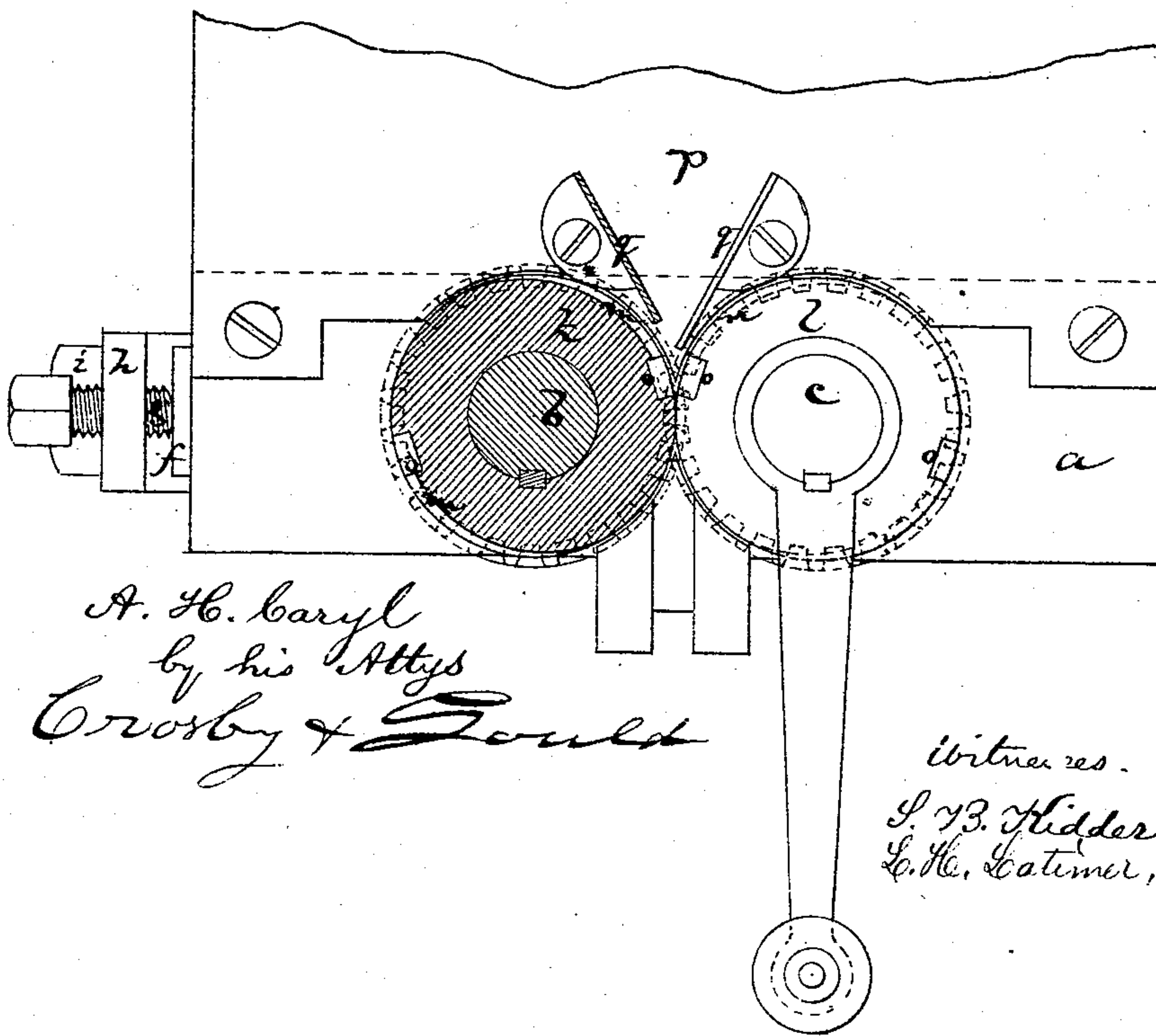
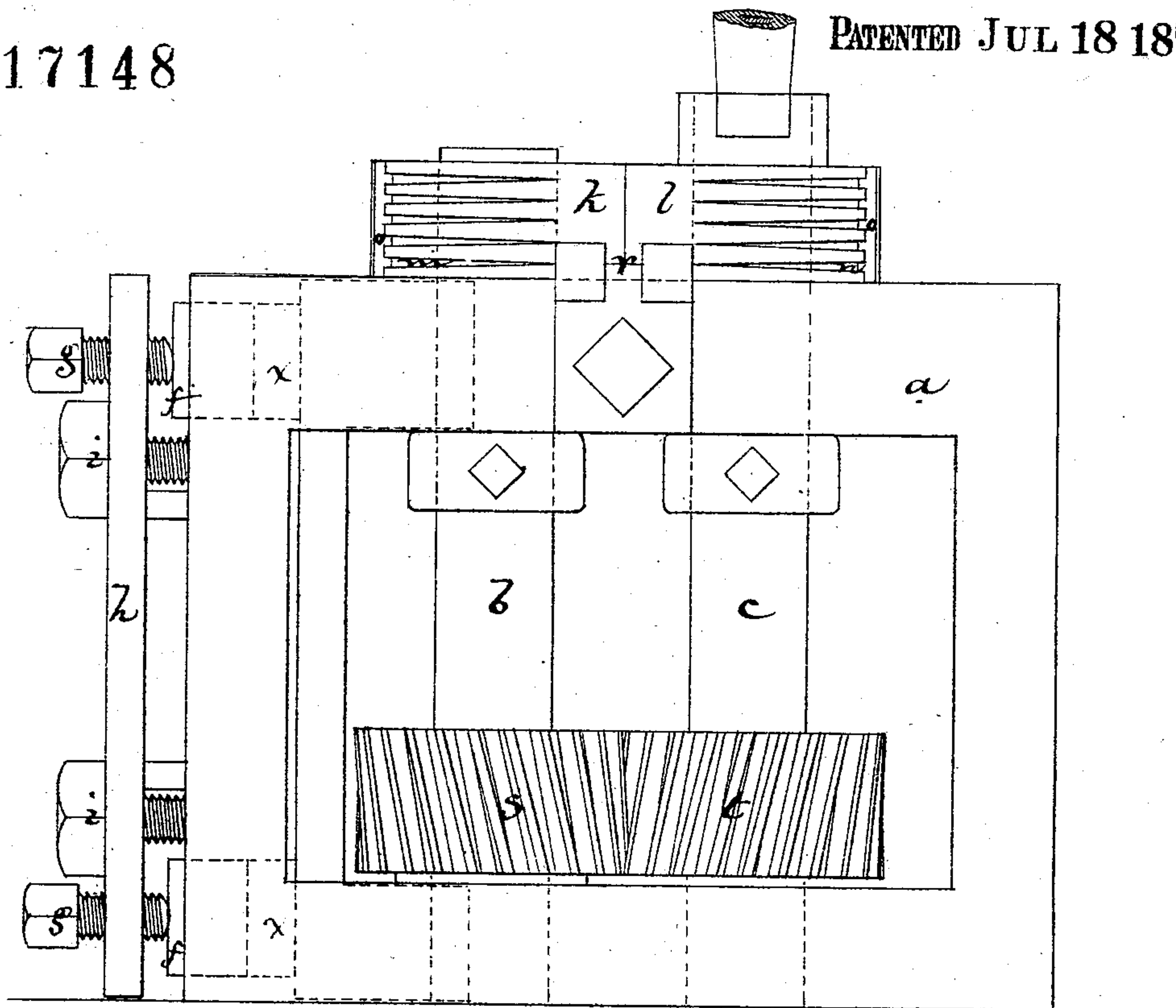


A.H. Caryl
Impt in the Manufacture of Horse-Shoe Nails,

117148

PATENTED JUL 18 1871



A. H. Caryl
by his Attys
Crosby & Gould

Witnesses.
J. B. Hilder.
L. H. Latimer,

UNITED STATES PATENT OFFICE.

ALEXANDER H. CARYL, OF GROTON, MASSACHUSETTS.

IMPROVEMENT IN THE MANUFACTURE OF NAILS FOR HORSESHOES.

Specification forming part of Letters Patent No. 117,148, dated July 18, 1871.

To all whom it may concern:

Be it known that I, ALEXANDER H. CARYL, of Groton, in the county of Middlesex and State of Massachusetts, have invented an Improvement in the Manufacture of Horseshoe-Nails; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practice it.

My invention relates particularly to a method of hardening or stiffening the shanks of horseshoe-nails.

Hot-forged machine-hammered horseshoe-nails, though superior in most respects to all other machine-made nails, do lack the requisite or desirable stiffness. And other cut and hot-forged horseshoe-nails are deficient in the desirable and requisite rigidity. To remedy this I roll the opposite edges of the shank, when cold, of a wrought nail, finished as to shape, and such edges alone, in tapering grooves between two cylindrical rolls, the cylindrical faces of which meet, the nail being held in position so that its head is seized in two vertical slots or recesses in the opposite rolls and by two shoulders of said recesses, the die-grooves or die-groove faces then seizing or biting upon the shank and passing upon its opposite edges, condensing the metal thereof and imparting the requisite or desirable rigidity thereto. It is in the process of taking a wrought nail, finished as to shape, and then hardening and rigidifying its shank by rolling its opposite edges, and such edges alone, when cold, that my invention consists.

In practicing my invention I prefer to use such a machine as is shown in the drawing, in elevation and in plan, the latter view showing one of the die-rolls in section.

a denotes a strong quadrangular frame; *b c*, two vertical shafts journaled therein, one of the shafts being journaled directly in the frame and the other in or against sliding bearings, which are supported against strong solid or block rubber or other elastic material *x*, held in place by pistons or slides *f*, against the ends of which set-screws *g* are forced, these screws working through nut-threads in a plate, *h*, which plate is bolted to the frame by bolts *i*. At the top of the shafts *b c* is a pair of die-cylinders or rolls, *k l*, each roll having a peripheral die-groove, *m* or *n*, extending from a slot or recess, *o*. The bottom of each cylinder rests on the top of the frame *a*, and the

two grooves *m n* are in a plane with the top of a table, *p*, on said frame, or so that a nail presented to the cylinders while resting upon said table is in a plane to enter the grooves. At the point where the nail is presented to the dies two guide-plates, *q*, are placed, each plate being cut away at the angle to admit the head of the nail. The head being presented under the guides, and so that it is between the slots or recesses *o*, the die-rolls are turned and the shoulders strike the head and move it forward until the die-surfaces bite upon the opposite edges of the shank, when they will carry the shank forward, rolling it down and condensing and hardening the edges as they roll, so that when the nail is fed through the shank will have been made hard and rigid by reason of such rolling of its edges. The nails are received from the dies upon a table or guide-plate, *r*. The shaft of one roll is driven from the other by two gears, *s t*, and, to prevent backlash and keep the grooves in proper relative position, I make each of these gears with twist or skew-teeth, as seen in the drawing.

Each cylinder is made with two die-grooves in the same horizontal plane, so that at each rotation of the cylinders two nails can be hardened. Each cylinder is also formed with a vertical series of die-grooves, placed at a short distance apart, as seen in the drawing, all the grooves of any one series opening from the same head-receiving slot or recess. By this construction the grooves of several series may be all turned while the cylinder is once in the lathe, while as either pair of grooves becomes worn so as to be ineffective, or not properly or fully effective, the ends of the cylinders may be turned or planed off until the next pair is brought into proper position relatively to the end of the cylinder.

Cutting-edges may be connected with the rolls to clip off the superfluous metal at the point of each nail.

I do not claim, broadly, the treatment of metals by cold rolling; nor do I claim anything shown or described in Polsey's patent No. 92,355; but

I claim—

As my improvement in the manufacture of horseshoe-nails, the process of taking a wrought nail finished as to shape, and then cold rolling its edges, and its edges alone, in die-grooves, substantially as described.

A. H. CARYL.

Witnesses:

A. H. CARYL, JR.,
S. A. HAMLIN.