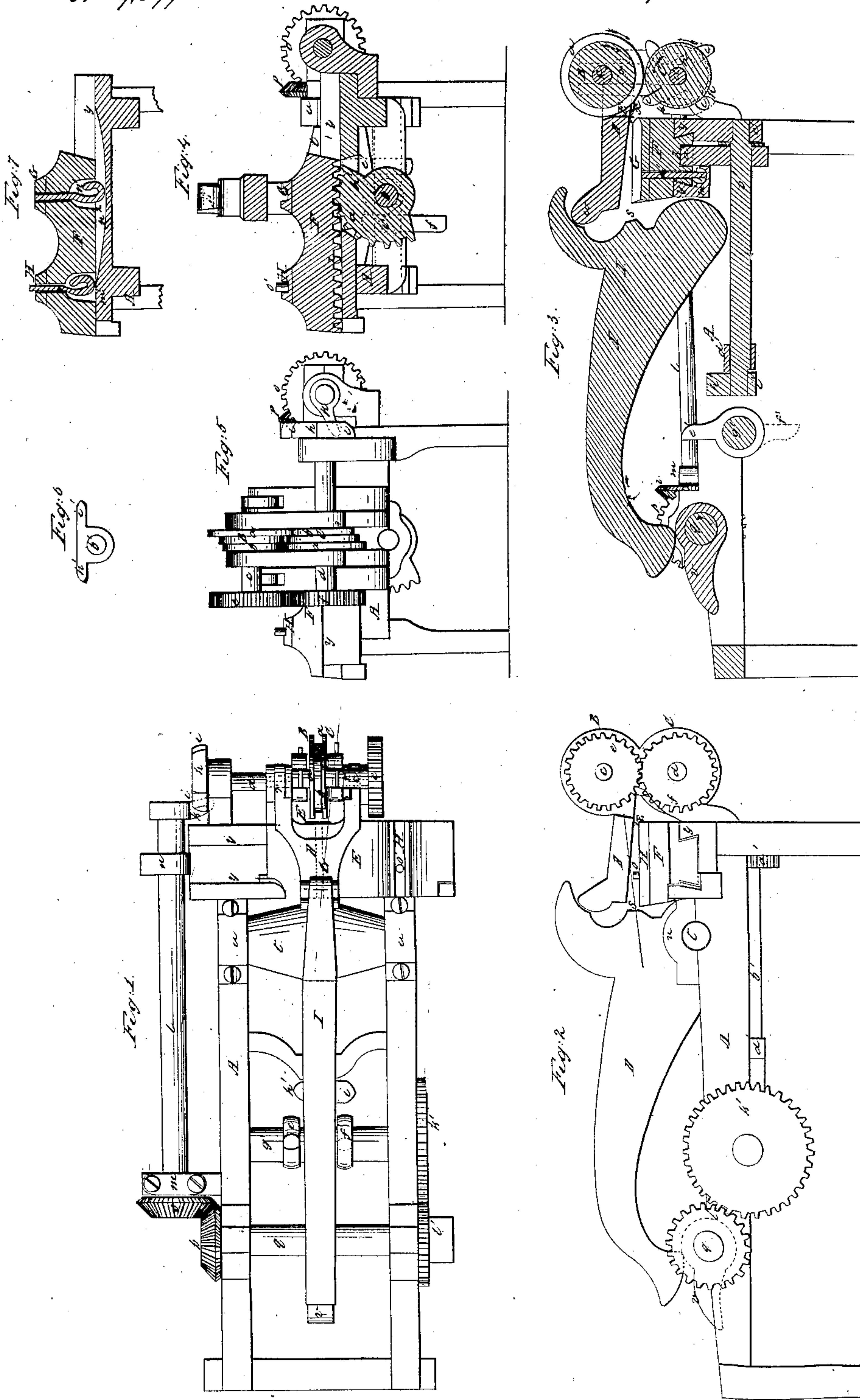


M. Belknap.

Making Spikes.

Patented Nov. 9. 1852.

N<sup>o</sup> 9,394.





# UNITED STATES PATENT OFFICE.

MOODY BELKNAP, OF CANTON, MASSACHUSETTS, ASSIGNOR TO BELKNAP & KINSLEY.

## RECIPROCATING-DIE SPIKE MACHINERY.

Specification of Letters Patent No. 9,397, dated November 9, 1852.

*To all whom it may concern:*

Be it known that I, MOODY BELKNAP, of Canton, in the county of Norfolk and State of Massachusetts, have invented a new and useful Machine for Manufacturing Spikes; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a top view of my said machine, Fig. 2 is a side elevation of it, Fig. 3 a central, longitudinal, and vertical, section of it, Fig. 4 is a vertical and transverse section taken through the reciprocating bed dies, and Fig. 5 is an end view of it.

The frame for supporting the operating parts of the machine is denoted at A. It may be constructed in any suitable manner or of any proper material. It is made to sustain at one end of it two feeding rollers or wheels B, C, each of which has a flange *a*, and a groove *b*, the former being made to project from one side of the periphery while the latter is sunk in the other side of it. The flange of each roller rests in the groove of the other and close up against the side of it as seen in the drawings. This leaves a square space between the two flanges and peripheries of the feed rollers through which space the spike rod passes when fed into the machine. These feed rollers are respectively fixed on two horizontal shafts *c*, *d*, which are geared together by cog wheels *e*, *f*. On one end of the shaft *d*, there is a wheel *h* of four arms, cogs, or teeth *i*, *i*, *i*, *i*, which are consecutively acted on (so as to turn the shaft ninety degrees of a circle) by a single tooth or cam *k* projected from one end of a shaft *l* as seen in the drawings. The said shaft *l* is supported and made to revolve in suitable boxes *m*, *n*, and has a bevel gear *o* fixed on its other end, the said bevel gear being made to engage with another such gear *p* fixed on one end of the main or driving shaft *q*. When the shaft *q* is put in revolution in the direction as denoted by the arrow on it in Fig. 3 it will put in operation the mechanism that rotates the feed rollers and will cause them to move or rotate in the directions as denoted by the arrows on them as seen in Fig. 3, such feed rollers having an intermittent rotary motion imparted to them.

In front of the feed rollers is a lever D

which works up and down on a fulcrum or pin *r* and carries the knife or cutter E that serves to sever the spike blanks from the rod. This lever works in connection with the bed dies G, H, of the reciprocating carriage F, the lever serving with either of such dies to grip and hold the spike blank while it is being headed by the header *s* of the heading lever I. The said header and heading lever are formed and arranged as seen in the drawings, the latter being attached to a strong fulcrum shaft *t* that rests and moves in proper boxes *u*, *u*. The longer arm of the heading lever is raised by a cam or wiper *v* fixed on the main shaft. The upper or shorter arm of the said lever is curved or made cam shaped as seen in Fig. 3, the same being for the purpose of acting on the projection *w* of the gripper lever D and pressing the same down on a spike blank. A spring *x* is used to elevate the lever D off the spike blank.

Underneath the lever D is arranged the carriage F which rests and slides transversely on rails or ways *y*, *y*. It carries the two bed dies G, H, which are each suitably formed for receiving the spike blank and in conjunction with the gripping lever pointing the said blank when the gripping lever is pressed down on it, the pointing of the blank being a matter which may be dispensed with if desirable to do so. On the underside of the carriage F there is a toothed rack *z*, in which a toothed sector *a'* works, the said toothed sector being fixed on a horizontal shaft *b'* that is supported in bearings *c'*, *d'* and has an intermittent reciprocating motion imparted to it by two cams or wipers *e'*, *f'*, which are fixed on a transverse horizontal shaft *g'*, and made to act alternately against two arms *h'*, *i'*, extended from the inner end of the shaft *b'*, as seen in the drawings, and more particularly Fig. 6 which is an end view of the shaft *b'* and its arms *h'*, *i'*. The shaft *g'* receives motion from the driving shaft by means of two gear wheels *k'*, *l'*, fixed respectively on them.

The horizontal plate *m'* which supports the rails *y*, *y*, has a curved depression *n'* formed in it as seen in Fig. 7 which denotes a vertical and transverse section of the machine taken through such depression. The said depression in connection with the plate serves to operate two dischargers *n'*, *o'*, that extend up through the carriage F, and respectively into the bed dies G, H. These



dischargers are made to slide freely up and down and to rest on the plate  $m'$ . When the carriage moves on or over the plate  $m'$  and across it one of them will descend while the  
5 other will rise upward. The one that descends below the bed die does so to allow a spike blank to enter it. The other one in rising expels the spike blank which may be in its bed die or lifts up such blank so that  
10 it will fall out of the die and be discharged from it by the movements or jar of the machinery. In the operation of the said machine the carriage F has a reciprocating intermittent movement such as will carry each  
15 bed die alternately under and away from the gripping lever D, each of the said dies being caused to remain at rest under such lever long enough for the operations of severing the blank from the rod, pointing and heading it, to take place.  
20

By the employment of two bed dies the cavities in which are alternately open in the manner set forth the difficulty of the spike blank adhering to the die as it will sometimes do and thereby be productive of serious consequences, can be obviated, as the attendant of the machine has it under his view and if it is not discharged from the die he

can effect its discharge by other means, or arrest the movements of the machine in time  
30 to prevent the blank from being again carried under the gripping lever and so as to intercept the feeding operation. Besides this I attain the advantage common to other machines where reciprocating dies are employed.  
35

I do not claim a series of two or more gripping or holding dies made to rotate around one common axis or shaft, nor do I claim reciprocating dies each provided with  
40 its own gripping die, but

What I do claim as my invention is—

The combining the two reciprocating bed dies G, H, (affixed to a carriage having a horizontal movement as stated) with the  
45 gripping lever D as the upper die for both so as to operate therewith substantially in the manner as above described.

In testimony whereof I have hereto set my signature, this twenty-fourth day of  
50 September, A. D. 1852.

MOODY BELKNAP.

Witnesses:

ELLIS AMES,  
THOS. HILL.