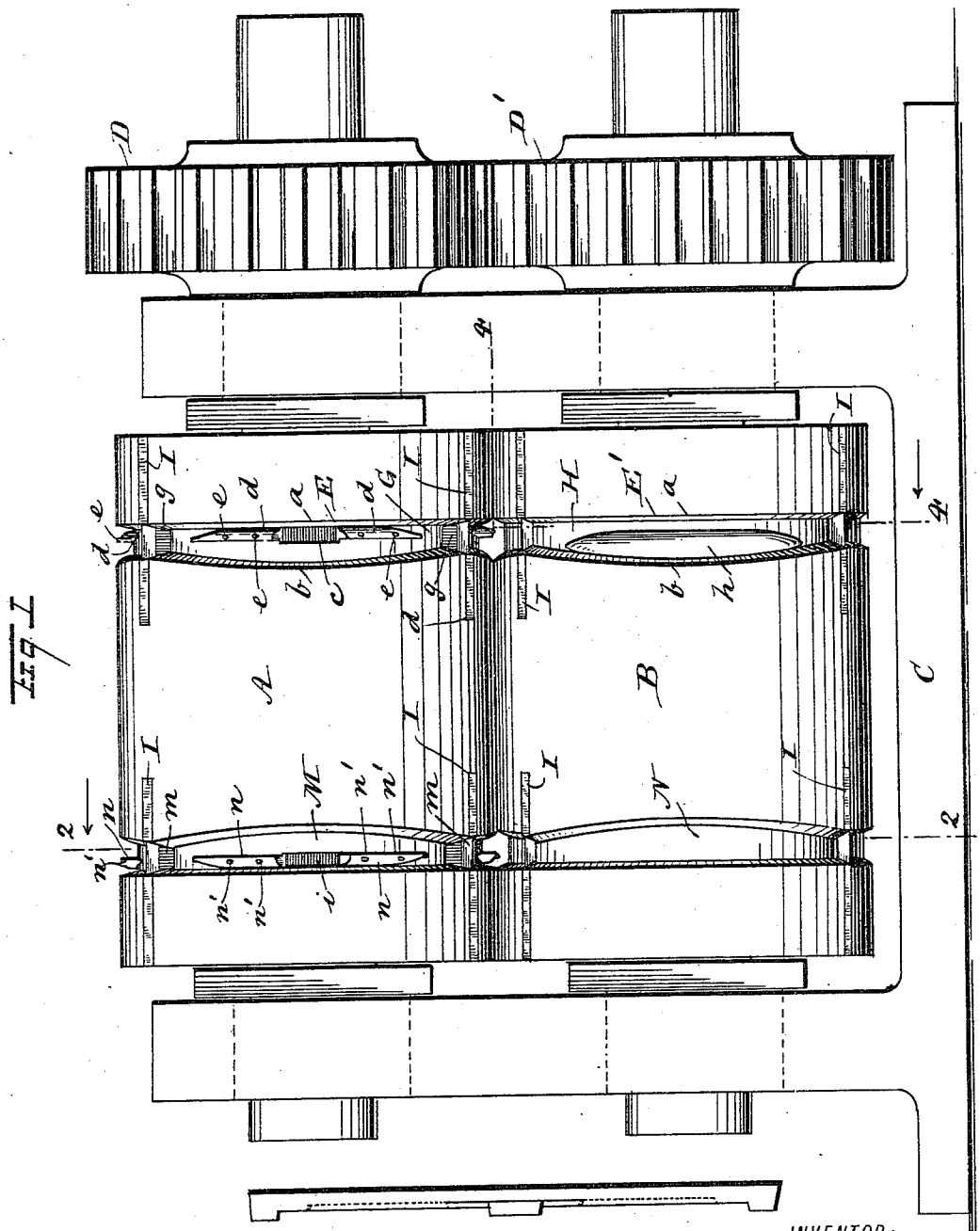


Fig 1

Fig 7

WITNESSES:

H. Walker

C. Sedgwick

INVENTOR:

J. F. Robinson

BY Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig 2

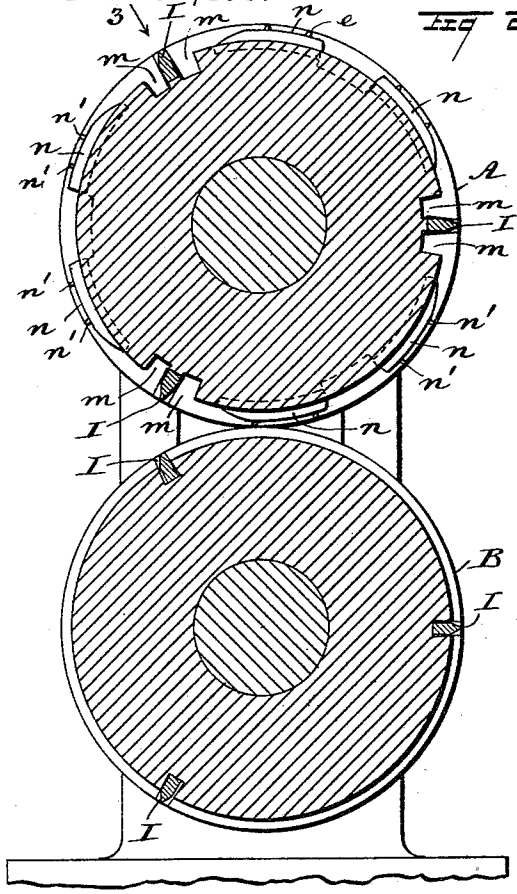


Fig 6

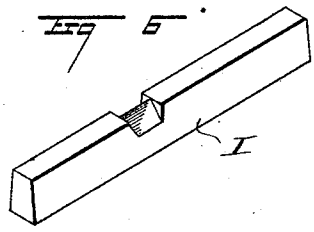
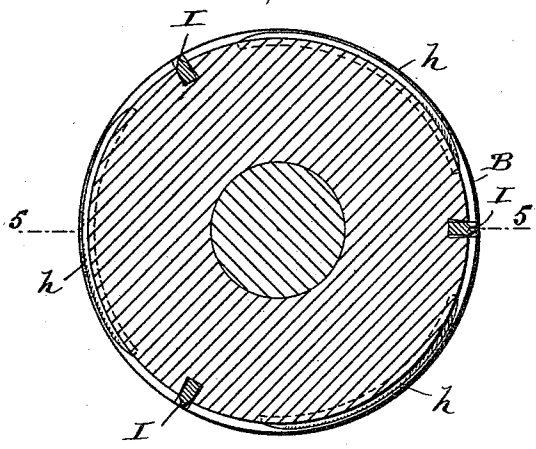


Fig 4



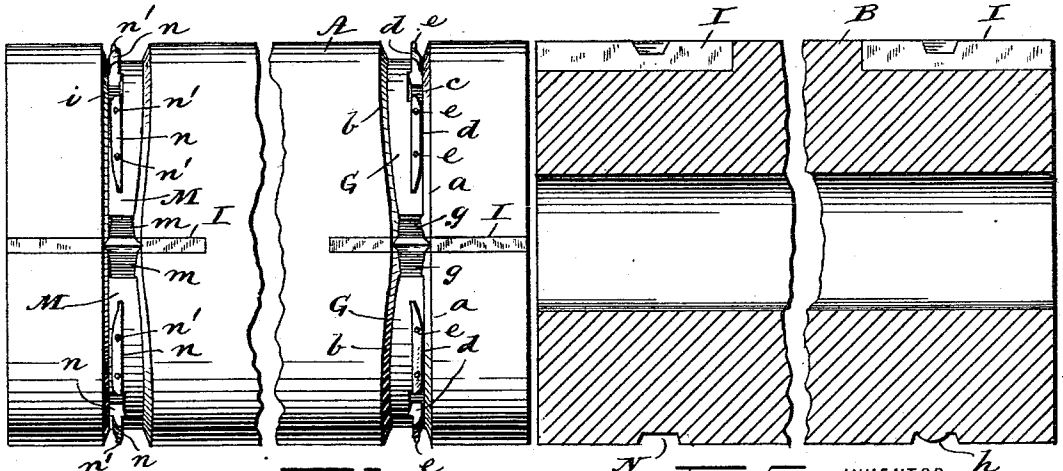


Fig 3 Fig 5

WITNESSES:

H. Walker

C. Sedgwick

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UNITED STATES PATENT OFFICE.

JOHN F. ROBINSON, OF ROCKAWAY, NEW JERSEY.

MACHINE FOR ROLLING HORSESHOE-BLANKS.

SPECIFICATION forming part of Letters Patent No. 458,498, dated August 25, 1891.

Application filed December 1, 1890. Serial No. 373,113. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. ROBINSON, of Rockaway, in the county of Morris and State of New Jersey, have invented a new and useful Improvement in Machines for Rolling Horseshoe-Blanks, of which the following is a full, clear, and exact description.

The invention relates to the novel formation of blanks for the shoes of horses or other animals by rolling the blanks in series from a bar longitudinally, and has for its object to produce a simple and effective device provided with machine-rolls, which will form a series of shoe-blanks consecutively from a bar of metal, each blank being furnished with heel and toe calks and nail-head creases, as well as marks for nail-holes.

With these ends in view my invention consists in the production of a novel machine for the formation of the shoe-blanks in series, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the rolling-machine which is adapted to form horseshoes having toe and heel calks and nail head and hole creases. Fig. 2 is a transverse section of the machine-rolls, taken on the line 2 2 in Fig. 1. Fig. 3 is a broken plan view of the top roll viewed in the direction of the arrow 3 in Fig. 2. Fig. 4 is a transverse section of the lower roll, taken on the line 4 4 in Fig. 1. Fig. 5 is a broken longitudinal section of the lower roll, taken on the line 5 5 in Fig. 4. Fig. 6 is a detached and enlarged view of one of the cutter-bars, which, in pairs on both rolls, sever the blanks from the bar as formed, and Fig. 7 is an edge view of the rolled shoe-blank.

There is a difference in form usually given to horseshoes applied to the front feet as compared to those secured on the rear feet of the animal, owing to the variation in structure of the hoofs. The hoofs on the fore feet being of thinner formation require a concave top face on the shoes applied thereto to insure ease in use and avoidance of injury to the animal, that would become lame in the pastern-joints if the shoes had improper contact with the frog of the foot. In view of the fact mentioned, there are two sets of molding-channels produced on the rolls of the machine exhibited in Fig. 1, as will appear in the description, said channels being adapted to produce complete shoe-blanks, excepting the nail-holes, for the front and hind feet of a horse. The top roll A and bottom roll B are each mounted in the usual approved manner, being provided with journal ends, which engage the frame-housings C revolubly and projecting therefrom at one side to receive the driving spur gear-wheels D D′, motion being communicated by any well-known method to the rolls from a source of power not shown. There are series of shoe-molds formed in the opposite channels E E′ and F F′ on the peripheries of the top roll A and bottom roll B, respectively. One of these pairs of channels contains the series of necessary projections and indentations for the formation of shoes for the front feet of a horse, the other pair of channels having conformations which will produce shoe-blanks for the rear feet of such an animal. The shoe-molds in the opposite channels E E′, shown on the right-hand end portions of the rolls A B, are designed for the production of front shoes, and will first be described. On the entire surface of the channels E E′, which are formed directly opposite each other, three molds for similar shoe-blanks are produced, this number being chosen as most convenient to represent; but it should be understood that the number of molds for blanks may be increased if the diameter of the rolls A B is so proportioned that the circumference thereof may be evenly divided into mold lengths, it being evident that the diameter of the top and bottom rolls must be equal. As the three shoe-blank molds are alike, which form the front shoes unbent in series and cut them off as they are successively produced from a hot metal bar, it will only be necessary to explain the construction of one mold, which occupies nearly one-third of the circumference of the rolls A B, the half-mold on the upper roll A shaping the lower surface of the shoe-blank, the other half of the same blank being produced by a peculiar conforma-

tion in the channel on the lower roll B, which is caused to register with the upper half-section of the shoe-mold by the twin gear-wheels D D'. The edge *a* of the circumferential channel on each roll A B is designed to form the outer edge of the three shoe-molds, or rather of the blanks produced therein, and this edge is sloped or beveled inwardly to insure the release of the blank as it is formed. A suitable width is given to the channel across the center of each shoe-mold to provide a proper width for the shoe-blank, and each mold-section of a single mold is arched slightly on the edge *b*, as shown in Fig. 1, where the full length of the top half-section G and lower half-section H is exhibited.

At the longitudinal center of the mold half-section G a rectangular cavity *c* is formed in the bottom of the channel, which in depth should equal the half thickness of the shoe-blank to be formed therein, the cavity *c* having its walls sufficiently inclined to render it slightly wedge-shaped, thereby giving a toe-calk formed therein a proper shape and permitting a free release of the shoe-blank at this point. It will be seen that the calk-cavity *c* is produced, having one side aligning with the sloping edge or wall *a* of the shoe-mold half-section G.

Adjacent to the end walls of the toe-calk cavity *c* two similar elongated dies of steel *d* are embedded in the bottom face of the mold half-section G, which are given a slight reducing taper from their bases to the top edge, and at spaced intervals on said edges small teats *e* are formed, these dies being provided for the formation of the longitudinal creases on the lower side of a horseshoe, wherein the nail-heads are embedded, the teats *e* marking the places in said creases for the punching of nail-holes in the shoe after the blank is bent into the shape of a shoe.

At each end of the mold half-section G a substantially rectangular socket *g* is produced, which sockets are converged slightly toward their bottoms and serve to form the heel-calks on a shoe-blank, and between each pair of adjacent sockets for the heel-calks a die I is embedded longitudinally of the rolls A B, so that the V-shaped cutting-edges thereon will lie oppositely in pairs and thus be adapted to sever a shoe-blank produced in any mold on said rolls. The mold half-section H, which produces the bottom of the shoe-blank, is of equal depth with that of the half-section G, with the exception that an elongated convex fillet *h* is produced on the bottom face of the mold-section H, which fillet extends an equal distance from the longitudinal center of the mold-section sufficiently to reach past the hoof-quarters, the ends of the fillet being tapered to vanish without any shoulders, so that the coaction of the two half-sections G and H will form a shoe-blank for the front foot of a horse and afford a proper concavity to the top surface of the shoe when it is bent from the blank.

The formation of one of the shoe-blank molds for the rear shoes is shown at M N on the top and bottom rolls A B, respectively, and consists of a top half-section M and bottom half-section N, the former-named being constructed with a toe-socket *i* and heel-sockets *m*, that are identical in form with those already described as formed in the half-sections H G, similar ribs for producing creases in the lower surface of a shoe-blank being shown at *n*, having teats *n'* thereon. The only change in construction of these shoe-blank molds is produced on the lower half-section N, which is destitute of any projections, and consequently forms the top surface of the shoe-blank for hind feet of horses, nearly level, and the shoes of about even thickness throughout their length. Similar cutting-dies I are embedded between each mold half-section M N and oppositely, so as to cut off the blanks as they are successively formed by the revolution of the rolls A B in a proper direction.

It will be evident from the foregoing description that the passage of a hot bar of iron or low-grade steel between the rolls A B, when they are rotated toward each other, will force the metal into the peripherally-formed shoe-blank molds and crowd it into the cavities therein, so as to produce integral toe and heel calks, creases, and nail-hole marks on each blank, which are cut off as they are formed successively.

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

1. In a rolling device for the formation of horseshoe-blanks, the combination, with a housing-frame, of two revoluble rolls thereon, each roll having a series of horseshoe-mold half-sections peripherally formed thereon and adapted to mate in pairs, the bottom half-section of each mold being provided with sockets to form toe and heel calks on the blank, and knife-dies that are adapted to sever the blanks when formed on a bar, substantially as set forth.

2. In a rolling device for the formation of horseshoe-blanks, the combination, with a housing-frame, of two revoluble rolls thereon, each roll having a series of horseshoe-mold half-sections peripherally formed thereon and adapted to mate in pairs, the bottom half-section of each mold being provided with sockets for the formation of toe and heel calks on the blanks, creasing-dies in said lower-mold half-section, and a transverse knife-die between the half-sections of all the molds on the rolls, substantially as set forth.

3. In a rolling device for the formation of horseshoe-blanks, the combination, with a housing-frame, of two revoluble rolls thereon, each roll having a series of horseshoe-mold

half-sections peripherally formed in alignment thereon and adapted to mate in pairs, the bottom half-section of each mold being provided with sockets for the formation of toe and heel calks integrally on the shoe-blanks, inserted creasing-dies, each having teats to mark nail-holes, a fillet of elongated form and convex face in the top half-section of each mold, and a transverse knife-die between each mold half-section on both rolls, substantially as set forth.

JOHN F. ROBINSON.

Witnesses:
GEORGE T. ROBINSON,
JOSEPH ROBINSON.