

P. N. FRENCH.

MACHINE FOR STRAIGHTENING AND NIBBING SPRING LEAVES.

No. 345,629.

Patented July 13, 1886.

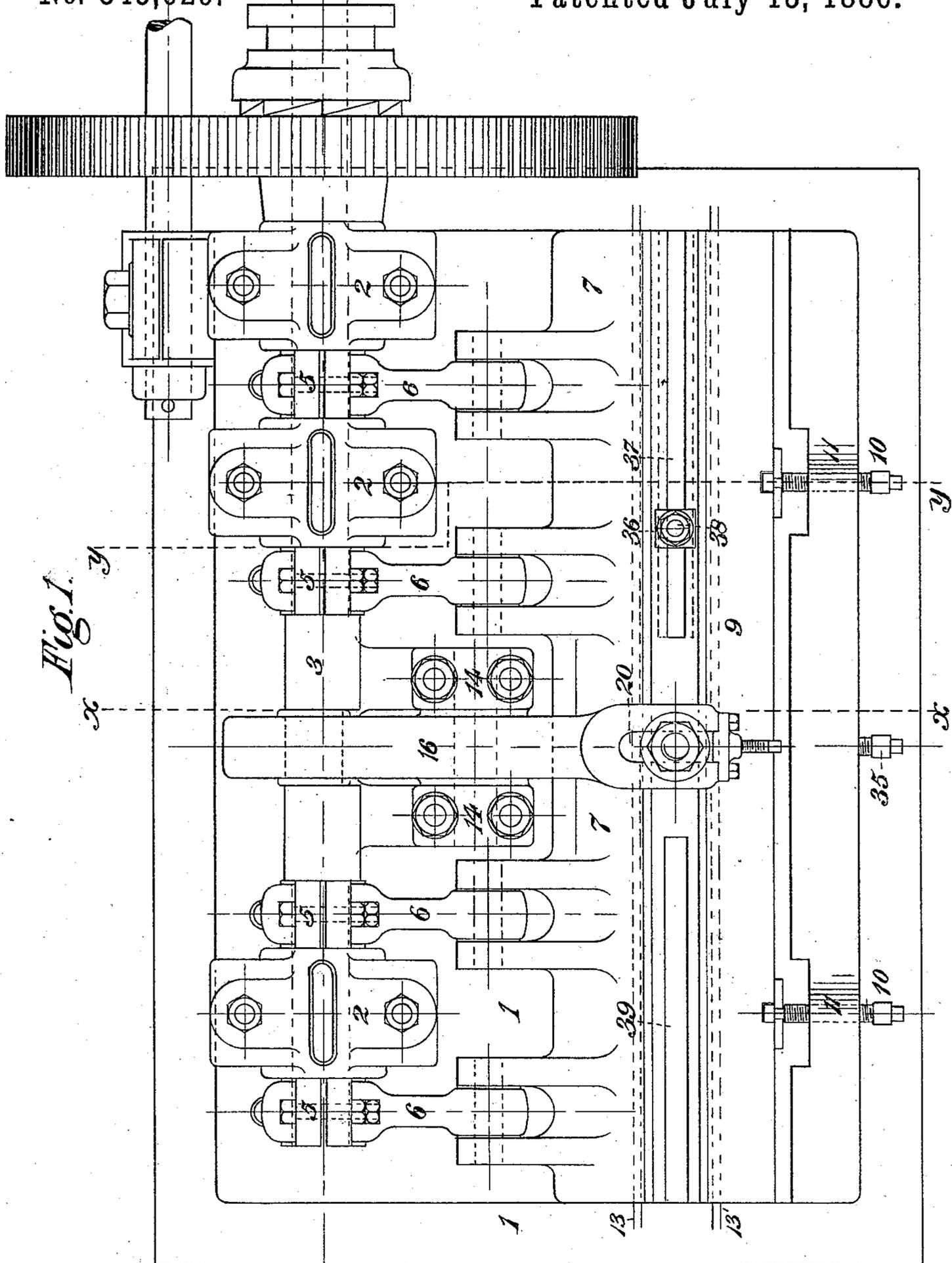


Fig. 1.

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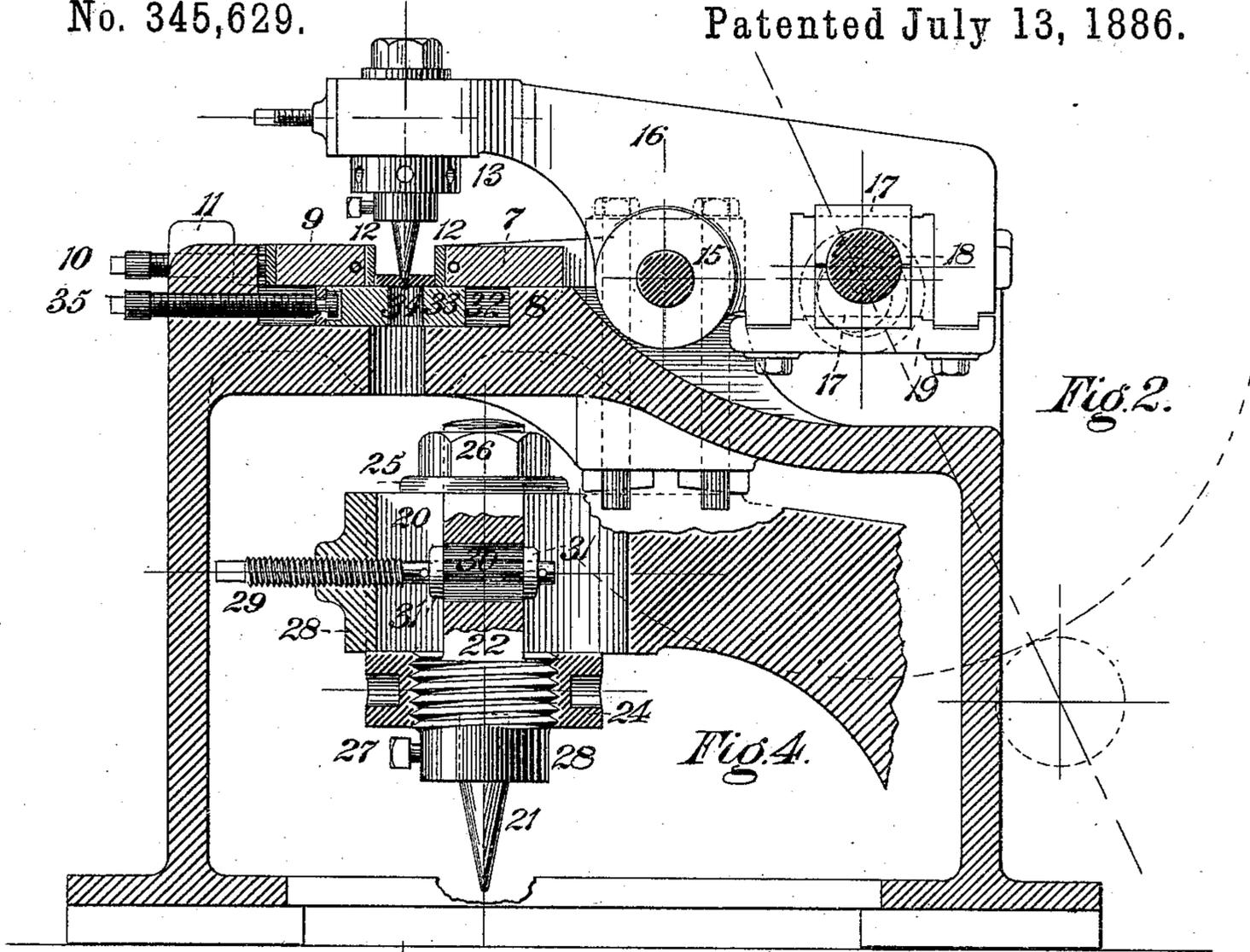


Fig. 2.

Fig. 4.

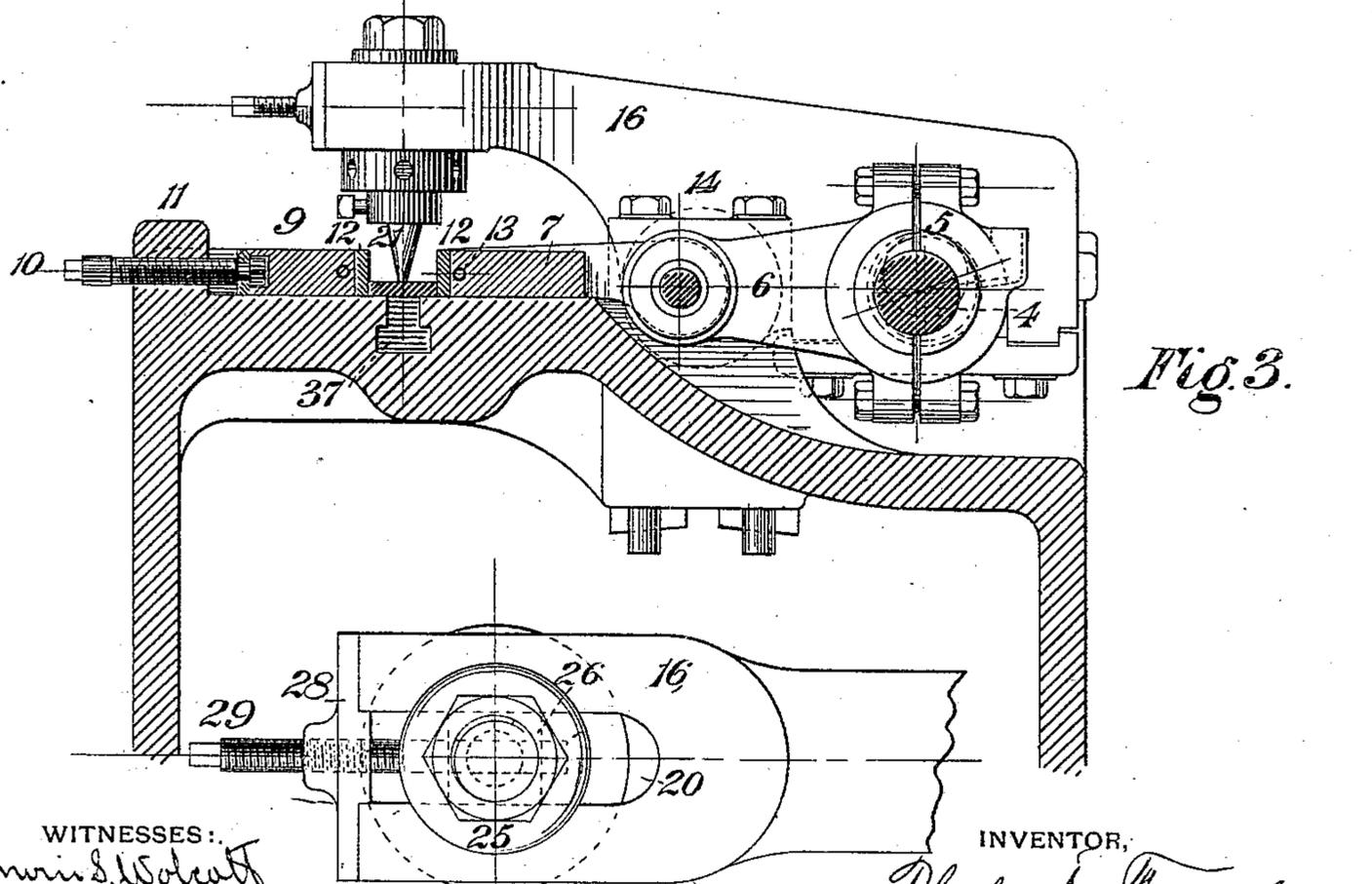


Fig. 3.

Fig. 5.

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# UNITED STATES PATENT OFFICE.

PHILO N. FRENCH, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE A. FRENCH SPRING COMPANY, (LIMITED,) OF SAME PLACE.

MACHINE FOR STRAIGHTENING AND NIBBING SPRING-LEAVES.

SPECIFICATION forming part of Letters Patent No. 345,629, dated July 13, 1886.

Application filed March 1, 1886. Serial No. 193,605. (No model.)

*To all whom it may concern:*

Be it known that I, PHILO N. FRENCH, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Machines for Straightening and Nibbing Spring-Leaves, of which improvements the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a top plan view of my improved straightening and nibbing machine. Fig. 2 is a sectional elevation of the same on the line *x x*, Fig. 1. Fig. 3 is a similar view on the line *y y*, Fig. 1. Fig. 4 is a sectional elevation, on an enlarged scale, of the nibbing-head. Fig. 5 is a top plan view of the head.

The invention herein relates to certain improvements in mechanism employed in manufacturing elliptic springs, and has for its object the simultaneous straightening and nibbing of the leaves composing such springs, preparatory to subsequent operations.

In general terms, the invention consists in the construction and combination of parts, substantially as hereinafter described and claimed.

Along one side of the bed or frame 1 are formed suitable bearings, 2, in which is mounted the shaft 3, said shaft being provided at suitable intervals with eccentrics or cams 4. Around these cams are placed the straps 5, which are connected by an arm, 6, to the slide or straightening-plate 7, mounted on suitable ways or beds, 8, formed on the upper side of the frame 1.

On the opposite side of the frame 1 is arranged the anvil-plate 9, said plate being transversely adjustable through the medium of the screws 10, connected to one edge thereof and passing through threaded holes in lugs or projections 11, formed on one edge of the frame, as shown in Fig. 2.

The reciprocating and anvil plates are provided on their operative edges with steel wearing-strips 12, and through the plates, near their working-faces, are formed the longitudinal water-tubes 13, provided at their ends with suitable supply and discharge pipes, thereby

preventing any undue heating and consequent distortion of the plates.

On the bed or frame 1, just in the rear of the reciprocating plate 7, are formed bearings 14, in which are mounted the journal-pins 15 of the vibrating arm 16. In the rear end of this arm 16 is formed a recess for the reception of journal-blocks 17, surrounding a crank, 18, formed on the shaft 3, these blocks 17 being held in place in the recess by the cap-bar 19, as shown in Fig. 2.

In the front end of the arm 16 is formed a slot, 20, for the reception of the holder for the nibbing-punch 21. This holder consists of a squared shank, 22, fitting in the slot 20, a cylindrical portion, 23, below the shank, provided with suitable screw-threads for the reception of the nut 24, and a threaded stud at the upper end of the shank, on which are placed the washer and nut 25 and 26, the washer being of sufficient diameter to extend beyond the edges of the slot 20. The nibbing-punch is held within the cylindrical portion of the holder by the set-screw 27, and its vertical adjustment is effected by raising or lowering the holder by means of the nuts 24 and 26, as will be clearly understood.

Through the cap-piece 28 of the slot 20 is formed a threaded hole for the adjusting-screw 29. The inner end of said screw, passing through the vertical slot 30 in the squared shank 22, is attached to the shank by means of the washers 31, arranged on opposite sides of the shank. This adjusting-screw is employed for effecting a horizontal adjustment of the punch-holder.

In the bed or ways 8 is formed the transverse groove 32, in which is placed the steel die 33, having the perforation 34. This die is connected to the adjusting-screw 35, passing through a rim along the front side of the bed or frame 1, and employed in connection with the punch 21, for forming the nib on spring-leaves.

In operating my improved machine the anvil-plate 9 is adjusted transversely in accordance with the width of the spring-leaves to be straightened, and the punch-holder and die 33 are correspondingly adjusted.

In adjusting the anvil-plate 9 care should

be taken that the spaces between the operative edges of the anvil-plate and the reciprocating slide shall be equal to the width of the spring-leaves when the slide is at the forward limit of its movement, as if said space were less than the width of the leaves the latter would be bent or its edges upset in the straightening operation.

To facilitate the placing of the leaves in position a movable stop, 36, is adjustably attached to the bed between the straightening-plates, an undercut groove, 37, being formed in the bed between the plates for the reception of the head of the stop clamping-bolt 38.

A plain groove, 39, is formed in the bed at its opposite end, to enable the operator to readily grasp the leaves with his tongs in removing them from the machine.

If desired, two or more nibbing-punches may be attached to the vibrating head, a corresponding perforated die being placed in the bed.

If desired to form holes entirely through the spring-leaves, the punch 21 should be adjusted down by means of the nuts 24 and 26 the necessary distance.

I claim herein as my invention—

1. In a machine for straightening and nibbing spring-leaves, the combination of an adjustable anvil-plate, a reciprocating bending-plate, and an adjustable punch, substantially as set forth.

2. In a machine for straightening and nibbing spring-leaves, the combination of an adjustable anvil-plate, a reciprocating bending-plate, an adjustable punch, and an adjustable perforated die, substantially as set forth.

In testimony whereof I have hereunto set my hand.

PHILO N. FRENCH.

Witnesses:

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