

HARTFORD MACHINE SCREW CO. *v.*  
REYNOLDS AND OTHERS.<sup>1</sup>

*Circuit Court, D. Connecticut.*      February 9, 1886.

1. PATENTS FOR INTENTIONS—CONSTRUCTION OF CLAIM.

The fourth claim of letters patent reissue No. 9,290, of July 13, 1880, to Christopher M. Spencer, for machine for making metal screws, is in its most important particulars, a reproduction of the first claim of the original patent, No. 143,306, of September 30, 1873, and is valid.

2. SAME—EQUIVALENTS—INFRINGEMENT.

The claim of the patent sued on was for a combination of mechanical devices for feeding forward a rod as screws were cut from it, and covered a combination of a hollow mandrel, a conical-ended sleeve, and a friction-feed device, or tube, arranged concentrically, one within the other, and in the order named. Defendants used the same parts, but placed the conical-ended sleeve outside the mandrel. *Held*, that this was an immaterial difference, and such arrangement was an infringement.

*Charles E. Mitchell*, for plaintiff.

*John K. Beach* and *Benj. F. Thurston*, for defendants.

SHIPMAN, J. This is a bill in equity to restrain the infringement of reissued letters patent No. 9,290, issued July 13, 1880, to Christopher M. Spencer, assignor to the complainant, for an improved machine for making metal screws. The original patent, No. 143,306, was dated September 30, 1873. The machine, as a whole, is a very important and useful one. The brief statement which the inventor gives, in the reissued specification, of the character of the invention is as follows:

“The machine automatically makes screws upon the end of a rod. This, my improved, machine has been organized with special reference to operate upon the end of a rod, form a screw, remove the threading tool

from the screw-thread cut on the rod, cut off the said screw, and then to automatically feed the rod forward, and make another screw, and so on until the rod is exhausted. By my plan the intermittent feeding of the rod is effected by a frictional feeding device made as a slotted, rotating, and reciprocating tube, and the rod is rotated by a rotating chuck having jaws, the chuck having no function whatever in the forward movement of the rod, and, in connection with such mechanism, to feed forward and rotate the rod at the proper time. I have combined and arranged a rotating tool-carrying turret, the tools of which are brought intermittently into proper position to turn down and thread the end of the rod; and the screw having been threaded, and the threading tool removed from it, a cutting-off tool is moved forward, and made to cut the screw from the end of the rod. By feeding the rod forward, by means of a friction feed, such as herein employed, rather than by a chuck, I am enabled to simplify the construction of the chuck, as it has but one motion, viz., that of rotation; and by employing a rotary tool-carrying turret, and cutting-off tool, as hereinafter set forth, I am enabled to form and thread the screws and cut them off all in the simplest and most expeditious manner; my mechanism, by reason of its simplicity and mode of operation, increasing the speed of manufacturing screws, and decreasing their cost beyond what would be the case if the turning-down and threading tools were operated by independent carriers; and so, also, by withdrawing the threading tool from 529 the screw before it is cut from the rod, the use of a screw-driver to remove the screw from the threading tool is obviated."

It will be seen that the mechanism is threefold: *First*, for feeding forward and rotating the rod; *second*, for forming and threading the screw upon the end of the rod; and, *third*, for cutting off the completed screw. The alleged infringement relates to the first-named

portion of the machine, and to the fourth claim of the reissue. This part of the mechanism is described by Mr. Shepard, one of the plaintiff's experts, as follows:

"These parts consist of a revolving chuck provided with suitable holding jaws. This chuck is mounted upon the end of a revolving shaft, which has no longitudinal movement; the shaft being made hollow to receive the friction-feed device and the rod from which the screws are to be formed. The friction-feed device consists of a tube of a size which will allow the rod to pass through it, said tube being split at its forward end, and the two opposite sides impinge upon the rod with sufficient friction to carry the rod forward when the tube is moved in the direction of the chuck; while, on the other hand, if the rod is pinched between the jaws of the chuck, the feed device or split tube will slip upon the rod as it is drawn back. One end of the feed device is provided with an annular groove to receive a projection on a slide or slipper, which slide is reciprocated by a cam, thereby imparting the necessary reciprocating movement to the feed device. The jaws are forced together and permitted to open by means of a conical-ended sleeve, which is outside of the friction-feeding device or feeding tool. This sleeve is also provided with a shipping groove, connected, by means of a suitable slide, to another cam, whereby a reciprocating movement is imparted to the conical-ended sleeve. These cams, feed device, and conical-ended sleeve are so combined with each other and with the chuck that the feeding device is fed forward at a time when the conical-ended sleeve is withdrawn, so as to permit the jaws to open, and, after the feeding device has reached the extent of its forward movement, said conical-ended sleeve operates to close the jaws, and hold the rod from slipping backward while the feeding device is drawn back to get a fresh hold on the rod. This friction-feed device reaches well

up towards the jaws, so that it will feed the rod until only a very short piece is left."

The friction-feed device or tube runs inside the conical-ended sleeve, which runs inside the revolving shaft or mandrel. Thus there are three concentric sleeves, the mandrel being outside.

In the application for the present reissue the patentee claimed, as a distinct invention, "the friction-feed device made as a tube, slotted at its end, and sprung together to grasp the rod;" but acquiesced in the refusal of the patent-office to allow that claim, and erased it from the application. It must be assumed, therefore, that the invention consists in the combination of the devices mentioned in the respective claims. The gist of that part of the invention which relates to the feeding mechanism was the automatic feeding device, acting in connection with the jaws, to feed the rod forward when the jaws are open,—the chuck and rotating shaft having no longitudinal movement,—and, when the jaws are shut, and the stock is being held and operated upon, to slip back and take a new hold, preparatory for a new feed, and the location of the feeding device 530 within the sleeve which closes the jaws, whereby the stock can be worked up with great economy of material. It is thus apparent that, although the friction tube must be considered to be old, it is a very important member of the combination which includes the feeding mechanism.

This part of the machine is claimed in the first claim of the original patent, as follows:

"In combination with revolving chuck, A, having jaws, *o, o*, the inner and outer sleeves, *c, w*; the former, by intermittent reciprocating motion produced by cam, H, feeding the stock a suitable length through chuck, A; the latter by a similar motion produced by cam, L, alternately opening jaws, *o, o*, to permit the passage of

stock, and closing them to hold stock to be operated upon by suitable tools.”

The same combination is claimed in the fourth claim of the reissue, as follows:

“In combination, the revolving chuck, *g*, provided with jaws, *g*, the friction-feed device, *d*, to grasp the rod, and the sleeve, *f*, the cam, *c*, or its equivalent, to reciprocate the sleeve *f*, to close the jaws while the rod is being rotated, and the tube, *d*, drawn back, and to permit the jaws to be opened as the tube is moved forward to feed the rod forward, all substantially as described.”

This claim is, in its most important particulars, a reproduction of the first claim of the original patent, and differs from the second and third claims of the reissue in that they specify that the conical-ended sleeve is located between the friction sleeve and the hollow shaft. The location of the sleeves, with reference to each other or to the mandrel, is not stated in the fourth claim; but, in order to avoid the vice of an improper expansion of the original patent, the claim must receive the same construction which properly belonged to the first claim of the original, and the two sleeves are the inner and the outer sleeve of that claim.

Looking more closely into the claim, the defendants insist that the two sleeves are not only an inner and outer sleeve, with reference to each other, but that it is indispensable that nothing should be interposed between them; while the plaintiff says that the claim had no reference to the location of the sleeves with reference to the mandrel.

The three sleeves of the Spencer device are so constructed that the conical sleeve is interposed between the mandrel and the friction tube; but I do not perceive that, in the specification or in the claims of the original patent, that form of construction was made an indispensable feature of the mechanism, as it was apparently made in the second claim of the

reissue. The first claim of the original was, so far as the two sleeves are concerned, for an inner friction slotted tube and an outer conical sleeve, which are in fact concentrically arranged within the hollow shaft; but it was not designed that the form of the arrangement with reference to this shaft should be so essential that a known equivalent method of arrangement should be without the patent. The language of the claim did not require such a construction, 531 and the invention did not consist in the exact order of arrangement, with reference to the hollow shaft, but had the broader scope which has been stated.

The feed devices of the defendants' mechanism are the counterparts of the plaintiffs machine, except that the conical sleeve slides upon the outside of the hollow shaft which carries the chuck, and acts upon the jaws of the chuck in the same way as the corresponding sleeve of the Spencer machine does; while the friction tube operates, in each machine, in the same way with reference to the other members of the combination. This is an immaterial difference.

The feeding device in the Matthews machine for making, from a rubber rod, rubber washers of about three thirty-seconds of an inch thick for bottle stoppers is claimed to be an anticipation of the fourth claim. There are some analogies between the two feeding mechanisms, which are skillfully used to make out a similarity between the machines; but the two devices are as radically different as the purposes for which they were respectively used differ. The Matthews machine did not have the friction slotted tube, and did not have the chuck, except by a strained use of words. It did not have the parts of the Spencer combination, nor the combination, and could not be adapted to the making of machine metal screws.

Let there be a decree for an injunction and an accounting, with reference to the use of the fourth claim.

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

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