S. C. KINGMAN.

Machines for Swaging Needle-Blanks.

No. 157,688. Patented Dec. 15, 1874.

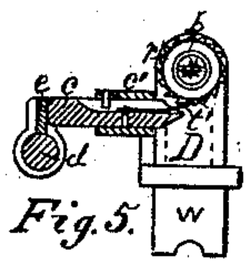


Fig. 5.

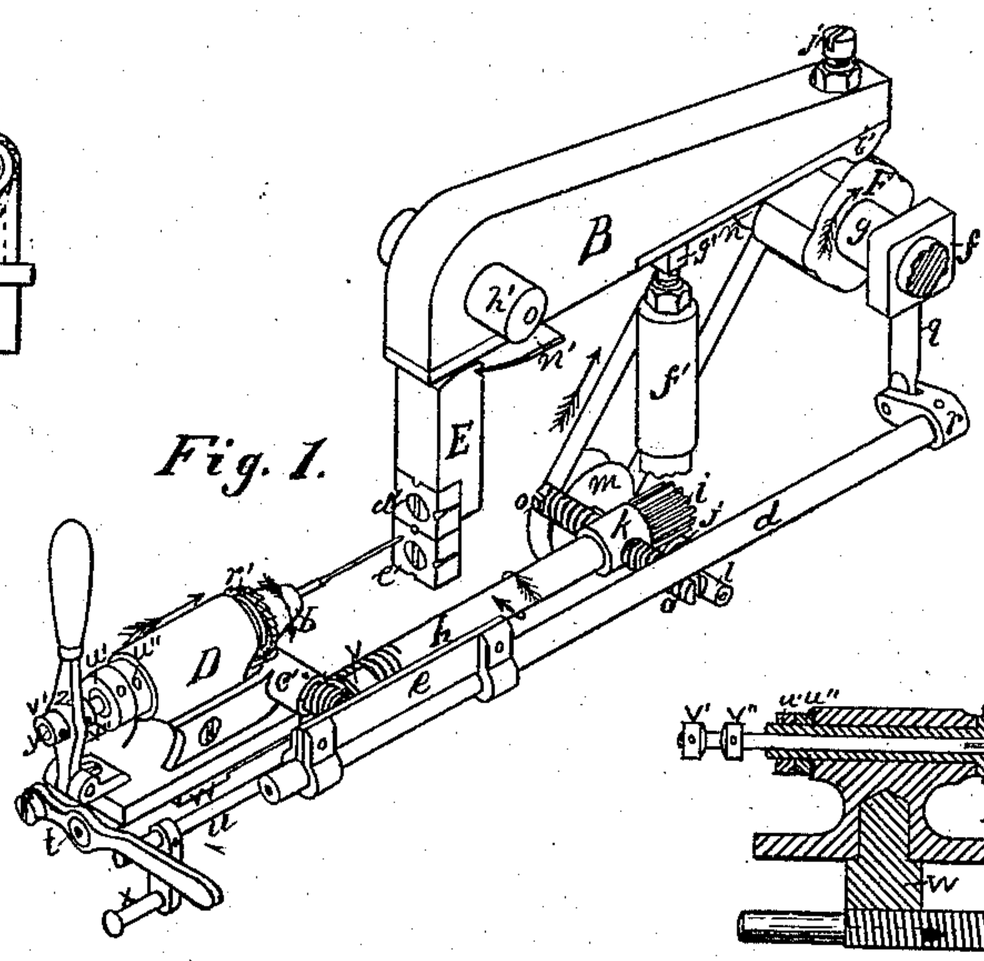


Fig. 1.

Fig. 4.

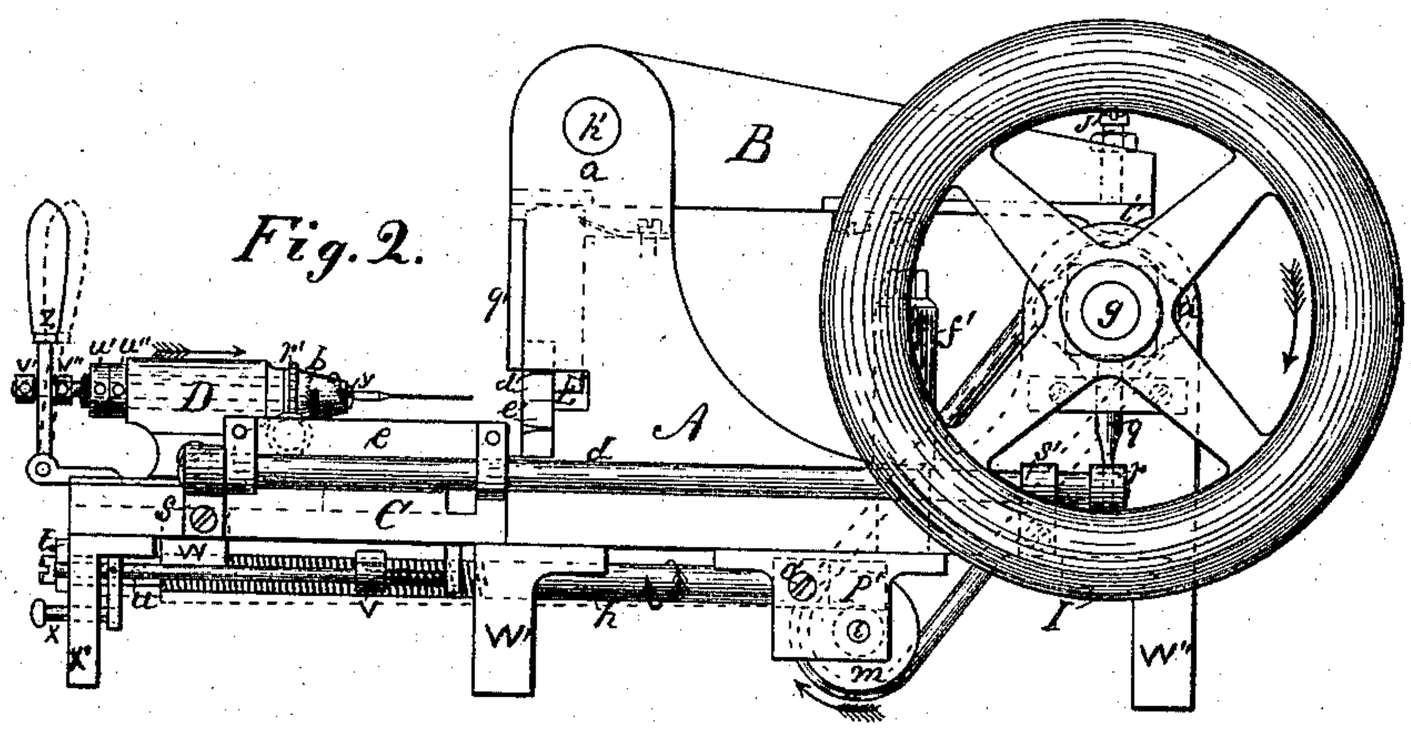
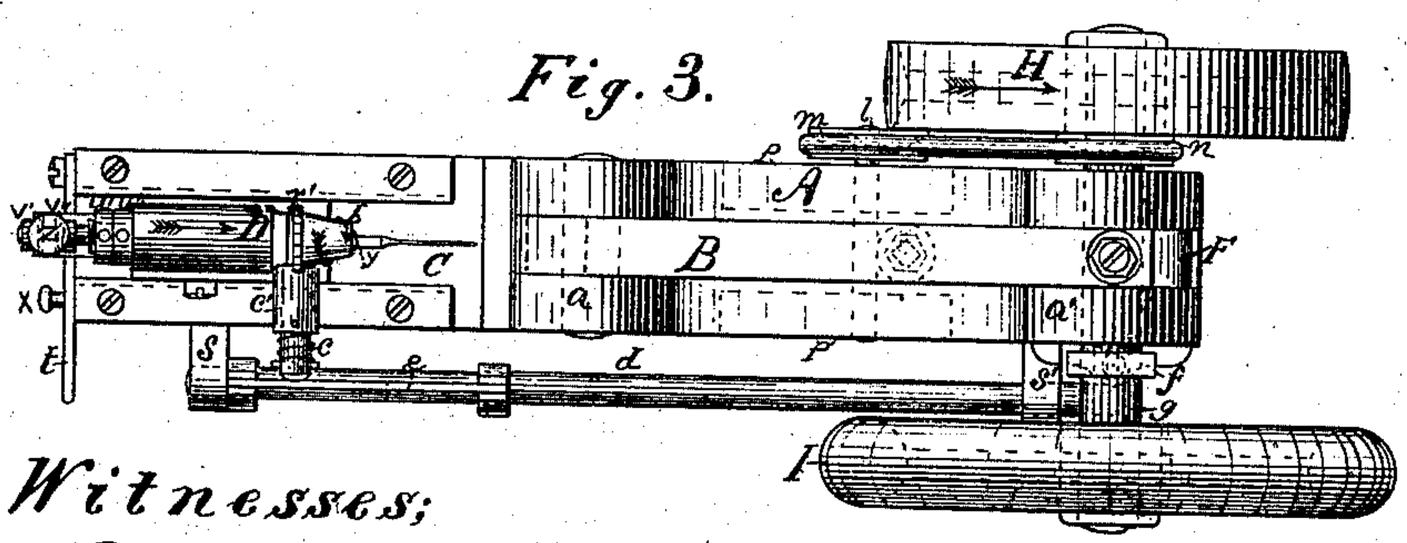


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL C. KINGMAN, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR SWAGING NEEDLE-BLANKS.

Specification forming part of Letters Patent No. **157,688**, dated December 15, 1874; application filed November 10, 1874.

To all whom it may concern:

Be it known that I, SAMUEL C. KINGMAN, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and Improved Machine for Swaging Sewing-Machine-Needle Blanks; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings making a part of this specification.

In that class of needle machinery known as swaging-machines, which are used for compressing or drawing out the wire blanks to the size and form required for the blades of sewing-machine needles, it has been found necessary in practice to produce the compressions upon the wire with uniformity and regularity in order to insure perfect and uniform sizes and forms to the blades, and my present improvements relate to the mechanism for operating the dies and feeding the blanks between the same.

To enable others skilled in the art to make and use my invention, I will proceed to describe the construction and operation of the same, with reference to the accompanying drawings.

Similar letters of reference indicate corresponding parts.

Figure 1 is a perspective view of the working parts of my improved machine, drawn without the frame in order to more clearly show the relative positions of the same. Fig. 2 is a side elevation, and Fig. 3 is a plan, of the same. Fig. 4 is a sectional view of the feed-spindle bearing and feed-nut, and a portion of the feed-screw. Fig. 5 is an end view of the feed-spindle and bearing, and a section of the spring-pawl carrier and bearing, and oscillating shaft and bar for operating the same.

A is the bed and frame of the machine, constructed with two upright bearings, *a a'*. B is the lever for operating the swaging-die. C is the bed for the feeding mechanism. D is the feed-spindle bearing. E is the sliding bar, to which is secured the upper swaging-die. F is the cam for operating the lever B. *b* is the feed-spindle. *c* is the spring-pawl carrier. *d* is the rock-shaft, and *e* is a bar attached to the rock-shaft *d*. *f* is a cam for operating the rock-shaft *d*. *g* is the main driving-shaft, and fitted to bearing *a'*. H is the driving-pulley secured to shaft *g*. I is a balance-wheel secured to the opposite end of the shaft *g*. *h* is the feed-screw and shaft for imparting motion to the feeding mechanism. *i* is a gear secured to the end of the feed-shaft *h*. *j* is an endless screw, which works into the gear *i*. *k* is a bearing for the feed-shaft *h*. *l* is a shaft for operating the feed-screw and shaft *h*. *m* is a pulley for driving the shaft *l*. *n* is a pulley secured to the shaft *g*. *o o'* are screws with conical points, which enter the sides of the bearing *k*. *p p'* are bearings for the shaft *l*. *q* is a bar for operating the rock-shaft *d*. *r* is a lever secured to the end of the rock-shaft *d*. The opposite end of the lever *r* is attached to the bar *q*. *s s'* are bearings for the rock-shaft *d*. *t* is a lever secured at the fulcrum to the frame of the machine. A bearing for the end of the feed-screw *h* is made a short distance from the fulcrum. *u* is a shipper-rod, on one end of which rests the lever *t* when the feeding mechanism is in operation. *v* is the shipper-lever for operating the shipper-rod *u*. *w* is the feed-nut secured to the sliding feed-spindle bearing D. *x* is a thumb-nut connected with the shipper-rod *u* to operate the shipper-rod when desired. *y* is a spring-chuck for holding the wire blank to be swaged, and is fitted to center hole in the feed-spindle *b*. *z* is a lever for operating the spring-chuck *y*. *c'* is the spring-pawl bearing. *d'* is the vibrating die secured to the sliding bar E. *e'* is the stationary die secured to the bed of the machine. *f'* is a stud secured to the bed of the machine under lever B. *g'* is a screw-bolt screwed into the end of the stud *f'*, and is designed to regulate and limit the motion of the lever B and opening of the dies *d' e'*. *h'* is a pin fitted to hole in upright *a*, on which swings the lever B. *i'* is a spring secured under lever B, near the end of which strikes the cam F. *j'* is a screw in the end of lever B to regulate the position of the spring *i'* with respect to the lever B. *n'* is a spring to raise the bar E, and keep the same against the lever B. *q'* is a cap over sliding bar E. *r'* is a

ratchet attached to the feed-spindle *b*. *t'* is a spring-pawl attached to the pawl-carrier *c*, to operate ratchet *r'*. *u' u''* are nuts on the end of feed-spindle *b*. *v' v''* are collars secured by rivets to one end of the spring-chuck *y*, one on each side of lever *z*. *w' w''* are legs for the frame and bed of the machine. *x'* is a leg for the bed of the feeding mechanism. The opposite end of the bed rests upon leg *w'*, as shown in Fig. 2.

I will now proceed to describe the practical operation of my improved machine, with reference to the accompanying drawings.

It is to be understood that wire blanks, equal in diameter to the size of the shanks of the needles to be swaged, are previously to be cut into lengths sufficient to supply the amount of stock required for the shanks and blades of the needles; the lever *z* is now thrown forward in about the position shown in broken line of the same, Fig. 2, which, being connected to one end of the chuck *y*, between the collars *v' v''*, forces the opposite tapering end of the same out of its tapering bearing in the end of the feed-spindle *b*. The chuck *y* has a hole in the tapering end of the same at the center, corresponding in size to the blank to be swaged. The tapering end of the chuck *y* is also split across the center to divide the same into two equal parts or jaws. The end of the blank designed for the shank is now inserted into the hole in the center of the chuck *y*. The lever *z* is pulled back to its original position, which operation brings the tapering end of the chuck *y* into the tapering bearing in the end of the feed-spindle *b*, and the two spring-jaws of the chuck are consequently forced together, and firmly bind the wire blank which has been inserted between them. The driving-pulley H is understood to revolve in the direction indicated by the arrow drawn upon the same, which communicates motions to the cam F, pulleys *m n*, and feed-screw *h*, in the directions indicated by the arrows drawn upon the same. As the long end of the lever B rests upon the cam F, which has four projections upon the face, a very rapid oscillating motion is imparted to lever B, which, in turn, communicates a rapid vibrating motion to the sliding bar E and die *d'*, motion being communicated to the feeding mechanism by means of the feed-screw *h*. The blank to be swaged is now moved forward with uniform speed, the free end of the blank entering the grooves between the die *d'* and stationary die *e'*, said grooves corresponding in size and form desired for the blade of the needle. A revolving motion is at the same time imparted to the blank by means of the ratchet *r'*, pawl *t'*, carrier *c*, rock-shaft *d*, and cam *f*. The blank is thus gradually moved forward between the dies *d'* and *e'*, receiving a series of compressions with uniformity and regularity until the nut *w*, attached to the feeding mechanism, reaches the shipper-lever *v*, which causes the shipper-rod *u* to move forward and away from under the lever *t*, which rests upon the end of the shipper-rod *u*, and which allows the shaft and feed-screw *h* to drop away from the nut *w*, as shown in broken outline of the feed-screw, Fig. 2. The feeding mechanism now being disconnected with the feed-screw *h* there is no longer a forward motion of the blank, leaving a shank upon the blank at any length desired, according to the position of the adjustable shipper-lever *v* upon the rod *u*. The feeding mechanism being now free from the feed-screw *h* can be pulled back to its original position, the swaged blank taken out of the chuck *y*, a new blank inserted, the lever *t* raised to allow the end of the shipper-rod *u* to pass under the same, as shown in Figs. 1 and 2, when the feed-screw is again connected with nut *w*, the feeding mechanism carried forward, and the swaging operation repeated, as before described.

Thus I produce all the motions required to swage or compress the blanks to the sizes and forms of blades desired with great mechanical accuracy and regularity, which result in uniform lengths and sizes to the blades of the needles.

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

1. In combination with the square dies *d'* and *e'*, the spring-chuck *y*, lever *z*, spindle *b*, bearing D, nut *w*, and feed-screw *h*, constructed substantially as and for the purpose specified.

2. In combination with the spindle *b*, the ratchet *r'*, spring-pawl *t*, pawl-carrier *c*, bar *e*, and rock-shaft *d*, constructed substantially as and for the purpose specified.

3. In combination with the feed-spindle bearing D, nut *w*, the feed-screw *h*, lever *t*, shipper-rod *u*, and shipper-lever *v*, constructed substantially as and for the purpose specified.

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Witnesses:

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