

NORTHWESTERN HORSE-NAIL CO. *v.* NEW  
HAVEN HORSE-NAIL CO. AND OTHERS.<sup>1</sup>

*Circuit Court, D. Connecticut.* August 4, 1886.

PATENTS FOR INVENTIONS—HORSE-NAIL  
MACHINES.

Letters patent No. 172,660, of January 25, 1876, to Robert Ross, for an improved machine for the manufacture of horse-nails, considered, the seventh and eighth claims thereof construed, and the former found to be infringed.

In Equity.

*Coburn & Thatcher* and *Benj. F. Thurston*, for plaintiff.

*Edward H. Rogers* and *Charles E. Mitchell*, for defendants.

SHIPMAN, J. This is a bill in equity to restrain the alleged infringement of letters patent No. 172,660, applied for November 16, 1872, and issued January 25, 1876, to Robert Ross, as inventor, for an improved machine for the manufacture of horse-nails. An automatic horse-nail machine must produce, as nearly as may be, the same nail which was formerly made by the hand of the smith. "The requisites of a finished horse-shoe nail," says the plaintiff's expert, "are, first, it shall be of very tough metal, capable of bending without breaking; that the head and neck shall remain soft, the body of the nail shall be hardened slightly, and to a greater degree on one side than on the other; that it shall have a chisel or bevel point, which shall be the hardest portion of the entire nail."

Before the date of the Ross invention there were horse-nail machines having a disk which carried the blanks by a step by step movement, and the subsequent operations of bending, stiffening, and clipping were successively and simultaneously performed. Upon this disk the blanks were generally

radially arranged. The machines of the Fowler patent, No. 64,964, dated May 21, 1867; of the Sandham patent, No. 109,844, dated December 6, 1870; and of the Wills patent, No. 117,584, dated August 1, 1871,—are examples of this general class. Each machine differs materially from the Ross structure, notably in the fact that the stiffening process is not performed by cold rolling, and that in the Fowler and Wills carrying devices the blanks are arranged radially, and in the Sandham machine they are in pockets, and do not hang vertically by their necks. In the first 235 two machines the stiffening is effected by pressure; in the Wills machine, by hammering. Other machines did a part of the work only. Of these the machine of the Chase patent, No. 78,644, dated June 9, 1868, which pointed and sheared the nail, and the Globe Nail Company's machine, which also had a feeding disk which carried radially projecting nails, and presented them successively and simultaneously to beveling and trimming devices, are examples. By the machine of the Hall patent, No. 121,511, dated December 5, 1871, the blanks were stiffened on each side by cold rolling, the points were beveled between rolls, and were subsequently sheared. This machine had no carrier. The blanks were fed through a vertical tube. The machine of the Wills patent, No. 122,876, of January 16, 1872, had a carrier in the form of a revolving screw, and cold rolled the blanks on one side. A small roller was passed over the nail while resting upon a stationary bed. It was beveled and trimmed on another machine. The machine of Carter's English patent, No. 1,338, dated April 23, 1868, was for making carpenters' nails, spikes, and bolts from rods of hot iron. After a heading die had formed the head of the nail, and while it was held by a gripper, it was tapered and pointed, by means of a roller on one side and a die on the other, and then was released, and discharged. The roller and die are said to be, and

I assume that they are, like the roller and die of the Ross machine.

It will thus be seen that before Ross' invention horse-nails were made, by different processes, upon one machine, the various operations being successively and simultaneously performed; and also that the blacksmith's art in stiffening one side of the nail had been imitated by cold rolling one side, but that horse-nails stiffened by cold rolling had not been made upon one machine having an intermittent carrier. It may be added that, by hammering or by cold rolling, the skill of the blacksmith is more nearly attained than by pressing.

Ross' invention consisted, in general terms, in a machine in which a new feeding mechanism, wherein the blanks hang vertically by their necks, presented the blanks thus suspended, by a step by step movement, to a roller and die, so that the nail was brought in front of the die, and rolled upon one side, and thereafter, in succession, to pointing and trimming dies, each operation being performed simultaneously.

The principal parts of the feeding mechanism are a horizontal ratchet feed-wheel, which is caused to revolve with an intermittent motion, and two stationary concentric guide-rings, so as to have a concentric space between the two. The outer ring exactly incloses the feed-wheel. The head of the blank drops through the spaces between the teeth upon the periphery of the wheel, while the annular space between the guide-rings is wide enough to receive the shank of the nail, but not wide enough to permit the head of the nail to pass. As the feed-wheel rotates, it forces the blank to pass around in the space between the rings that support it. The carrying device consists 236 of the intermittent notched feed-wheel and the concentric guide-wheels.

The first claim, which is for the feeding mechanism, is as follows

“The improved nail-carrying device, composed of the two concentric guide-rings and the notched feed-wheel, provided with teeth projecting downwards, and operating to carry the nails around between the rings.”

There was nothing particularly new in the pointing or trimming devices, or in the successive and simultaneous operation of the different processes by which a nail is made, but the Boss carrying device was new; and neither it, nor any other intermittent carrier, had been united with a roll and die in the manner specified in the patent, and an intermittent carrier had not been united in one machine with rolling, beveling, and trimming devices.

The seventh and eighth claims of the patent—the only claims which are said to be infringed—are as follows:

“(7) The combination in a horse-nail machine of a feed-wheel, a roll-die, and a nail-roll, together with their respective connections with the main shaft, substantially as hereinbefore described, so that the nail may be brought into position in front of the die before the die is advanced, and the die be advanced before the roll begins its work.

“(8) The arrangement in a nail-machine of the feeding mechanism, the rolling devices, and the pointing and trimming devices, substantially as hereinbefore described, so that, when the nail-carriage is full, a nail shall be brought into position before the trimming die, and another before the beveling die, at the same moment that one is brought into position for the action of the rolling mechanism.”

The seventh claim has reference to the combination of a carrier wheel of the Ross type, a roll-die, and nail-roll for rolling the nail on one side only, together with their respective connections with the main shaft, so arranged or connected therewith that the nail is brought in front of the die before the die is advanced; and then, after the die is advanced, the roll begins

its work by passing down over the die, wiping or rolling the nail. It is for a carrier wheel in which nails hang vertically by their heads, a roll-die, and nail-roll, substantially as described, and their connections with the main shaft, so that the nail, while suspended, shall be brought to the roll and die, which shall operate upon it in the described order and manner. This claim specifies a feed-wheel of the Ross type, and does not include the entire carrying device of the Ross machine.

The eighth claim includes the primary elements of the Ross machine, as they are specified in the patent; the feeding mechanism; the rolling, the pointing, and trimming devices, arranged with reference to each other, as specified in the claim. The feeding mechanism is that which has been before described, and which is described in the first claim, and embraces more than the feed-wheel of the seventh claim.

The carrying device of the defendants is described by their expert as follows:

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“It consists of a ring having upon its inner surface an inwardly projecting flange, in which are a series of equidistant recesses, to be somewhat narrower than the head of the nail blank to be introduced. The ring is supported from below, and so as to leave the space below the notches or recesses in the ring clear, and so that a nail introduced into either of the said recesses, point downwards, will fall until the head comes to a bearing on the ring, and so that, if the ring be rotated, it will carry the blanks so introduced in a circular path. On the periphery of the ring is a series of notches corresponding to the notches on the inside of the ring.”

In the Ross machine the movements of the carrier, the roll, and the roll-die, are all derived directly from the main shaft. In the defendants' machine the pointing and trimming devices receive their movements directly from the main shaft, but the rolling devices receive their motion from a counter-shaft, at right angles to

the former. In the defendants' machine the roll-die, the nail-roll, the pointing and trimming devices, are substantially those of the Ross patent, and the nail, while suspended, is brought by the feed-wheel into position, in front of the die, before the die is advanced, and the die is advanced before the roll, which rolls the nail on one side only, begins its work. A nail is also brought into position before the trimming die, and another before the beveling die, at the same moment that one is brought into position for the action of the rolling mechanism.

Upon the question of infringement of the seventh claim the defendants make several points, which involve different constructions of the claim.

1. If the claim is, broadly, for any dial feed-wheel and a stiffening device combined, so that the stiffening device would operate upon the blank presented by said wheel, then it was anticipated by the Fowler and Sandham patents and the first patent of Wills. This construction is so obviously inadmissible that it was not pressed.

2. If the seventh claim is, broadly, for a dial feed-wheel, a roll-die, and a nail-roll, arranged with reference to each other, as recited in the claim, and irrespective of the peculiar connections between said parts and the main shaft, then the invention was the substitution of the roll-die and nail-roll of the Carter patent in place of the stiffening devices in the pre-existing patents, which have just been mentioned, which substitution involved nothing more than the skill of the trained mechanic, and was unpatentable. Assuming that the improvement did substitute the rolling device of the Carter patent for the stiffening device of some other patent, the conclusion that the Carter device could have been put into a horse-nail machine with any dial feed-wheel, or especially with a new feed-wheel, without that reconstruction which would require invention, seems to me to be very

untenable. The inventive skill of the patentee does not require much discussion, in view of the pre-existing devices and his machine. An examination of them all Shows that the Ross machine, as well as its predecessors, was the product of a creative mind. He made a new carrying 238 device, and he made a new combination of a carrier wheel of his type, and a roller and roll-die.

3. If the seventh claim includes the connections whereby all the movements are derived from the main shaft, then the defendant's machine does not infringe. The feed-wheel, roll-die, and nail-roll of the defendant's machine are moved by one main shaft, as the primary factor of their movements. "There is a short counter-shaft interposed between the main shaft and another shaft that runs lengthwise of the machine, and motion is transmitted from said main shaft to said other shaft by gear-wheels. Said lengthwise shaft has upon it an eccentric and a cam. The eccentric carries the roll carriage, and causes it to reciprocate at each revolution of said shaft, and the cam actuates the vibrating arm to which the roll-die was attached."

It would be an extremely narrow construction of this claim to-compel the connections to be directly with the main shaft, and to say that there was no infringement because a part of the devices got their direct movement from a counter-shaft. Such a construction would also be unjust to other patents for machines wherein motion must necessarily be transmitted, either directly or indirectly, from one shaft. The means by which motion is transmitted from one shaft to another are so various, and so well known to machinists, that the limitation which is desired by the defendants might result in an easy spoliation of inventions. The defendants' positions in regard to the claim, which were selected by an experienced and skillful expert, and by able counsel, appear to me to be

so untenable that a court is compelled to hold that the claim is being infringed.

The plaintiff regards the successive and simultaneous action upon the different nails as the important element of the eighth claim. I think that as much importance should be paid to the primary elements of the different devices as to the manner in which the work is delivered by the carrying device. The feeding device of the defendants is not claimed to be an infringement of the concentric rings and the notched wheel of the plaintiff's machine, and the eighth claim is not infringed.

There was a misunderstanding on the part of the plaintiff as to the effect of the stipulation which had been entered into, and the existence of the plaintiff corporation was not proved. Unless its corporate capacity is admitted, opportunity will be given to make the requisite proof before an interlocutory decree is signed.

Let there be a decree against infringement of the seventh claim, and for an accounting.

<sup>1</sup> Edited by Charles C. Linthicum, Esq., of the Chicago bar.

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