

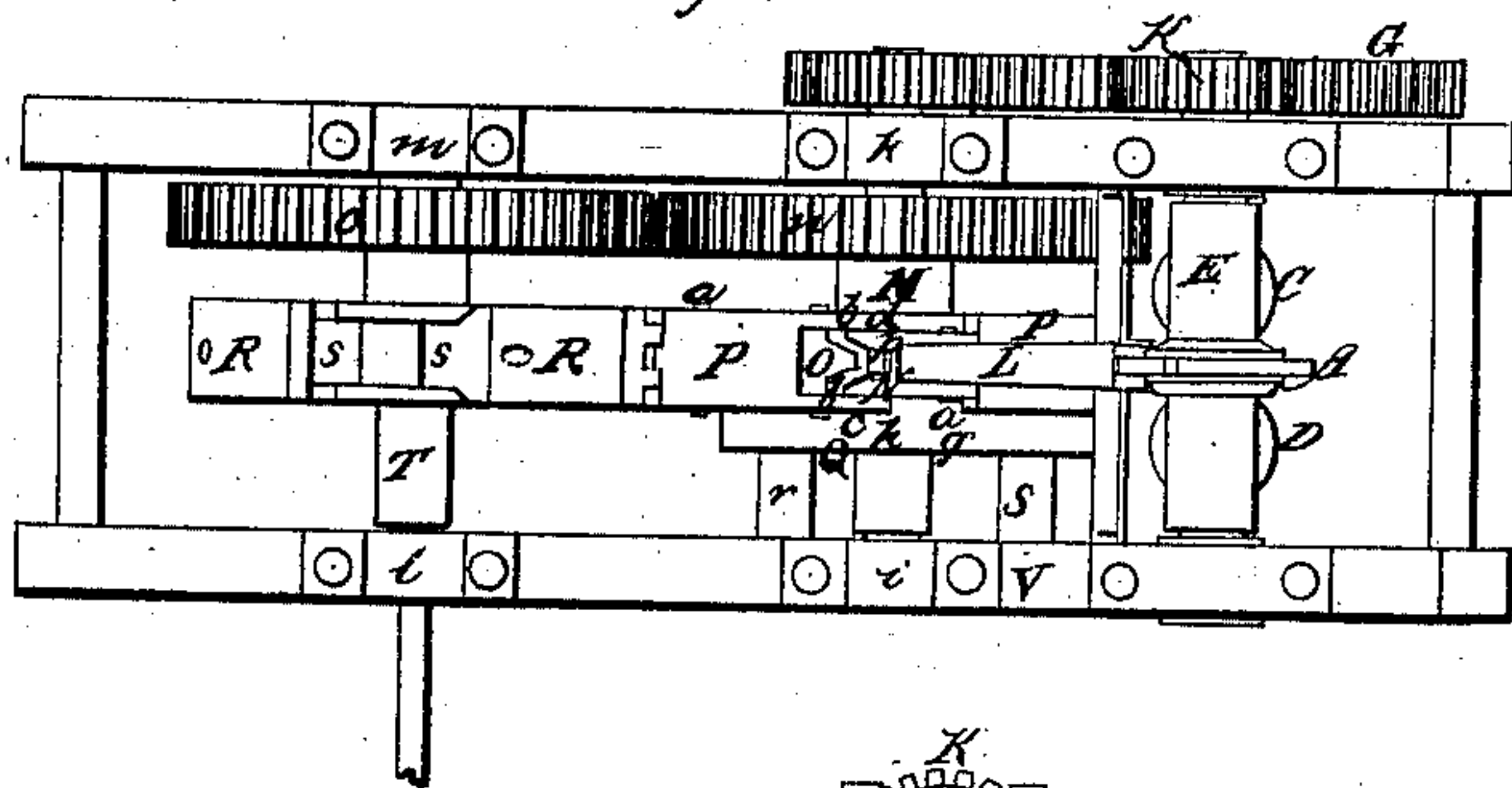
*George & Brown.*

*Spike Machine.*

*N<sup>o</sup> 6,325.*

*Patented Apr. 17. 1849.*

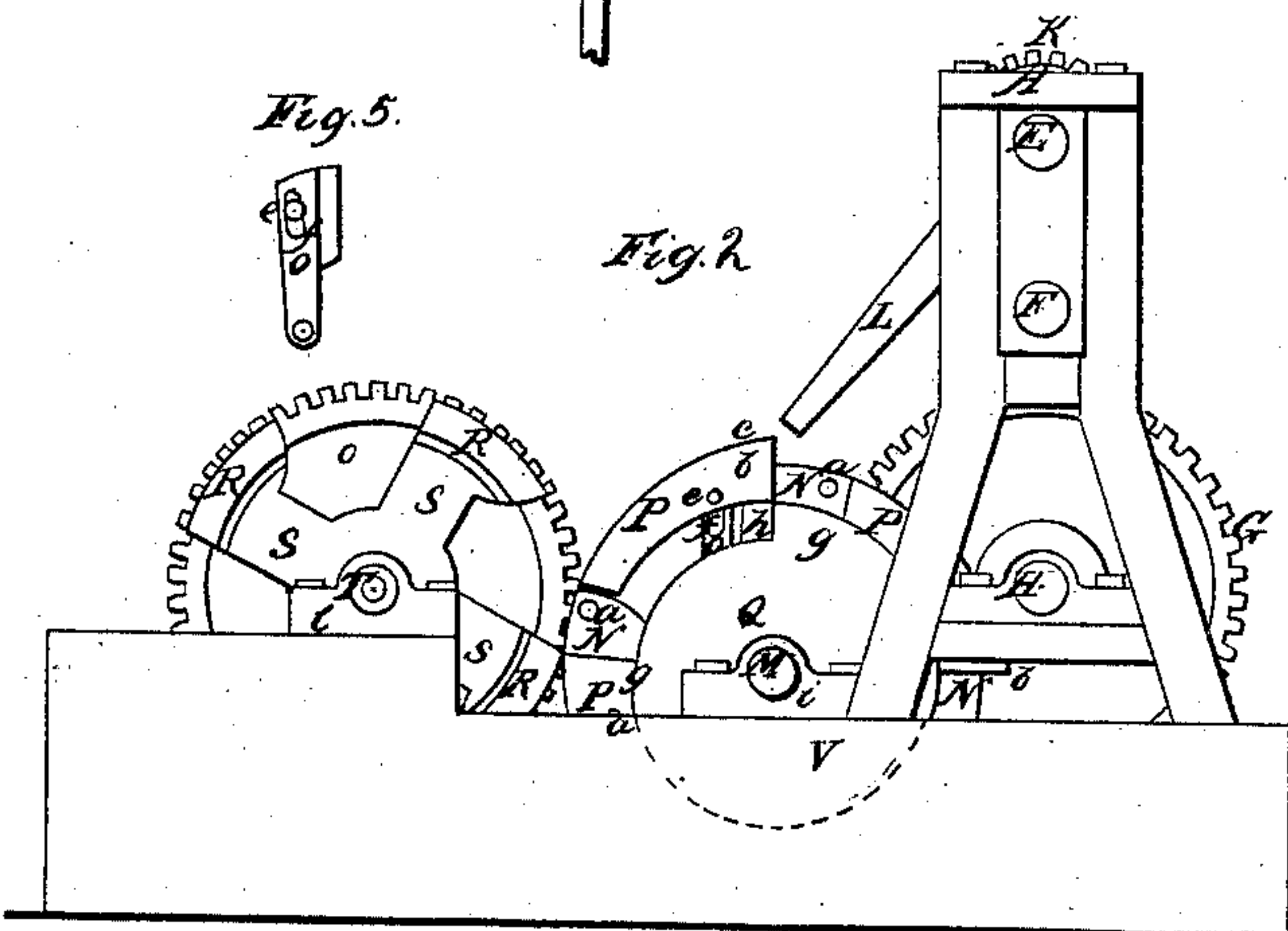
*Fig. 1.*



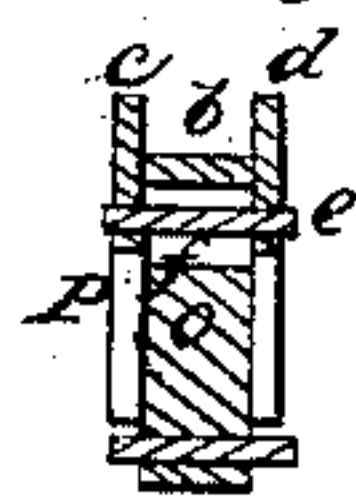
*Fig. 5.*



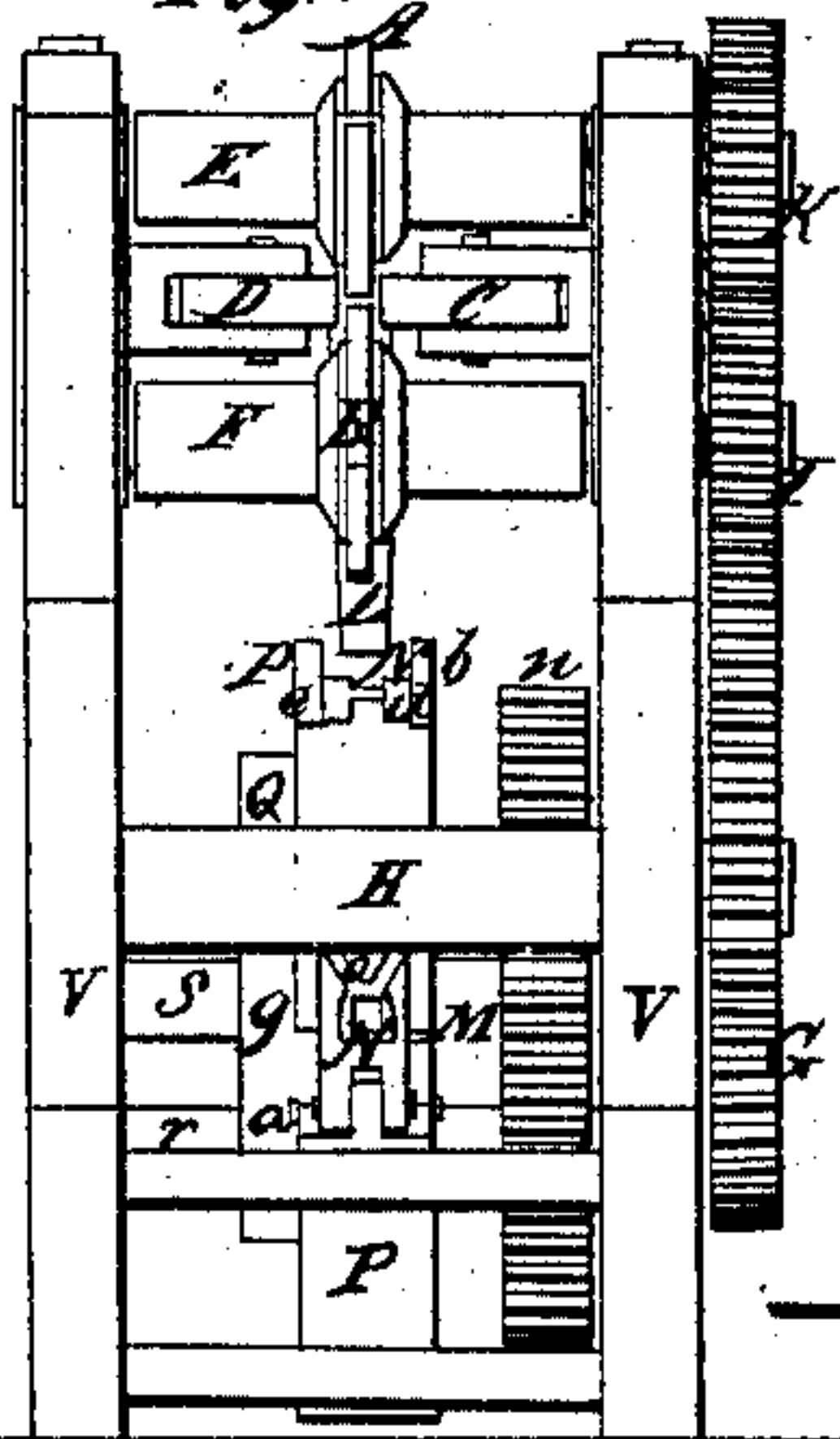
*Fig. 2.*



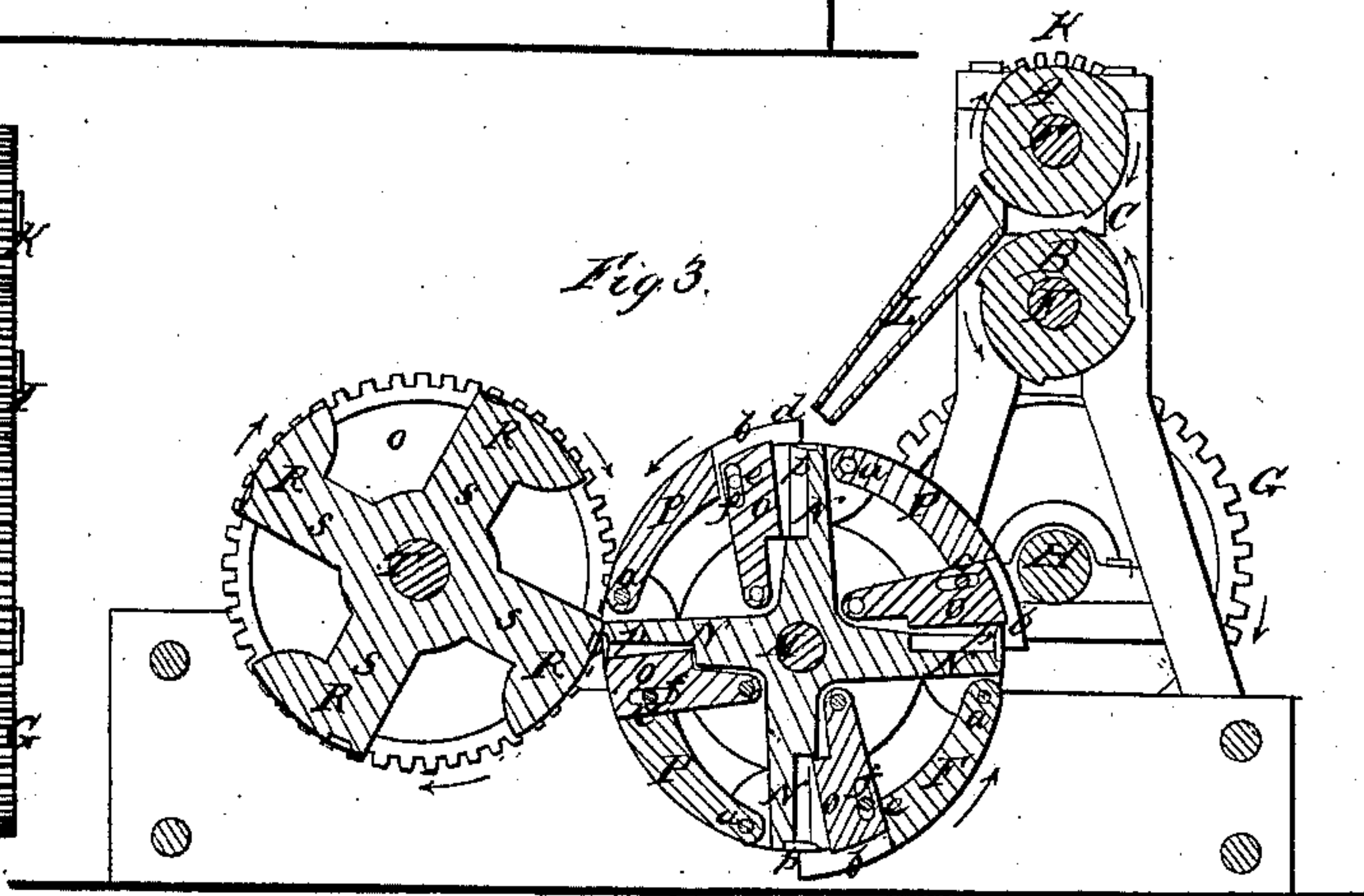
*Fig. 6.*



*Fig. 4.*



*Fig. 3.*





# UNITED STATES PATENT OFFICE.

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## REVOLVING-DIE SPIKE-MACHINE.

Specification of Letters Patent No. 6,325, dated May 18, 1849.

*To all whom it may concern:*

Be it known that we, AMMI M. GEORGE, of Nashua, in the State of New Hampshire, and EPHRAIM BROWN, of Lowell, in the State of Massachusetts, have invented a new and useful Machine or Improvement in Machinery for Manufacturing Spikes; and we 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 our said improved machine, Fig. 2, is a side elevation of it, Fig. 3, is a central vertical and longitudinal section and Fig. 4 is an end elevation of it.

The first part of our machine is that portion of it by which a spike is separated or cut from a spike rod and pointed. This consists of four rollers A, B, C, D, two of which viz. A, B, are arranged with respect to one another and between the other two and fixed in horizontal shafts E F, as seen in the drawings. The other two viz. C, D, are arranged so that their peripheries are respectively disposed in contact in the sides of the others, the spike being formed or pointed and cut off by the combined actions of their rollers, the peripheries of the two vertical rollers A B being so formed as to point the spikes, and cut them from the rod in succession. The side rollers are for the purpose of preventing the spike from increasing in width under the pressure of the pointing rollers. Motion is given to the pointing rollers by a cogged wheel G, pressed on the shaft H, and made to engage with one of two gears I, K, which are respectively fixed on the shafts of the reducing or pointing rollers. The spikes as they are successively pointed and severed from the spike rod, fall into and down an inclined conductor or spout L and by it are conveyed into the rotating series of dies of the gripping and beading machinery which constitutes the second part of our machine, and is constructed and operates as follows.

To a horizontal shaft, M, a series of any suitable number of holding dies M, O, N, &c., is attached. Such pair of the said dies being composed of a fixed die or bed, N (connected firmly to and so as to radiate from the shaft) and a movable die, O, hinged at its end nearest the shaft to the fixed die, and so as to be capable of being moved toward or away from it, as circumstances may

require. To the rear side of each piece of metal M, a curved lever bar P is jointed in such manner as to admit of its other end, being raised or depressed in a vertical direction or in other words said lever bar moves on horizontal joint, pin or fulcrum *a*. The outer edge of the bar is curved as seen in the drawing and the said bar at its rear end which is not jointed to the fixed die N, is connected to the next adjacent movable, gripping or holding die O, the connection being made as follows, that is to say, the end of the bar is made with a fork or space *b*, which receives the outer end of the movable gripping die O, within it, and also receives at the same time part of the fixed die as seen in the drawing. Through each of the projecting parts C, D, of the fork of the bar, a pin *c*, is made to extend and to enter an upright groove F made in the side of the die O, as seen in Fig. 5, which denotes a side view of one of the dies O, O, and in Fig. 6, which is a cross section of the fork of the lever or bar and die O. By inspection of the drawings it will be seen that the said curved bar is also curved in its lower edge and so as to be capable of being operated on or raised by a cam *g* of a stationary cam plate Q arranged with respect to the series of holding dies as seen in the drawings. The said cam plate has a depression made in it of a size sufficient to admit of the necessary downward motion of the lever bar when it is depressed by one of a series of arcs or cams R R, &c. fixed respectively to arms S, S, &c. projected from a horizontal shaft T disposed as seen in the drawings. The shafts M, T, are supported by and revolve in proper boxes *i*, *l*, *m*, and they are connected by two gear wheels, *n*, *o*, so as to revolve together, one of the said gears being arranged and fixed on each of the shafts. On one end of the shaft M, there is a cogged pinion U which engages with and turns the gear G, and thus communicates motion to the machinery directly above the shaft, the directions in which the several shafts revolve are denoted in Fig. 3 by arrows placed on them respectively. Each set of holding dies has a cavity or bead matrix formed in it, as seen in the drawings, this cavity being of sufficient size to receive and give shape to the surplus metal rolled out by the pressure of either of the cams R, R. The cam plate Q is sustained in position by two arms *r*, *s*,



extending from it to the side of the frame P of the machine, the said cam plate being made with an opening through its middle part of sufficient size to permit the passage  
5 of the shaft M through it, and the free revolution of the said shaft.

The operation of the machine is as follows: A spike rod being heated to redness, is introduced at one end between the pointing  
10 rollers. The machine being put in motion, the said rollers draw the rod between them, point its end and separate a portion of the rod from the rod (viz. a piece of sufficient length to form a spike) which portion  
15 after being so severed from the rod, drops into the conductor or spout L. It falls down this spout with its pointed end in advance, and drops into or between some one set of the series of gripping or beading  
20 dies, the wheels or sets of gripping and beading dies being in motion. Now while the movable die O, of said set of holding dies moves forward its curved bar P is met by one of the cams R, R, and depressed  
25 thereby so as to bear against and force the said movable die O, against its fixed die N, and thereby grip and confine the spike between said dies, and while the cam R rolls over or against its projecting end, and  
30 crushes it down, and thus in connection with the cam p forms the spike head. Next the wheel of holding dies continuing to revolve, carries the curved bar P around and against the periphery of the cam plate Q

which so acts against the said bar as to  
35 cause it to move, and open the gripping jaws or dies and allow the spike to fall out of the same. The spikes are thus manufactured in constant succession, the parts of the mechanism being so adapted to each other,  
40 that as fast as one spike is pointed and cut off it may drop downward and be received into or between the gripping jaws and be beaded and discharged as above described.

What we claim as our invention in each  
45 set of gripping and beading dies of the series, is

1. The combination of the fixed die N, the movable die O, the curved bar P, the cam  
plate Q with its cam, and the arc or cam R  
50 the same being applied to the shafts M T, and adjusted together, and made to operate essentially in manner as herein before specified.

2. We also claim the combination of the  
55 series of rotating pointing and severing dies A, B, C, D, the conductor L and the series of gripping and beading dies, as constructed, combined and arranged, and made to operate substantially as herein above described.  
60

In testimony whereof we have hereto set our signatures this sixteenth day of September A. D. 1848.

AMMI M. GEORGE.  
EPHRAIM BROWN.

Witnesses:

FREDERICK PARKER,  
GEORGE KING.