2 Sheets—Sheet 1.

H. A. WILLIAMS.

Machine for Rolling Taper Shapes.

No. 208,447. **Patented Sept. 24, 1878.**

Fig. 1.

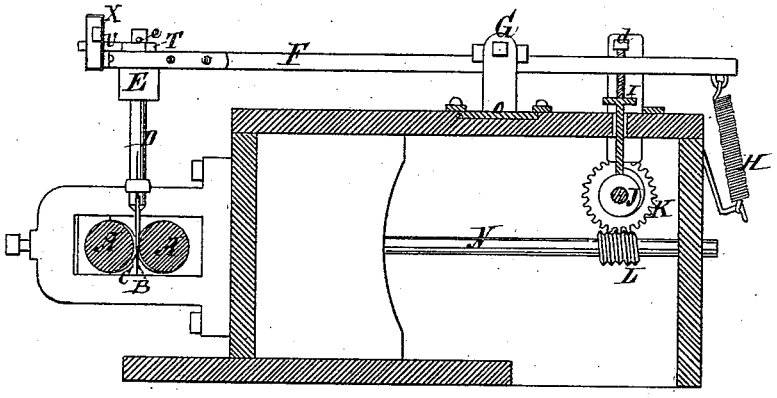
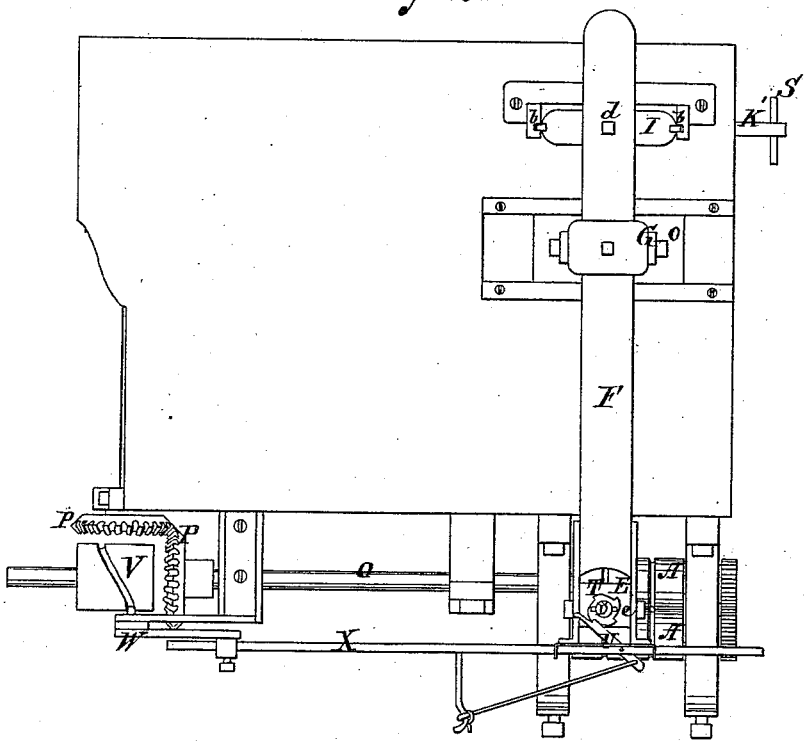


Fig. 2.



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2 Sheets—Sheet 2.

H. A. WILLIAMS.

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Fig. 3.

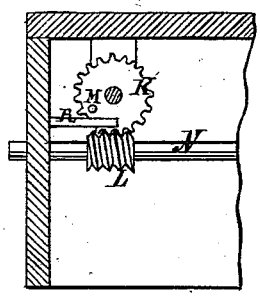
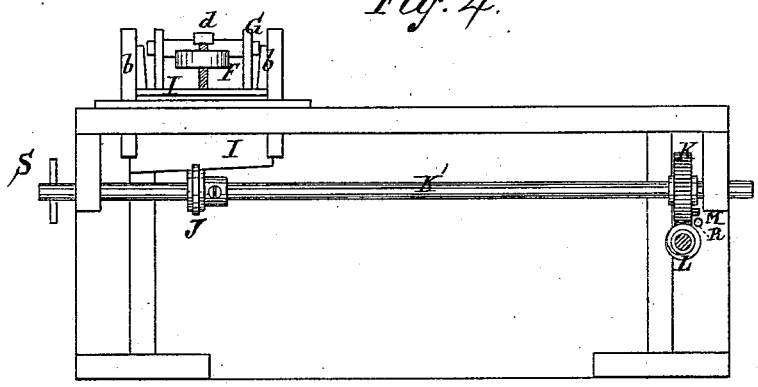


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY A. WILLIAMS, OF TAUNTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR ROLLING TAPER SHAPES.

Specification forming part of Letters Patent No. **208,447**, dated September 24, 1878; application filed February 16, 1878.

To all whom it may concern:

Be it known that I, HENRY A. WILLIAMS, of Taunton, Bristol county, and State of Massachusetts, have invented new and useful Improvements in Machines for Rolling Taper Shapes, &c., of which the following is a specification:

My invention relates to roller-die machinery for shaping shoe-makers' awls, crimping-tacks, picker-teeth, hackle-pins, bodkins, and other taper shapes by repeated and successive operations, in one and the same pair of roller-die grooves; and it consists of a feed mechanism, which is arranged vertically to the roller-dies, and is consequently more simple and efficient than the laterally or horizontally working feed, because the material to be shaped gravitates into the dies without the aid of any device other than a holder, and the holder affords a simpler means of effecting a progressive feed, which is also a part of the invention, than can be had with the ordinary horizontal feeder.

Figure 1 in the accompanying drawings is a transverse section of a roller-die machine with my improved gravitating feed mechanism. Fig. 2 is a plan view. Fig. 3 is a detail. Fig. 4 is a side elevation.

A represents a pair of roller-dies for pointing wire B by successive operations in groove C, said rollers being placed together side by side, so that the wires to be pointed may be presented from above them instead of from the side, as commonly arranged, and they are geared and operated in the ordinary way.

D is a stock, in the lower end of which the wires are placed to be presented to the roller-dies. This stock is suspended vertically in the head E of a holding-arm, F, so that it can rise and fall and also revolve freely in said head, and the head is jointed in the forked end of the arm, to allow it to vibrate freely to accommodate the wires to the dies, and also so that the stock may be swung forward to facilitate the application of the wires to the stock and their removal therefrom.

The arm is pivoted on a fulcrum, G, and is pressed by a spring, H, against the graduating-plate I, which is progressively advanced upward under the arm F by the cam J, thereby gradually depressing the stock, and thus progressively feeding the wires to the shaping-dies.

When the rollers gripe the wire they throw it upward in performing their work until the end rises out of their gripe. Then, when the enlarged portions of the grooves pass the wire, it falls down and feeds into the shaping-grooves to the extent allowed by the pin *e*, which lodges on the top of the head E and limits the fall of the stock.

In order to adapt one holder to be used for different die-grooves in the same pair of rollers, the fulcrum G is mounted on a sliding base, *o*, and the graduating-plate is extended laterally, so that the holder may be shifted along from groove to groove. The plate I is therefore made to work in guides *b*.

The arm F is made to bear upon the plate I by an adjusting-screw, *d*, by which the holder is set for articles of different lengths. The cam J is turned slowly by the worm-wheel K on shaft K′ and the worm L on a shaft, N, which is geared with the driving-shaft O by the wheels P.

Each wire is to be pointed and finished during one revolution of the cam, and is to be removed when the graduating-plate I drops from the summit of the cam. The cam stops while the finished wire is removed and a new blank put on the stock; and for this purpose a stud-pin, M, is arranged in the side of the wheel K in such relation to a stationary projection, R, that it will lift wheel K out of worm L at the same time or immediately after the graduating-plate drops from the summit of the cam.

When the new blank is in position the operator starts the cam ahead a little by the handle S, to let the pin M drop off the rest R, and thus connect the gears.

The stock D is gradually turned by the ratchet T and pawl U to shift the wire in the dies, and the pawl is worked by the cam V on the driving-shaft, the lever W, and the slide X.

The stock may be shifted by other means and the graduating device for the holder may be modified or changed without departing from the spirit of my invention, the essential part of which is a gravitating feed mechanism in connection with roller-dies; also, means for progressively-feeding by gravitation.

By this mode of feeding I am enabled to do much better and finer work than I can with the horizontal feed, being enabled to make sharp needle-points, and also to make the metal tougher and more durable.

By this arrangement of the work-holding stock so as to feed by gravitation there are some advantages gained over the horizontally-working feed, which are much more important than the mere saving of the spring or other device necessary for feeding in that arrangement, one of which is that it feeds quicker, and therefore enables the machine to do more work in a given time. Although a spring, which is the simplest device for so feeding the work, may be made to work as quick or quicker than gravity, yet, to enable it to do so, it must have such power that the stopping of the stock after feeding up shocks and jars the machine too much, and it is apt to cause the wires to shift forward in the jaws by which they are held, and thus feed into the rolls too much, which, by reducing them too fast, make fins, which develop in slivers on the sides of the wires as they are turned over and the fins rolled down.

Another advantage is that the springs or other feeding device would have to be readjusted every time pieces of different lengths were worked; and for long pieces, such as spindles of spinning machinery, the springs would have to be of such great length, in order to have the necessary range and be capable of much durability, as to be very objectionable; and another advantage is greater facility which this arrangement affords of adjusting the holder so as to present the work exactly in line of the grooves, which is very important, for, unless so presented, the wires will be bent.

The arm holding the stock can be shifted right or left, forward or backward, by much simpler contrivances than a sliding carriage can be raised or lowered or shifted laterally.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with roller-dies arranged in a horizontal plane, of a work-holding stock which feeds the work into the dies by gravitation, and is raised preparatory thereto by the rolls, substantially as described.

2. The combination, with roller-dies arranged in a horizontal plane, of a work-holding stock which feeds the work into the dies by gravitation, and progressively advances it therein, substantially as described.

3. The combination of the adjusting-arm F, work-holding stock D, and mechanism for adjusting the arm with roller-dies, substantially as described.

4. The graduating-cam J and plate L, in combination with the adjusting-arm F, stock D, and roller-dies A, substantially as described.

5. The combination, with the roller-dies, of stock D, arm F, graduating-plate I, cam J, and a stop mechanism to the latter, substantially as described.

6. The combination, with the roller-dies, of spring H, adjusting-screw *d*, graduating-plate I, adjusting-holder F, and stock D, substantially as described.

7. The combination of vertically-sliding stock D, pivoted head E, and adjusting-arm F with roller-dies, substantially as described.

HENRY A. WILLIAMS.

Witnesses:
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