

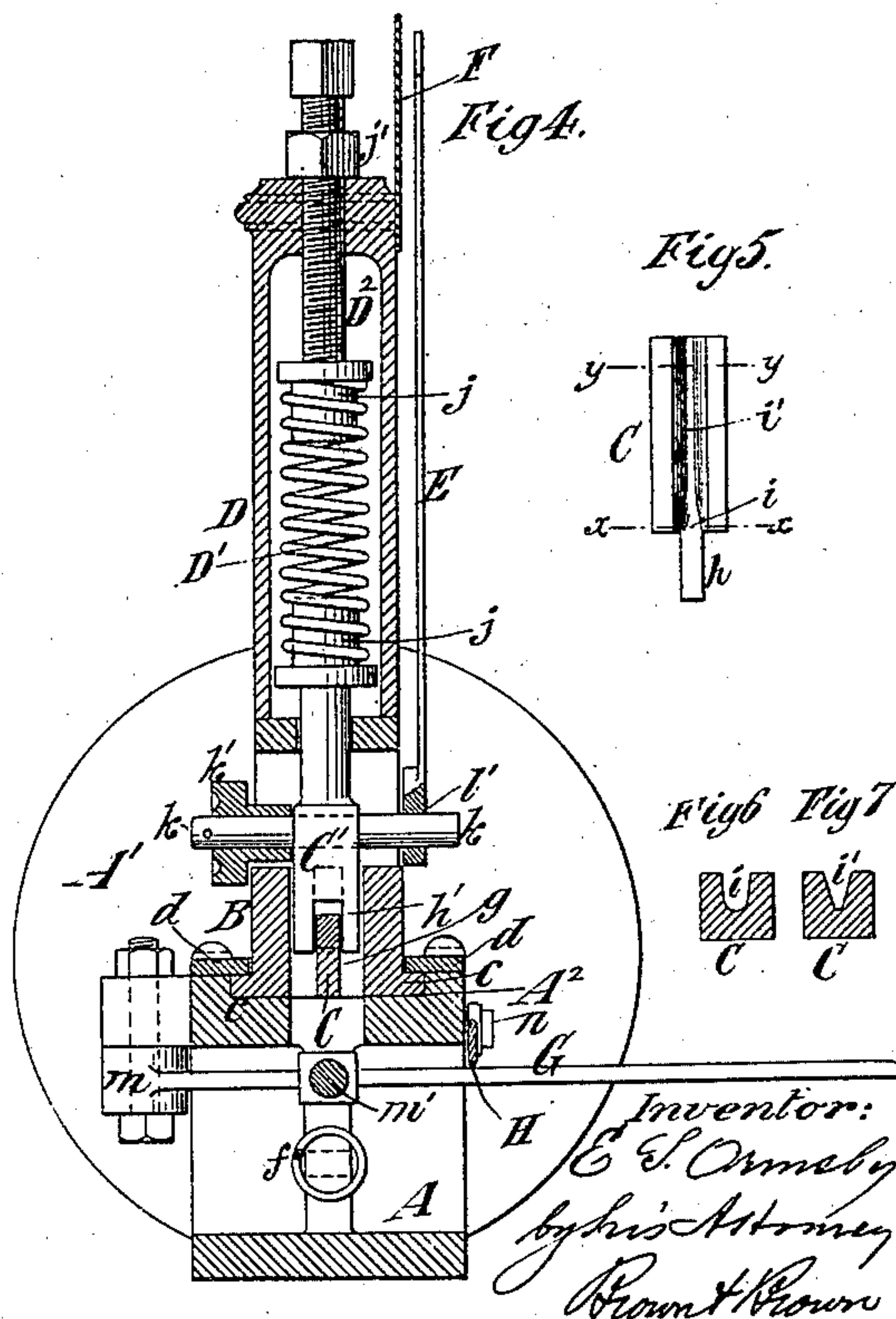
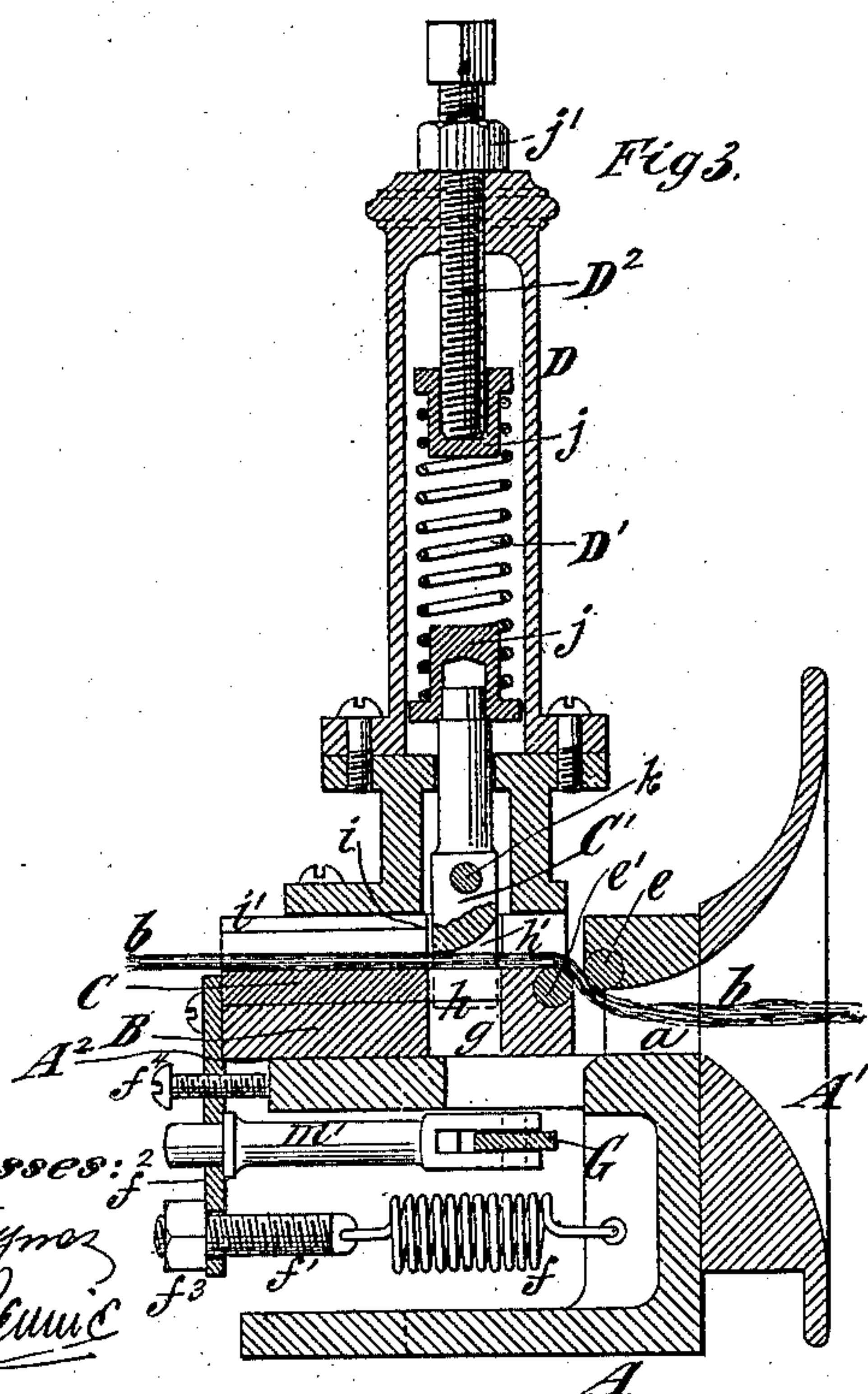
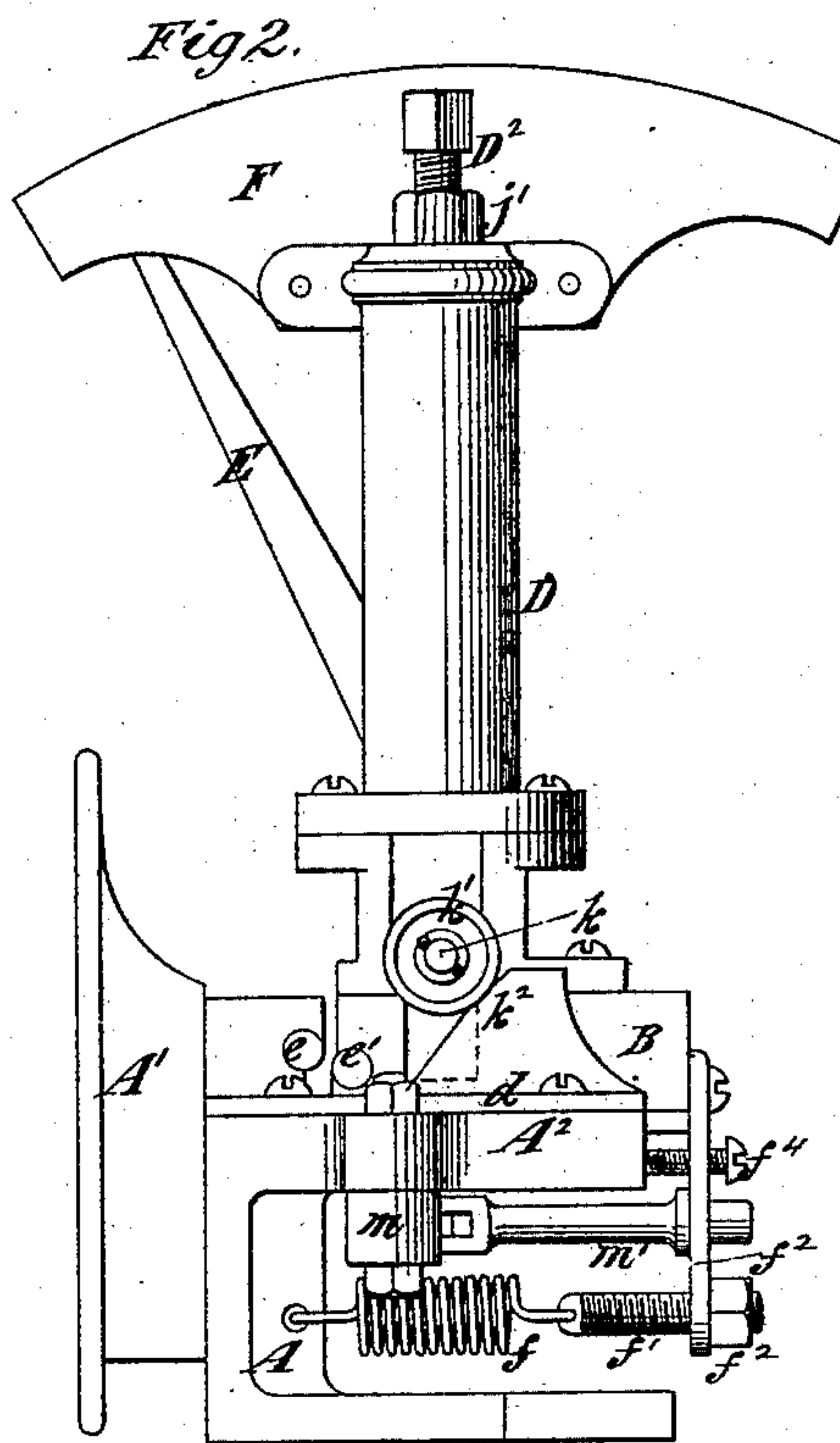
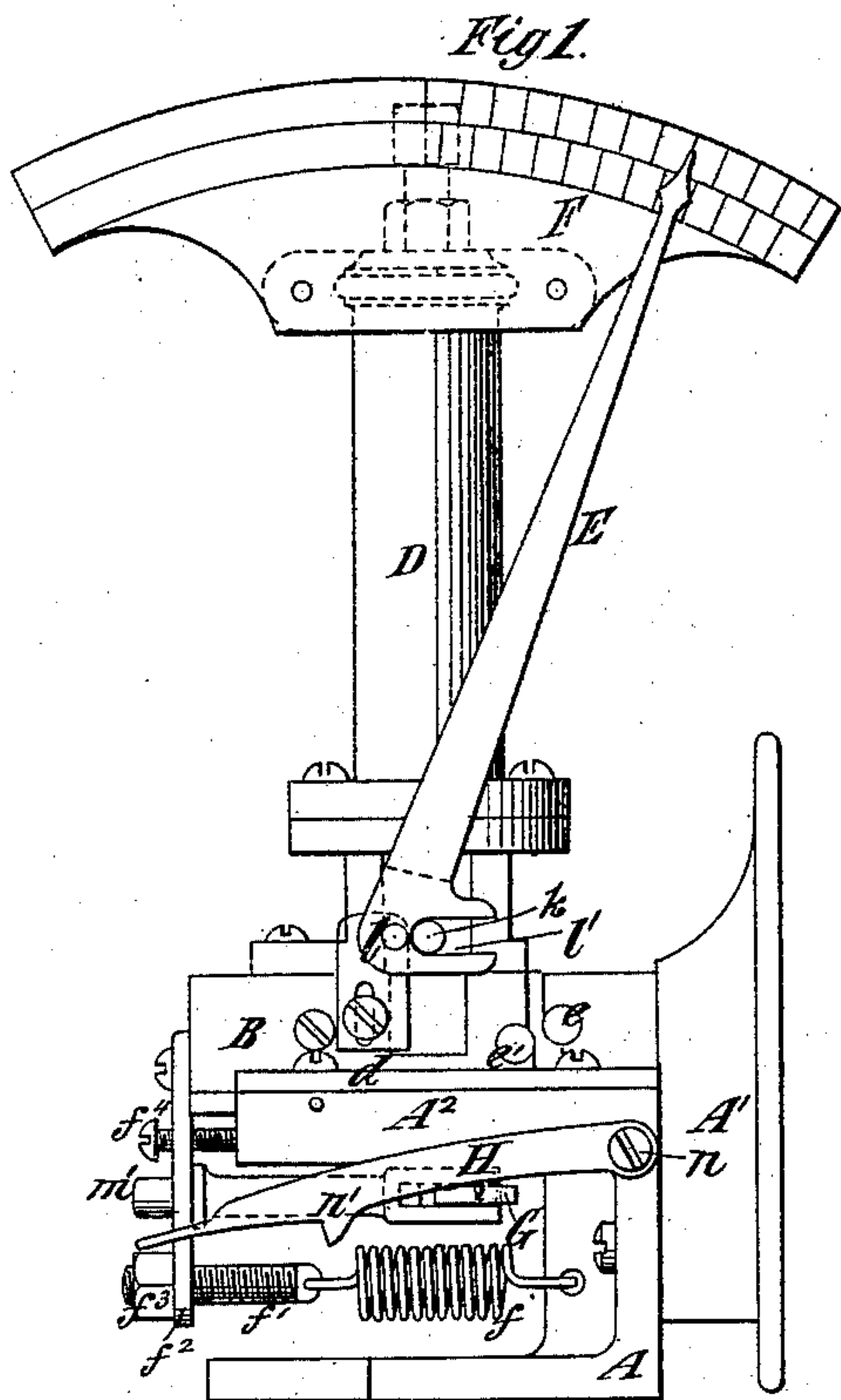
(No Model.)

E. S. ORMSBY.

NIPPER HEAD FOR SPINNING MACHINES.

No. 286,727.

Patented Oct. 16, 1883.



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UNITED STATES PATENT OFFICE.

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NIPPER-HEAD FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 286,727, dated October 16, 1883.

Application filed February 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELISHA S. ORMSBY, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Nipper-Head for Spinning-Machines, of which the following is a specification.

My invention relates to the nippers or nipper-heads which are commonly employed in the machine known as the "jenny," used for spinning rope-yarn and certain kinds of twine. In such machines the nipper or nipper-head is mounted upon a regulating-lever, which controls the speed of the chain of gill-pins which deliver the sliver to be spun.

My invention consists in the combination, in a nipper-head, of two nippers, placed one in advance of the other in the nipper-head, and through both of which the sliver passes, whereby I more effectively straighten the fiber of the sliver before the twist takes place and bring the sliver into better condition for twisting. These two nippers are in all cases so constructed that the first nipper, or the one through which the sliver first passes, is capable of yielding or opening by a movement of one of its jaws or members in the direction of the length of the sliver, so as to straighten the fibers, while the second nipper is capable of yielding or opening by a movement of one of its jaws or members in a direction transverse to the length of the sliver. The springs whereby the two nippers are closed preferably are of such relative strength that the first nipper will open more easily than the second.

The invention also consists in the combination, in a nipper-head, of a nipper composed of two jaws or members, one of which is capable of a yielding movement in a direction transverse to the length of the fiber, an adjustable spring or weight acting upon said yielding jaw or member, a scale, and an index or hand connected with said movable jaw or member for indicating the extent or variations of its movement, and thereby enabling the operator to readily ascertain what size of yarn is being spun. If the yarn is too large, more pressure is given to the second nipper.

The invention also consists in the combination, in a nipper-head, of a nipper having two members or jaws with flat faces, and one of which has a continuation of gradually-chang-

ing form from the flat surface to a rounded or concave surface, and then to a V-shaped surface. From the flat faces of the nipper jaws or members the sliver passes over or through the rounded or concave portion, and then through the V-shaped portion, it being subjected to a twisting action meanwhile; and by making one of the members or jaws with a face of the form specified the making of round, smooth, and evenly-twisted yarn or twine is facilitated.

The invention also consists in various novel details of construction and combinations of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of one side of a nipper-head embodying my invention. Fig. 2 is an elevation of the opposite side thereof. Fig. 3 is a central vertical section of the nipper-head. Fig. 4 is a vertical section in a plane at right angles to the plane of the section, Fig. 3. Fig. 5 is a plan of the nipper jaw or member, having the face of varying form; and Figs. 6 and 7 are transverse sections of said jaw or member on the dotted lines *xx* and *yy*, respectively.

Similar letters of reference designate corresponding parts in all the figures.

Before proceeding to give a detailed description of the nipper-head here chosen to illustrate my invention, I would remark that I do not limit myself to the particular construction here shown, and that many of the novel features of my invention may be embodied in nipper-heads of other constructions.

The nipper-head comprises two principal parts, one of which parts is rigidly secured to the upper end of the regulating-lever, which controls the speed of the chain of gill-pins which deliver the sliver to the nipper, and the other of which parts is movable, or adapted to yield relatively to the first part named and independently of any movement of the nipper-head, as a whole, with the regulating-lever. The part of the nipper-head which is rigidly secured on the regulating-lever comprises a stock-piece, A, which may be of cast metal, bolted to the top of the regulating-lever, (not here shown,) and a trumpet-mouth, A', with its throat *a*, through which the sliver *b* passes. The movable or yielding part of the nipper-

head comprises a block, slide, or piece, B, which is adapted to slide or move in a direction lengthwise of the sliver in a slideway, A², in the stock-piece A. The slide or block B is provided with tongues or ribs *c*, and the slideway is provided with gibs *d*, which overlap the tongues and secure the slide or block in the slideway.

In the adjacent faces of the slide B and stock A are secured pieces *e e'*, of steel or other suitable material, which form the members or jaws of the first nipper, and between which the sliver *b* passes. The member or jaw *e* of the nipper is fixed, but the member or jaw *e'* is capable of yielding, as it is secured in and moves with the slide B. The member or jaw *e'* is held in place adjacent to the member or jaw *e* by a spring, *f*, which is attached at one end of the stock A and at the other end to a screw-threaded rod, *f'*, that passes loosely through a hole in a piece, *f''*, attached to and constituting a part of the slide B. The rod *f'* has upon it a nut *f'''*, whereby the tension of the spring *f* may be regulated. The movement of the member or jaw *e'* toward its fellow is limited by an adjustable stop, which may consist of a screw, *f⁴*, adjustable in the piece *f''* and abutting against the end of the stock A, as shown in Fig. 3.

The slide B has a vertical slot or mortise, *g*, extending through or partly through it, and it carries both the members or jaws C C' of the second nippers. The lower member or jaw, C, as here shown, consists of a steel plate or piece secured in the slide, and having a portion, *h*, of reduced width. (Shown in Fig. 5.) The member or jaw C' consists of a vertically-movable plunger, which is forked at its lower end, *h'*, so as to straddle the portion *h* of the piece C, as shown in Fig. 4. The bottom of the fork *h'* is curved in a direction lengthwise of the sliver, as shown in Fig. 3, so that the sliver may enter readily between it and the top of the member or jaw C; but the adjacent faces of the two said members or jaws are flat or straight in a direction transverse to the length of the sliver. The portion *i* of the face of the member or jaw C just in advance of the member or jaw C' is rounded or concave, as shown in Fig. 5, and in Fig. 6, which is a section on the line *x x*, Fig. 5, and beyond the portion *i* is a portion, *i'*, which is of V-shaped transverse section, as shown in Fig. 5, and in Fig. 7, which is a section on the dotted line *y y*, Fig. 5. The last nip on the sliver of course is between the members or jaws C C', and there the twist produced by the flier commences. The varying form of the face of the member or jaw C, from the flat portion to the rounded or concave portion *i* and the V-shaped portion *i'*, gradually changes the form of the sliver from an approximately square form to a round yarn or twine, and by this formation of the member or jaw C, I am enabled to produce very smooth, round, and uniform yarns or twine, superior to those produced heretofore.

Mounted upon the slide B is a spring-case,

D, containing a spring, D', the ends of which fit upon buttons or thimbles *j*, one of which fits the end of the plunger C' and the other of which receives the end of a set-screw, D². The screw D² is fitted to the upper closed end of the spring-case D, so that by turning the screw the tension of the spring D' may be varied, and after adjustment the screw may be held by a jam-nut, *j'*, in a well-understood manner. The upper or movable jaw or member, C', yields by compressing the spring D', and therefore by adjusting the screw the nip of the members or jaws C C' may be varied as may be desired. The movable member or jaw C' has a pin, *k*, extending laterally through it, and provided with a roller or bowl, *k'*, and upon the stock A is a cam, *k''*, with which the roller or bowl comes in contact as the slide moves back or yields, as shown in Fig. 2, whereby the movable member or jaw C' is moved away from its fellow C. Consequently it will be seen that when any large place in the sliver comes into the nipper *e e'* the member or jaw *e'* yields, and the slide B moves back against the force of the spring *f*, and at the same time raises the member or jaw C' of the second nipper against the force of the spring D'. The spring *f* should be adjusted so as to yield before the

E designates an index fulcrumed at *l* to the slide B and forked at *l'*, so as to embrace the pin *k* in the upper member or jaw, C', as shown in Fig. 1. The index E indicates on a scale, F, the rising and falling movement of the member or jaw C', and the extent of opening of the nipper may be ascertained readily. If the attendant notices that the nipper is producing too thick or large yarn or twine, he adjusts the screw D² and puts more tension on the spring D', and thereby produces a stronger nip; but if he sees that the yarn or twine is too small, he loosens the screw and lessens the tension of the spring D'.

To enable the slide B to be drawn back for the purpose of introducing the sliver, I provide a lever, G, fulcrumed at *m* and acting through a rod or stem, *m'*, on the piece *f''*, which forms a part of the slide. When the slide is pushed back as far as is desirable, the lever is caught and retained by a latch, H, which is fulcrumed at *n*, and is provided with a shoulder, *n'*, for engaging with the lever. When the latch H is raised, the slide is returned by the spring *f*.

In this nipper-head the sliver passes through two nippers, which bite it at a little distance apart, and by their action straighten the fibers, and enable a better quality of yarn or twine to be produced.

This nipper-head may be substituted for the ordinary nipper on the regulating-lever, and it is therefore easily applied to existing spinning-machines.

I am aware that it is not new to provide two nippers in a single nipper-head, the movable jaws or members of the two nippers being both capable of movement in a direction

transverse to the length of the fiber. In such a device the twist takes place at the first nipper, while the second nipper serves only to polish the yarn after twisting. I therefore desire to limit my invention to a nipper-head having two nippers, the movable jaw or member of the first nipper being capable of yielding in a direction lengthwise of the fiber and the movable jaw or member of the second nipper being capable of movement in a direction transverse to the length of the fiber. By such a combination the operation of hand-spinning is closely imitated. The movable jaw or member of the first nipper, being capable of yielding in a direction lengthwise of the fiber, is very effective in straightening the fibers without offering too much resistance, and is less liable to scrape back the fiber, so as to make tow and gather lumps, than is a nipper the movable jaw or member of which is capable of yielding in a direction transverse to the length of the fiber, and through which the sliver is first passed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a single nipper-head, of two nippers placed one in advance of the other, devices for holding one of the members or jaws of the first nipper with a yielding pressure against movement in a direction lengthwise of the sliver, and devices for holding one of the members or jaws of the second nipper with a yielding pressure against movement in a direction transverse to the length of the sliver, substantially as and for the purpose described.

2. The combination, in a nipper-head, of a stock-piece adapted to be secured to a regulating-lever, and comprising one member or jaw of the first nipper, and a slideway, a trumpet-mouth upon the stock-piece, a slide capable of movement in said slideway, and carrying the movable member or jaw of the first nipper, devices for holding said slide with a yielding pressure against movement in a direction

lengthwise of the fibers, a second nipper in the said slide, and devices for holding one of the two members or jaws of said second nipper with a yielding pressure against movement in a direction transverse to the length of the sliver, substantially as and for the purpose described.

3. The combination, with the stock-piece A, comprising the slideway A^2 , the nipper member or jaw e , and the trumpet-mouth A' , of the slide B, comprising the member or jaw e' , and the piece f^2 , the spring f , and a rod and nut, $f' f^3$, for adjusting its tension, and the adjustable stop f^4 , substantially as described.

4. The combination, in a nipper-head, of two members or jaws, one of which is capable of movement in a direction transverse to the length of the sliver, an adjustable spring or weight acting upon said yielding member or jaw, a finger and scale, and an index connected with said movable member or jaw for indicating the extent and variations of its movement, substantially as described.

5. The combination of the slide B, nipper members or jaws $C C'$, spring-case D, spring D' , adjusting-screw D^2 , scale F, and index E, fulcrumed at l , and connected with the member or jaw C' , all substantially as described.

6. The combination of the stock-piece A, slide B, nipper members or jaws $C C'$, a spring or weight for acting upon the member or jaw C' , the lever G, the roller k' , and the cam k^2 , all substantially as described.

7. The combination of the member or jaw C, having the flat portion, the rounded or concave portion i , and the V-shaped portion i' , and the member or jaw C' , forked to embrace or straddle the member or jaw C, and having its face flat in a transverse direction and rounded in a longitudinal direction, substantially as described.

ELISHA S. ORMSBY.

Witnesses:

FREDK. HAYNES,
ED. L. MORAN.