

P. M. BEERS.  
Needle-Swaging Machine.

No. 210,289.

Patented Nov. 26, 1878.

Fig:1.

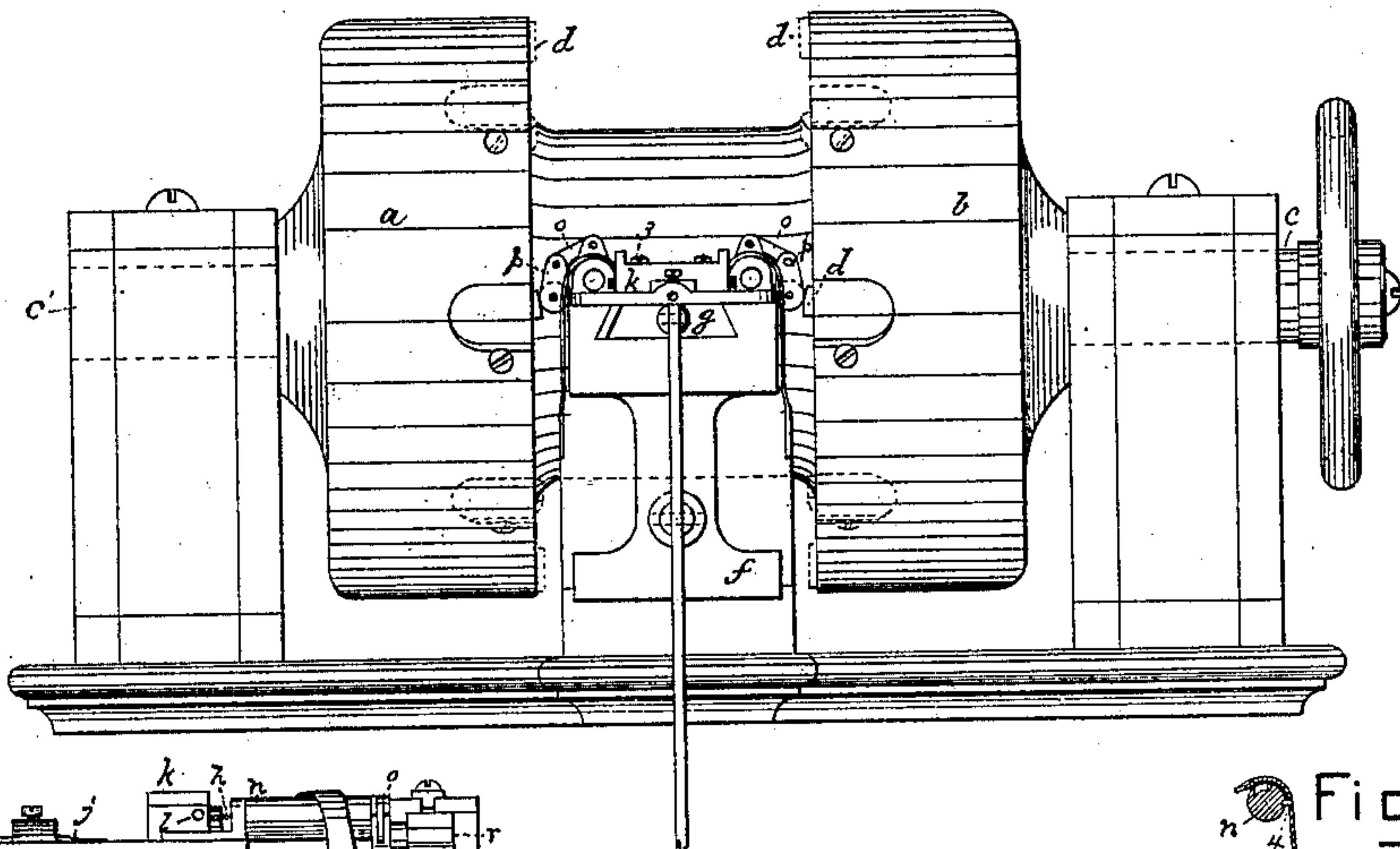


Fig:7.

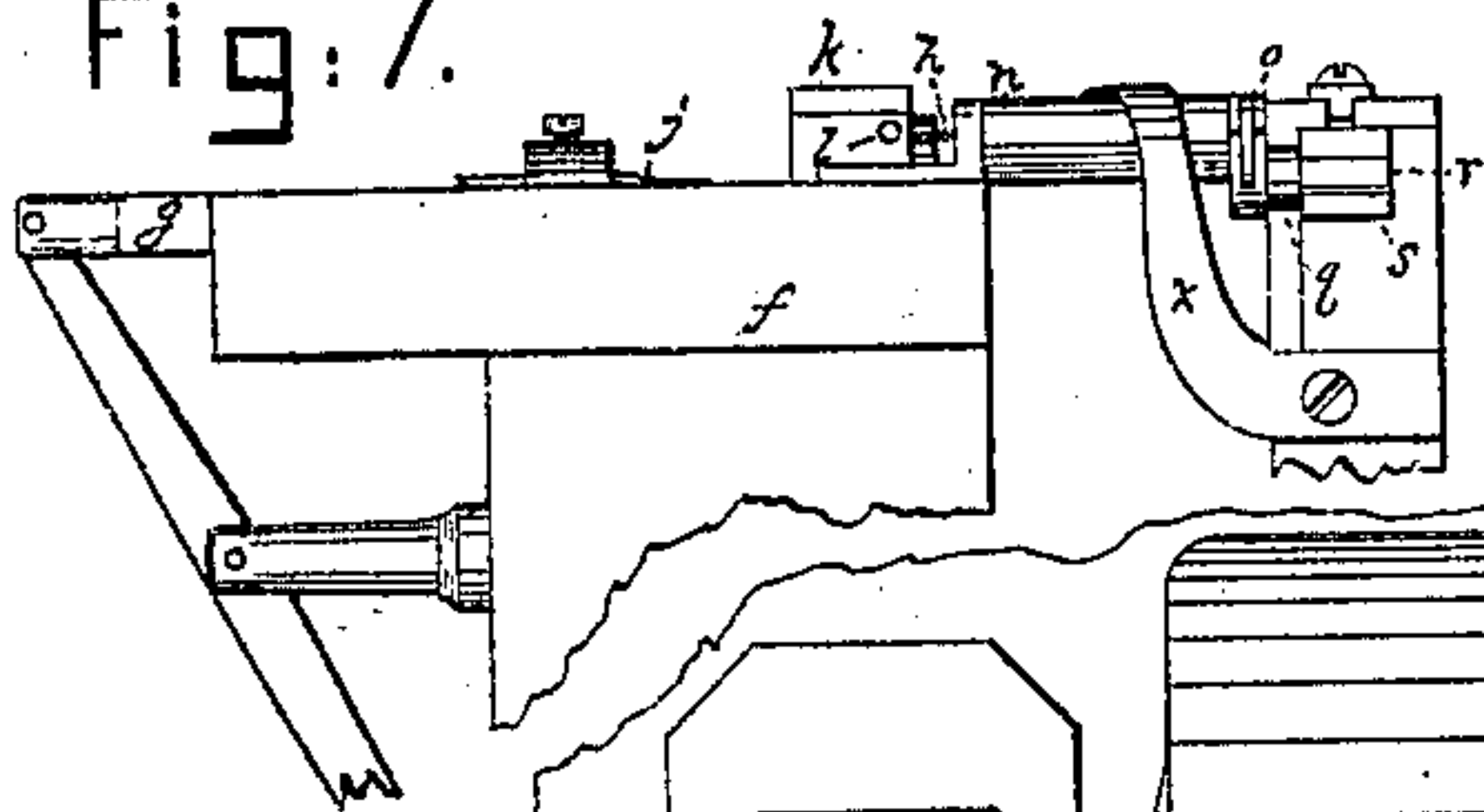


Fig:2.

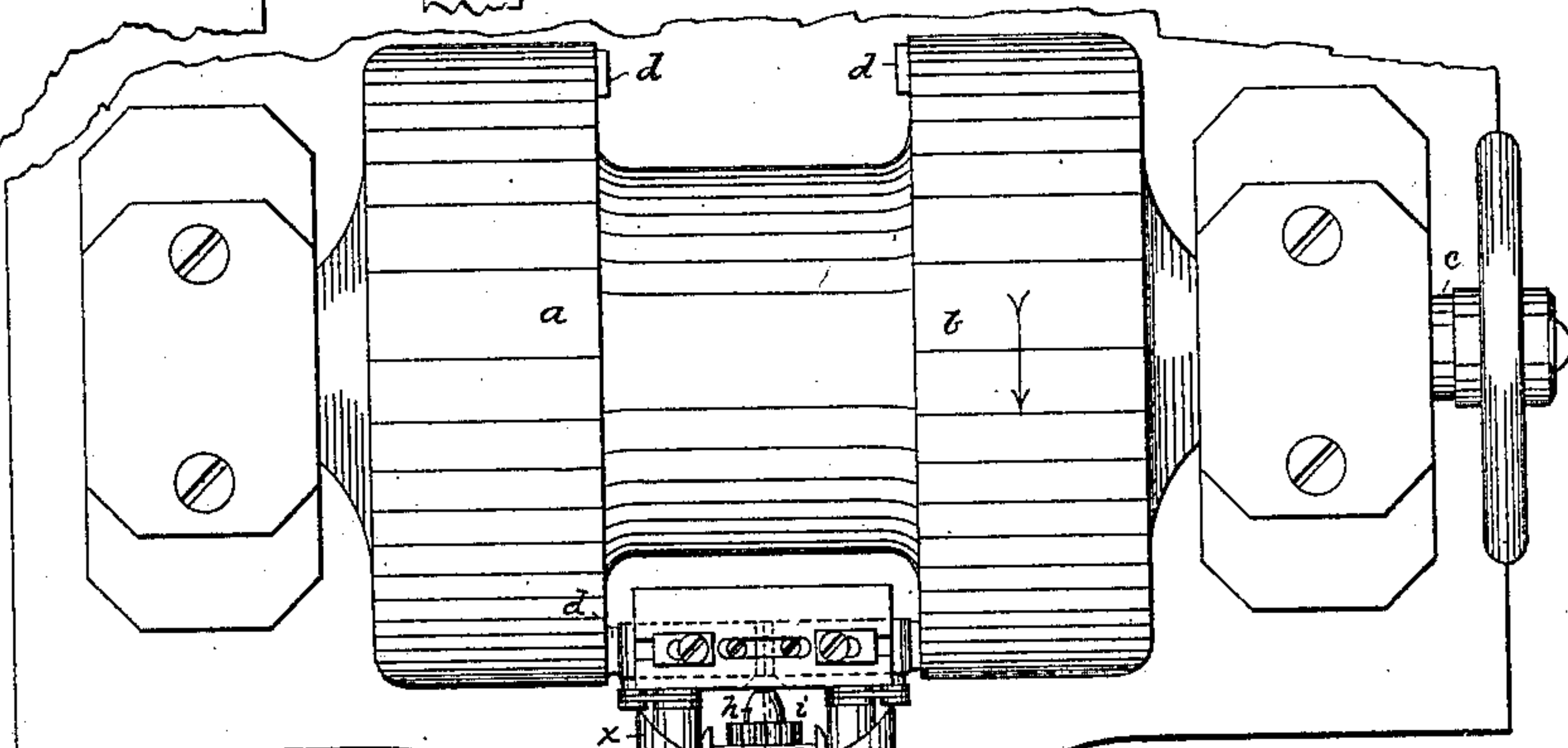


Fig:8.

Fig:5.

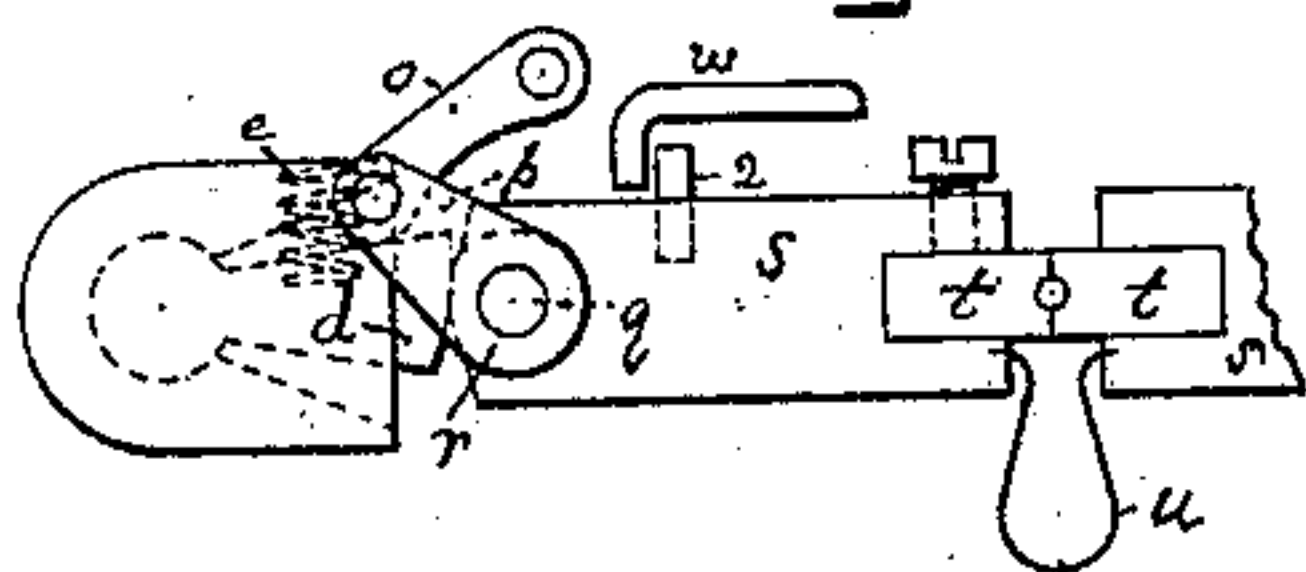


Fig:6.

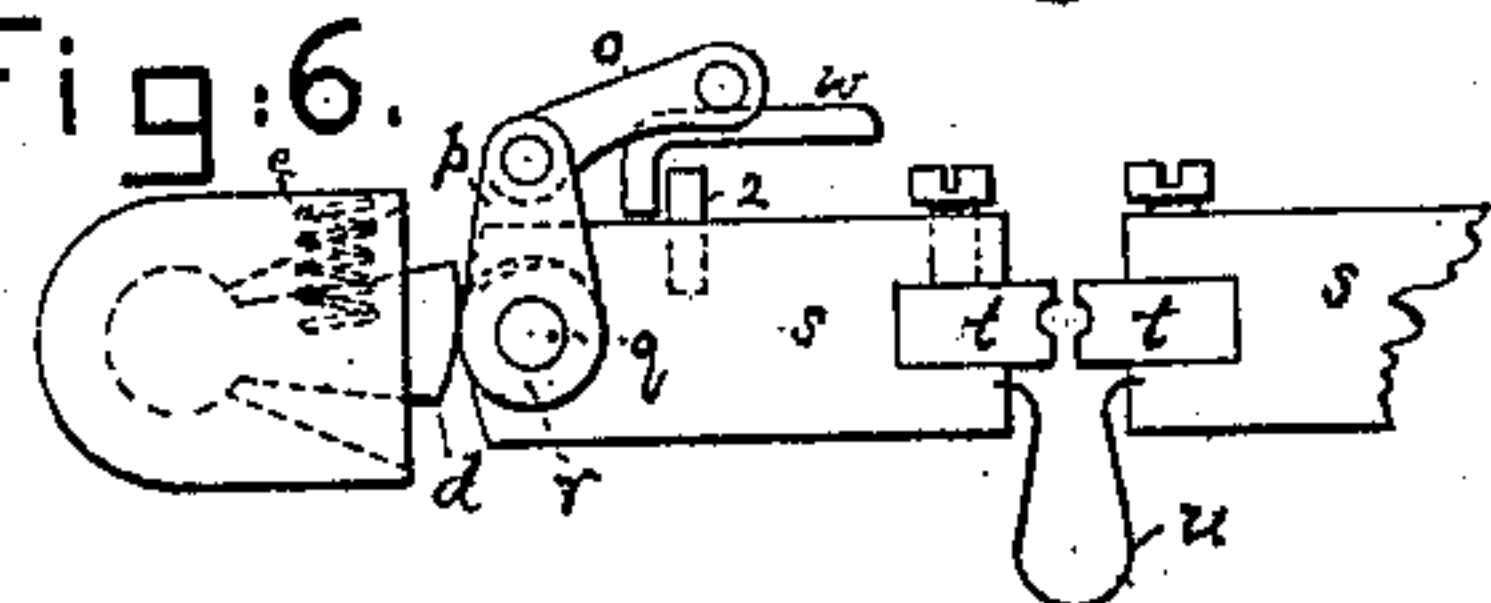


Fig:4.

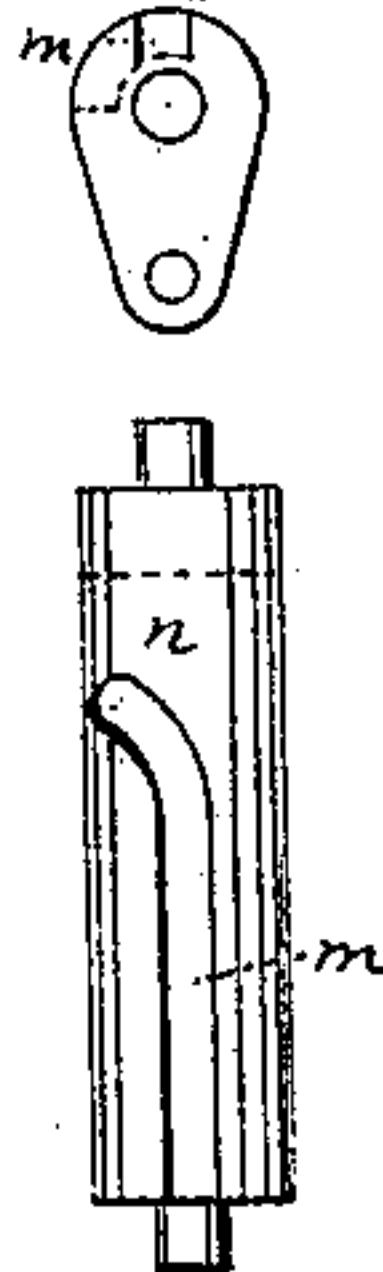
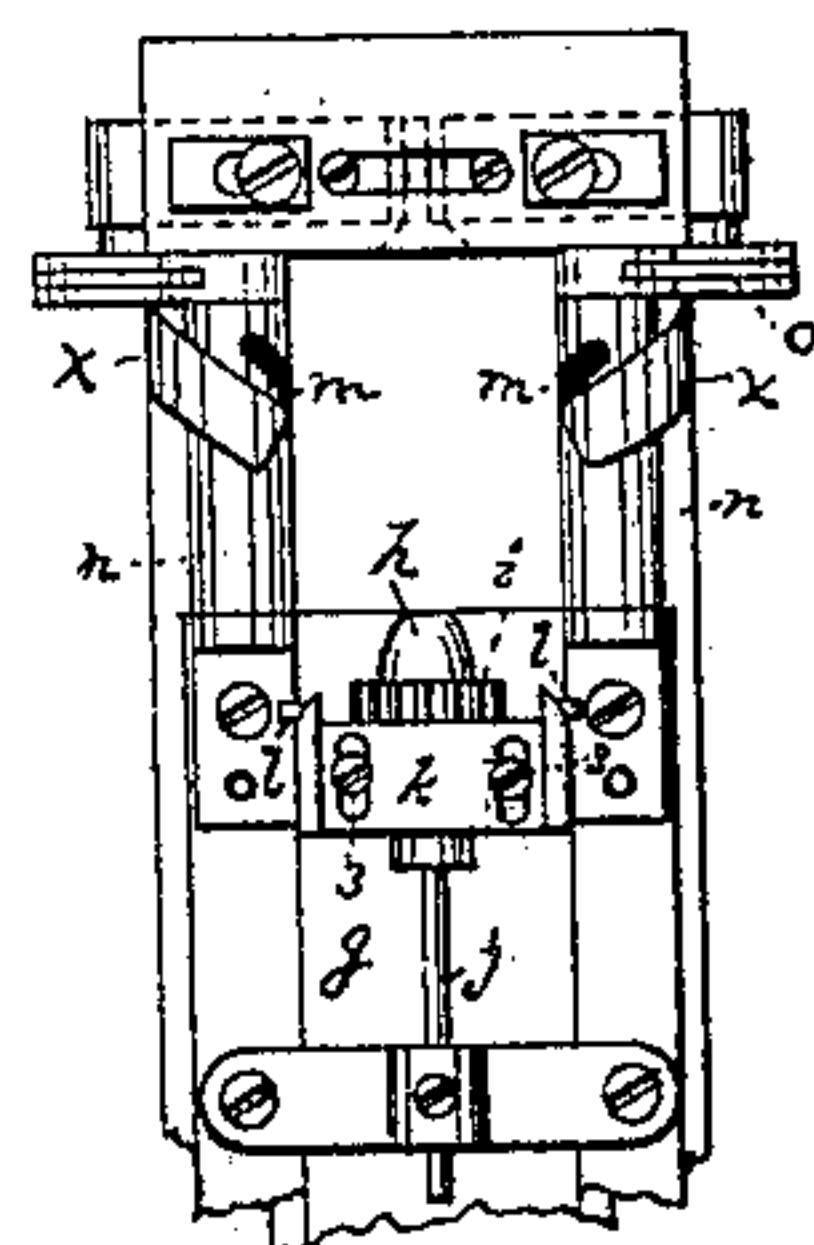


Fig:3.



Witnesses.

N. E. Whitney.  
L. F. Connor

Inventor

Philo M. Beers  
by Crosby & Gregory, Attys.



# UNITED STATES PATENT OFFICE.

PHILO M. BEERS, OF BRIDGEPORT, CONN., ASSIGNOR TO THE WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

## IMPROVEMENT IN NEEDLE-SWAGING MACHINES.

Specification forming part of Letters Patent No. **210,289**, dated November 26, 1878; application filed July 29, 1878.

*To all whom it may concern:*

Be it known that I, PHILO M. BEERS, of Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Needle-Swaging Machines, of which the following description, in connection with the drawing forming a part thereof, is a specification.

This invention relates to machines for swaging sewing-machine needles or other articles, as wire and rods; and the object of the invention is to so control the throw of the dies that the article being swaged may be swaged tapering, or be automatically made of irregular form, as desired.

In the manufacture of curved eye-pointed needles, such as used in the Wheeler & Wilson machine, the needle has to be of greater diameter at or near than just above the eye, in order to permit the thread to rend freely through the material being sewed. United States Patent No. 167,630 shows how a needle-blank may be operated upon by dies to swage it of uniform diameter at the shank and eye portions; but the said blank so swaged after the formation of the eye had to be reduced by a subsequent grinding operation.

This my present invention is an improvement upon the machine represented in said patent, to which reference may be had, for in this my present machine the apparatus for removing the blanks from the hopper and feeding them to the rotating chuck, the said chuck, and the mechanism for rotating and reciprocating it with a blank, will and may be as described in the said patent.

This invention consists in the combination, in a needle-swaging machine which has mechanism to rotate and reciprocate the blank, of a reciprocating die or dies and an automatically-operated variable device to co-operate with the dies and tappets, to automatically increase the stroke of the die or dies to swage the blank of less diameter above the eye, as hereinafter set forth; also, in that improvement in the art or method of manufacturing sewing-machine needles by swaging which consists in swaging of a certain diameter the point end and eye-forming portion of the blank as it is being rotated, and then swaging to less

diameter that portion of the blank just beyond and between the eye-forming portion and the shank or head of the needle, as hereinafter set forth.

Figure 1 represents, in front elevation, a sufficient portion of a needle-swaging machine to illustrate my invention; Fig. 2, a plan view thereof, the carriage being shown as moved forward to place the blank between the dies; Fig. 3, a detail showing the carriage drawn back; Figs. 4, 5, and 6, details of the mechanism for automatically changing the throw of the dies; Fig. 7, a side elevation of the carriage; Fig. 8, a detail of the sleeve-holders.

The double-tappet cylinders *a b*, mounted on the main shaft *c* of the machine, operate during their rotation to reciprocate the dies, as in United States Patent No. 165,976; but the tappets *d* are in this invention so connected with the cylinders (see Fig. 5) as to be capable of turning or swinging back for a short distance opposite the direction of rotation of the tappet-cylinders, so that the blows of the tappets upon the dies are made more easy. A spring, *e*, in connection with each tappet, operates to restore it to its original position after it has passed a die.

The portion *f* at the front of the machine has a reciprocating slide, *g*, at the forward end of which is the chuck *h* and gear *i* to rotate it, the said parts and the pinion which engages the gear *i* being as shown in Patent No. 167,630, before referred to. The plunger *j* for removing a blank from the hopper into the chuck is also as in the said patent.

At the forward end of the carriage is a regulating-plate, *k*, provided with pins *l* or friction-rollers, which enter the grooves *m* in the sleeves *n*, which are connected by links *o* with arms *p*, projecting from shafts *q*, provided with or adapted to operate variable throw devices or contrivances *r*, automatically actuated to cause the front or acting ends of the dies *t*, when the die-holders *s* are moved forward by the tappets, to come together more or less close to vary the diameter of the article or wire being swaged between the dies.

In this instance of my invention the variable throw device is shown as an eccentric located at one end of and supported by the die-



holder *s*, and it may be rotated, as in Fig. 5, to place its larger or longer radius outside of and beyond the end of the die-holder, to be struck by the tappet to swage the blank to its least diameter, as when it is being operated upon between its eye and shank; or it may occupy a position within the die-holder, as in Fig. 6, the tappet then striking either the end of the die-holder or the portion of the variable device of least radius, the die then coming less near together, and swaging the blank of larger diameter.

I have herein shown both dies arranged to be reciprocated at the same time, but it is obvious that one die might be stationary; but this plan would not be so well, for the strain on the machine would be unequal, and the blank would be less uniform.

It is obvious that the construction of the variable device herein shown may be changed without departing from my invention—as, for instance, any suitable automatically-operated wedge may be interposed between the tappets and the die-holders, or between portions of the die-holders. A spring, *u*, throws the die-holders open until the projection or pin 2 thereon strikes the adjustable stop *w*, which controls the backward position of the die-holders according to the diameter of the needle being swaged.

The regulating-plate *k* is made adjustable by the set-screws 3, so that the pins upon the plate may act sooner or later, during the forward motion of the carriage, with the wire being swaged, so as to throw out the variable

device and cause the wire to be reduced at the desired portion of its length—as, for instance, in the case of a needle, to commence the reduction very close to or farther from the portion of the blank to form the eye.

The sleeves are locked in position while the pins of the regulating-plate are withdrawn from the grooves *m* by means of sleeve-holders *x*, provided with pins 4, which enter holes in the sleeves, the said holders being released during the inward run of the carriage by the action of the regulating-plate against their ends. (See Fig. 2.)

I am aware that it is not new to forge a flat bar so that it tapers toward one end.

I claim—

1. In a needle-swaging machine, a rotating and reciprocating chuck to hold the blank, combined with dies *t*, two rotating tappet-cylinders to actuate the dies, and an automatically-operated variable device to increase the throw of the dies just after swaging the point and eye forming portions of the needle-blank.

2. The die-holder and its eccentric or variable device, combined with the sleeve and intermediate connections and the regulating-plate to operate the eccentrics, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PHILO M. BEERS.

Witnesses:

G. W. GREGORY,  
N. E. WHITNEY.