

C. D. WRIGHTINGTON.
Horseshoe-Nail Machine.

No 68,824.

Patented Sept. 10, 1867.

Fig. 2

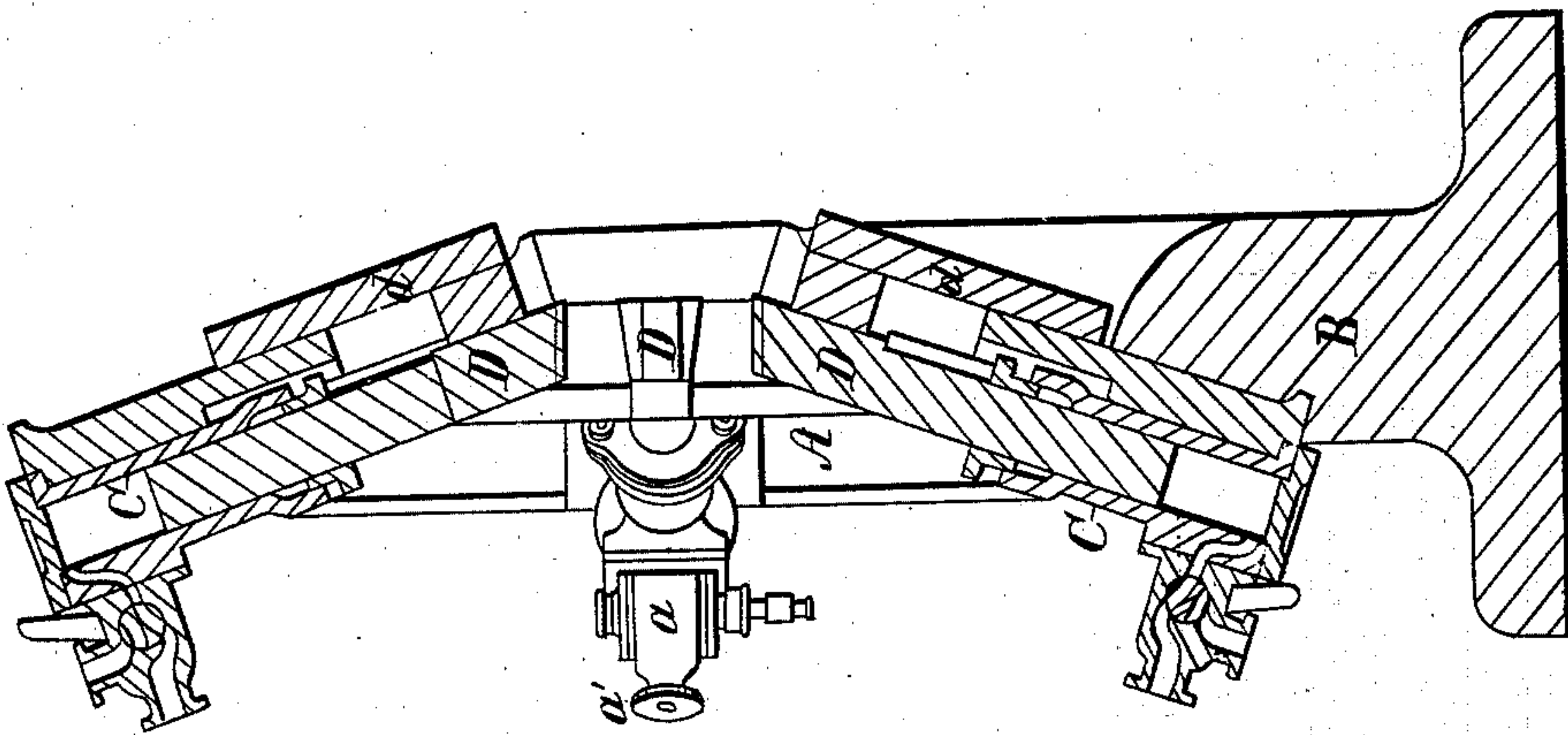
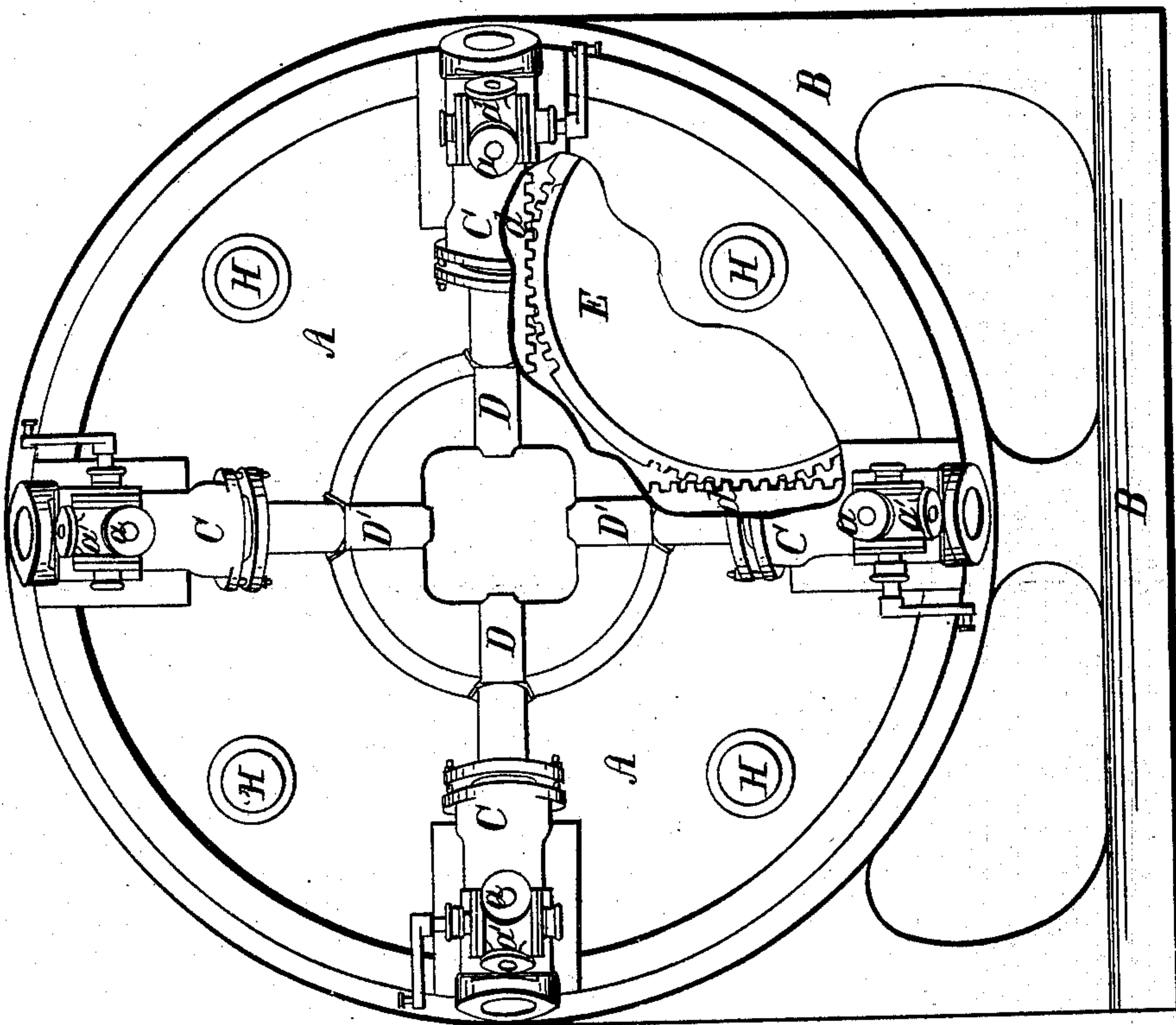


Fig. 1



WITNESSES

Chas. F. Fieper.
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INVENTORS:

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by J. H. Adams. Atty.

United States Patent Office.

CHARLES D. WRIGHTINGTON, OF FAIRHAVEN, AND BENJAMIN P. RIDER,
OF CHELSEA, MASSACHUSETTS.

Letters Patent No. 68,824, dated September 10, 1867.

IMPROVED HORSE-SHOE NAIL MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that we, CHARLES D. WRIGHTINGTON, of Fairhaven, in the county of Bristol, and BENJAMIN P. RIDER, of Chelsea, in the county of Suffolk, and State of Massachusetts, have invented a new and useful improvement in Machines for Making Horse-Shoe Nails, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents an elevation of our machine, with a part of the bed-plate and steam-cylinders removed to show the gearing for operating the hammers.

Figure 2 is a vertical section of the machine.

Similar letters indicate like parts in the several figures.

The object of our invention is to produce a simple, efficient, and rapidly operating machine for making horse-shoe nails; and the invention consists in connecting the hammers to the pistons of steam-cylinders, so that they shall be operated directly by the action of steam introduced into the said cylinders, and the alternating movements of the hammers and pistons shall be effected by means of segmental or circular gears engaging in toothed racks attached to or forming a part of the pistons, or by equivalent devices in connection with steam-power, so that as two of the opposing hammers are forced towards each other, by the direct action of the steam, the other two opposing hammers will be simultaneously retracted by means of gears operated by the forward motion of the first-named hammers without the direct agency of the steam.

Referring to the drawings, A represents the bed-plate or support for the operative parts, properly mounted on a frame, B. The bed-plate A is made of a somewhat concavo-convex or dish form, with an opening in the centre, and to its inner or concave side are attached four steam-cylinders C, at equal distances apart, and so arranged that the hammers attached to the pistons opposite each other shall come together alternately in the central opening. The cylinders C are provided with proper induction and eduction ports or steam-passages, to and from which the steam is admitted and discharged by means of valves, which may be operated in any suitable manner in connection with the steam-power. D D' D' represent the hammers, which may be attached to or form a part of the pistons of the steam-cylinders, and to each piston or hammer in the rear of the bed-plate is attached a rack, d. These racks are provided with teeth on each side, which are made to engage with circular or segmental gears E turning on centres or axes H, attached to the bed-plate A, so that as two opposite hammers are approaching each other, the other two hammers will at the same time correspondingly recede from each other, and thus the motions of the two opposing hammers will certainly and continuously alternate with the other two opposing hammers. The cylinders and hammers being attached to the concave side of the bed-plate A, are caused to incline inwardly towards the centre or opening of the said bed-plate, the effect of which is to impart a drawing force to the blow of the hammers, and thus tend to more rapidly reduce the rod from which the nail is formed to the proper size. The faces of the opposing hammers being parallel with each other they will be at an angle with the axial line of the hammers. The hammers are driven forward by the force of the steam which enters the proper induction port, and at the end of the throw of the piston the eduction valve will be opened, two opposing hammers being thus simultaneously operated. At the moment of contact of the two opposing hammers with an intervening object the force of the steam ceases to act, and is immediately transferred to the other two opposing hammers, which are operated in the same manner, the forward motion of each pair acting, through the medium of the racks and segmental gears, to retract the other opposing pair. Instead of racks and gears above described for imparting an alternate reciprocating motion to the hammers, other equivalent means may be adopted, such as a system of levers, &c.

By means of the direct action of the steam-hammers the machine may be simply constructed, which enables it to be driven at a high rate of speed, and consequently perform more work in a given time than a complicated machine, or such as are in general use. The direct action of the hammers, by their necessary accuracy, also insures great uniformity in the manufacture and finish of the nail.

The simplicity of the machine necessarily involves but a small amount of wear and consequent repairs, and the machine is enabled to be very readily and easily started or stopped, when desirable. The hammers or pistons may be constructed of great strength, so as to act with efficiency, and with little liability to injury.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. We claim the combination of the four hammers D D', attached to or forming a part of the pistons of steam-

cylinders, with the gears E arranged substantially as described, whereby the forward motion of the two opposing hammers D D, actuated by the direct action of the steam, will operate to retract the opposing hammers D' D', substantially as described.

2. We claim the arrangement of the hammers D D' on the inclined sides of the bed-plate A, as and for the purpose described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHAS. D. WRIGHTINGTON,
BENJAMIN P. RIDER.

Witnesses:

J. H. ADAMS,
DAVID KELLEHER.