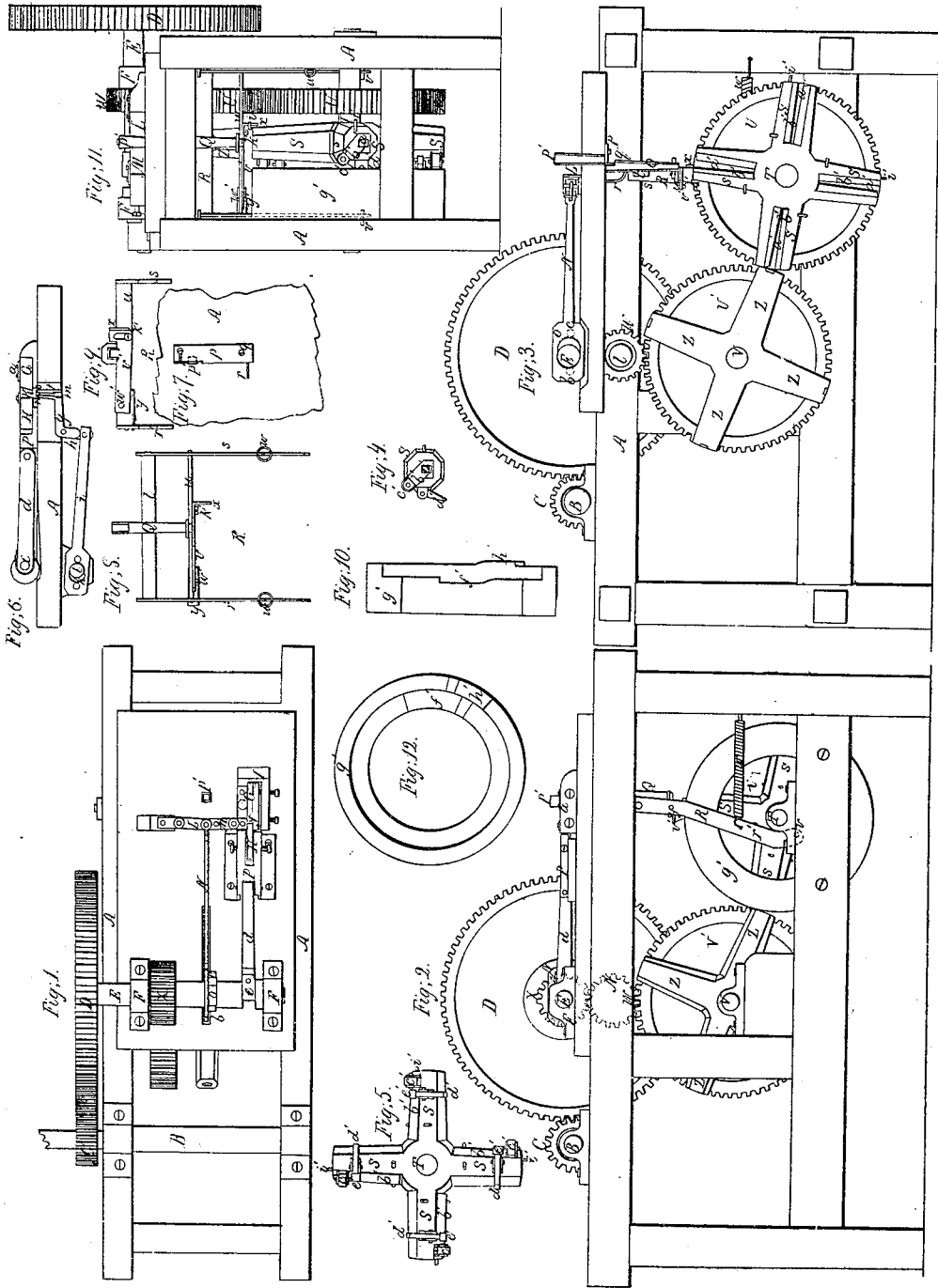


E. B. WHITE.
MAKING RAILROAD SPIKES.

No. 6,666.

Patented Aug. 28, 1849.



UNITED STATES PATENT OFFICE.

EDWIN B. WHITE, OF NASHUA, NEW HAMPSHIRE.

ROTATING SPIKE-MACHINE.

Specification of Letters Patent No. 6,666, dated August 28, 1849.

To all whom it may concern:

Be it known that I, EDWIN B. WHITE, of Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful or Improved Machinery for Making Railroad-Spikes; and I do hereby declare that the same is fully described and represented in the following specification, and accompanying drawings, letters, figures, and references thereof.

Of the said drawings Figure 1, denotes a top view of my improved machine. Fig. 2, a side elevation of it. Fig. 3, a central vertical and longitudinal section of it. Fig. 4, is an end view of one of the arms of the series of gripping arms. Fig. 5, is a side view of the said series of gripping arms, as detached from the rest of the machinery. Fig. 6, is a longitudinal and vertical section of the pointing dies and their movable gage.

In such of the said drawings as the same is seen A, represents the main table or frame for supporting the operative parts of my machine.

B, is the driving shaft, having a pinion or gear C, fixed on it which pinion engages with a gear wheel D, fixed on a horizontal shaft E, supported by and made to revolve in bearings F, F.

G, is the stationary pointing die, and H, the movable one, they being arranged and shaped as seen in Figs. 1 and 6. The two dies G, H, are disposed in line with each other, and have a stationary gripping die I, placed on one side of them, and a movable gripping die K, arranged on the opposite side of them as seen in Fig. 1. The movable gripping die turns on a pin or fulcrum *a*, and is moved toward and away from the fixed die I, by means of two toggle joints L, M, which are actuated (that is either brought into a straight line or on angle with each other) by a pitman N, and an eccentric or cam O, the latter being fixed on the shaft E, and made to operate alternately against two pins, or studs, *b*, *c*, projecting from the side of the pitman. The movable pointing die H, is fastened to a carriage P, to which a reciprocating rectilinear motion, in a direction toward and away from the stationary die G, is given by means of a connecting rod *d*, and a bell crank *e*, on the shaft E.

Between and below the two pointing dies is, what I term, the "movable gage," which consists of a block *f*, fixed on the upper arm of a bent lever *g*, which plays or rocks on a

fulcrum *h*, the lower arm of the said lever being jointed to a pitman or connecting rod *i*, to which a reciprocating movement is imparted by a cam or eccentric *k*, fixed on a horizontal shaft *l*. This movable gage is caused to pass a short distance upward and between the two pointing dies every time the movable one of them departs or moves away from the fixed one. In so doing it is to be made to rise up a short distance above the lower edges of the pointing faces of the two dies; this distance being sufficient to allow space for the spread of the metal during the operation of making the point, which takes place after the departure of the gage, or its downward depression from between the dies. As soon as the gage has been raised up between the pointing dies, the movable gripping die is to be advanced toward its fellow or fixed die, and so as to hold the spike blank at the proper altitude between the pointing dies; it being understood that the spike rod or blank to be pointed has previously, and while the gage is up to its highest position, been introduced between the dies, and so that its lower end shall rest upon the top of the gage. The object of the movable gage it will be seen is to so adjust the spike blank or rod, that there may be the proper room for extension or spread of the metal during the action of the pointing dies; the same being arranged so as to be just sufficient to bring the metal down to the angular point required without any unnecessary strain on the pointing dies. The gage *t*, is provided with an orifice or opening *m*, to which a water pipe may be attached. From this orifice two small passages or ducts *n*, *o*, lead in such manner as to cause water when forced through them to strike in one or more streams against the face of each of the pointing dies; the same being for the purpose of keeping the same from being overheated, or at the proper temperature. Any suitable apparatus for supplying the water and injecting it into the orifice and through the discharging ducts may be employed.

After the spike blank has been pointed it is removed from the dies and dropped with its point downward into a spout or hopper P', whose lower end has a movable bottom, or lever slide *p*, adapted to it; see Fig. 7, which denotes an underside view of the same, the said slide being made to play or move horizontally on a pin or fulcrum *q*, and to be thrown forward so as to cover the

discharging mouth of the hopper by a spring *r*. The said hopper is made to communicate with a conductor or spout *Q*, which is supported by a movable rocker frame *R*, and over the series of gripping arms *S*, *S*, *S*, &c., of the heading machinery.

A side view of the movable frame *R*, and conductor *Q* is seen in Fig. 8. This movable frame consists of two upright bars *r'*, *s*, connected together by two horizontal cross bars *t*, *u*. Each of the upright bars is supported on a fulcrum pin *v*, inserted through its lower end, and in the frame *A*. A retractive spring *w*, is also applied to each of the bars *t*, *u*, and the frame *A*, as seen in Fig. 2.

The lower end of the conductor *Q*, has a slide valve *v'*, applied to it, the same consisting of a plate of metal made to turn on a pin *w'*, inserted and fixed in the underside of the cross bar *u*, see Figs. 8 and 9, the latter being an underside view of said slide plate or valve *v'*. The said slide plate bears against a retractive spring *y*, and has a stud *x*, projecting down from its opposite end. The manner in which the slide plate *v'*, and the frame *R*, are made to operate will be hereinafter described.

The heading mechanism is as follows: *S*, *S*, *S*, are a series of gripping arms, made to radiate at equal distances asunder from a horizontal shaft *T*, which is rotated by means of a cogged wheel *U*, (fixed upon it), which engages with another cogged wheel *U'*, fixed on a horizontal shaft *V*; the said wheel *U'*, being put in revolution by a pinion or gear *W*, which engages with a gear *X*, placed on the shaft *E*, hereinbefore mentioned.

A series of headers or radial arms *Z*, *Z*, *Z*, *Z*, are made to extend from the shaft *V*, and to respectively cooperate with the gripper arms *S*, *S*, *S*, *S*. Each of the said gripper arms contains a socket, made in it as seen in end view at *a'*, in Fig. 4; that is to say one half of the socket or die for holding the spike blank is made or constructed in the arm, while the other or movable half of the socket or die, is formed in the gripper *b'*, which is hinged at its lower end to the arm, and moves or plays within a space cut out of the arm. The socket or space between the arm and gripper is arranged diagonally, or so that the gripper as well as the arm shall act against two adjacent sides of the spike blank. Consequently when the spike blank is introduced between the arm, and the gripper *b'*, and the latter is closed down they bear equally on the four sides of the said blank, and thereby hold it more firmly while the head is being made, than it is held by a gripper and arm, which operates or grips it by two only of its sides.

To the side of each gripper *b'*, a small friction roller *c'*, is fixed as seen in Figs. 4 and 5. A small lever *d'*, is also applied to

a fulcrum fixed to the gripper arm; one end of the lever being made to extend underneath a small hook *e'*, fixed in the side of the gripper. The said lever is to act in connection with a cam or wiper, and to open the gripper or draw it away from the arm *S*, in such manner as to release the spike blank after it has been headed. The said cam is shown at *f'*; Fig. 10, which is a vertical and transverse section of a ring or cam plate *g'*, which is fixed to the front side of the frame *A*, as seen in Fig. 2, and also in Fig. 11, which is an end view of the machine. Fig. 12 is a rear side view of the ring or cam plate *g'*, and shows not only the position of the wiper or cam *f'*, but also that of another wiper *h'*, (seen also in Fig. 10,) which is to operate against the friction roller *c'*, of each gripper, and so as to close or force down the gripper at the proper time.

On the outer end of each gripper arm *S*, there is a small stud or projection *i'*, which, during the revolution of the arm, is brought by it in contact with the stud *x*, of the slide plate of the conductor *Q*, and thereby presses said slide plate aside or away from the mouth or lower end of the conductor, in such manner as to allow a spike blank which may be therein, to drop out of the same and into the socket *a'*, or between the gripping jaws of the heading machinery. The slide plate when pressed aside from the conductor is pressed against a pin or stock *k'*, made to project in a proper manner, from the underside of the bar *u*, and as the arm *S*, continues its motion, the consequence will be that it will create a forward movement of the frame *R*, until the stud *i'*, slips off the stud *x*. This being done the retractive springs *w*, *w*, bring back the frame with force and so as to cause the upper end of the conductor *Q*, to strike against the slide *p*, of the hopper *P'*, and so move the same from over the end of the said hopper, as to permit a spike blank previously deposited therein to drop into the conductor.

As the operation of pointing a spike blank is carried on, while another spike blank is being introduced into the gripping dies of the arms *S*, *S*, *S*, &c., and the heading operation is being performed, some contrivance, (in consequence of the peculiar method in which the frame *R*, operates,) is requisite to receive the spike blank, directly after it is pointed, and before it is introduced into the conductor *Q*. This contrivance is the hopper and its slide plate hereinabove explained.

During the revolution of each arm *S*, its outer end is met by and rolls in contact with the outer end of some one of the heading arms *Z*, *Z*, *Z*, *Z*, which is properly formed for compressing or bending the spike blank down in the shape of the head required to be made on it. Soon after the spike has

been headed, the gripper jaws open and allow it to fall out from between them during the continued movement of the arm around in a circle.

5 Having thus described my improved machine, what I claim as of my invention is as follows—that is to say—

1. I claim in combination with the movable gage, and pointing dies, the ducts or
10 passages made in the gage for the distribution of the water on the dies as described.

2. I also claim the hopper P', and its

slide in combination with the conductor Q, and its movable frame R, the whole being made to operate together substantially as 15 above explained.

In testimony whereof I have hereto set my signature this thirteenth day of February A. D. 1849.

EDWIN B. WHITE.

Witnesses:

FRANCIS P. WHITTEMORE,

B. B. WHITTEMORE.