

No. 671,624.

Patented Apr. 9, 1901.

E. HAAST.
NARROW WARE LOOM.

(Application filed Oct. 10, 1900.)

(No Model.)

6 Sheets—Sheet 1.

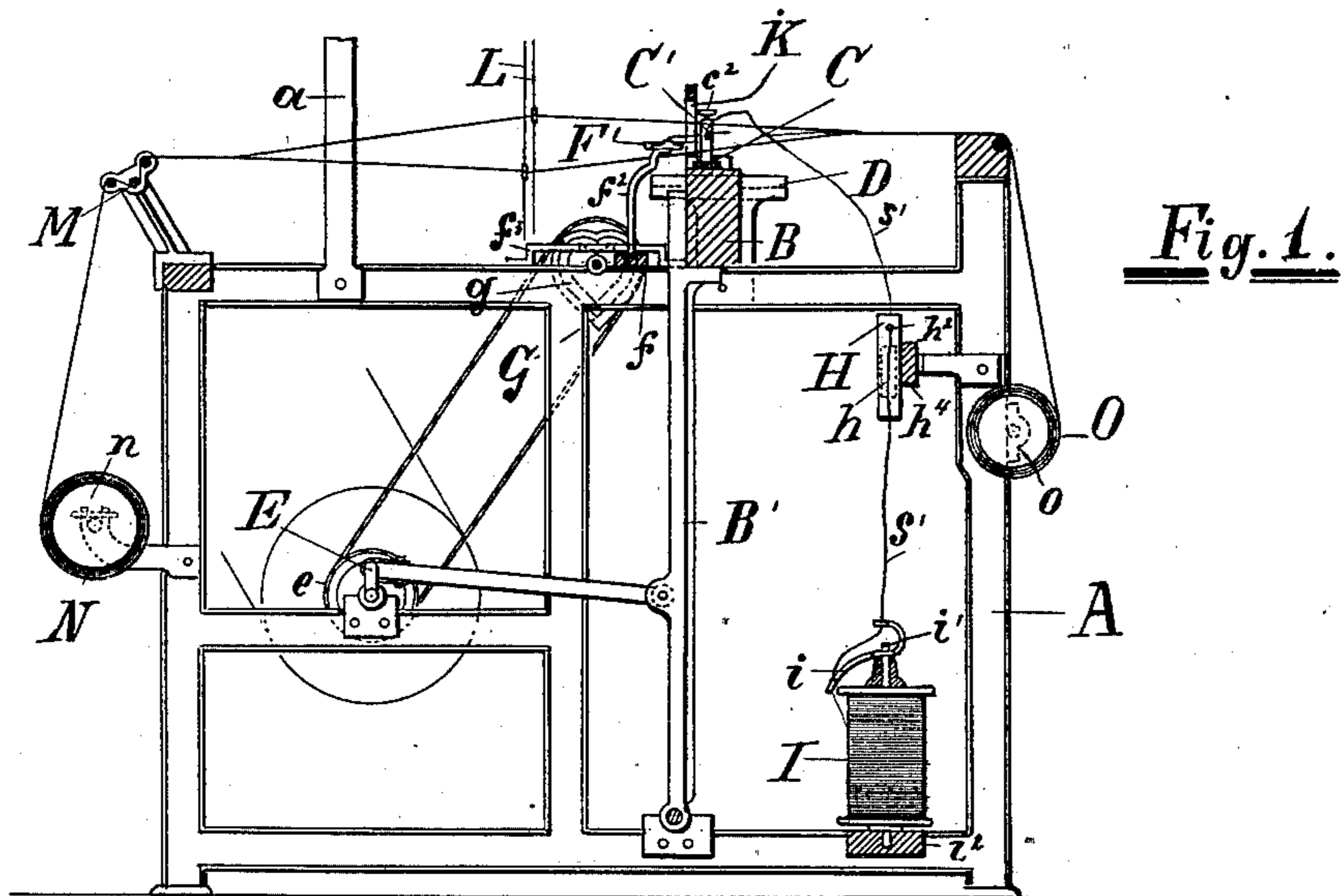


Fig. 1.

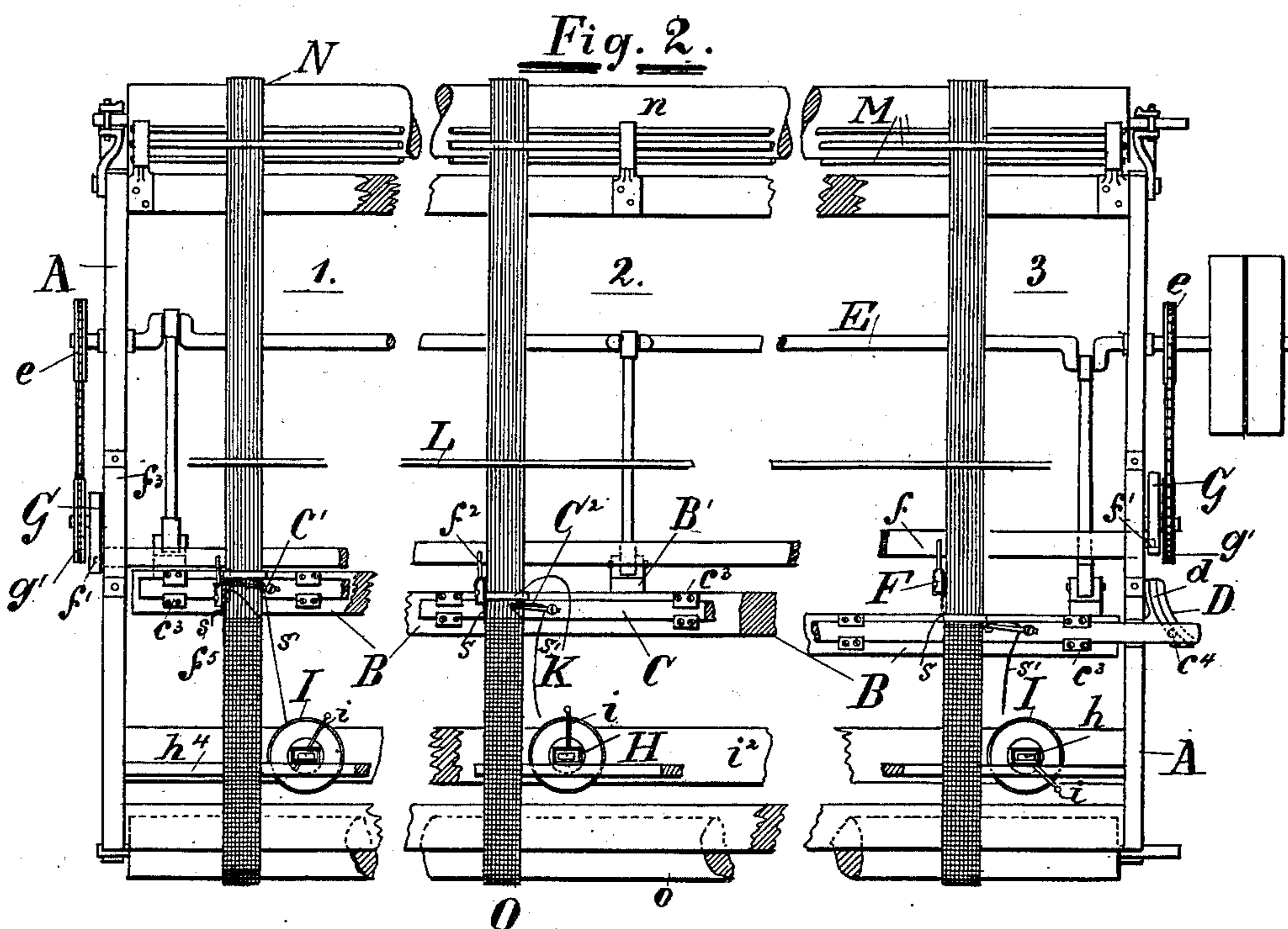


Fig. 2.

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Fig. 3.

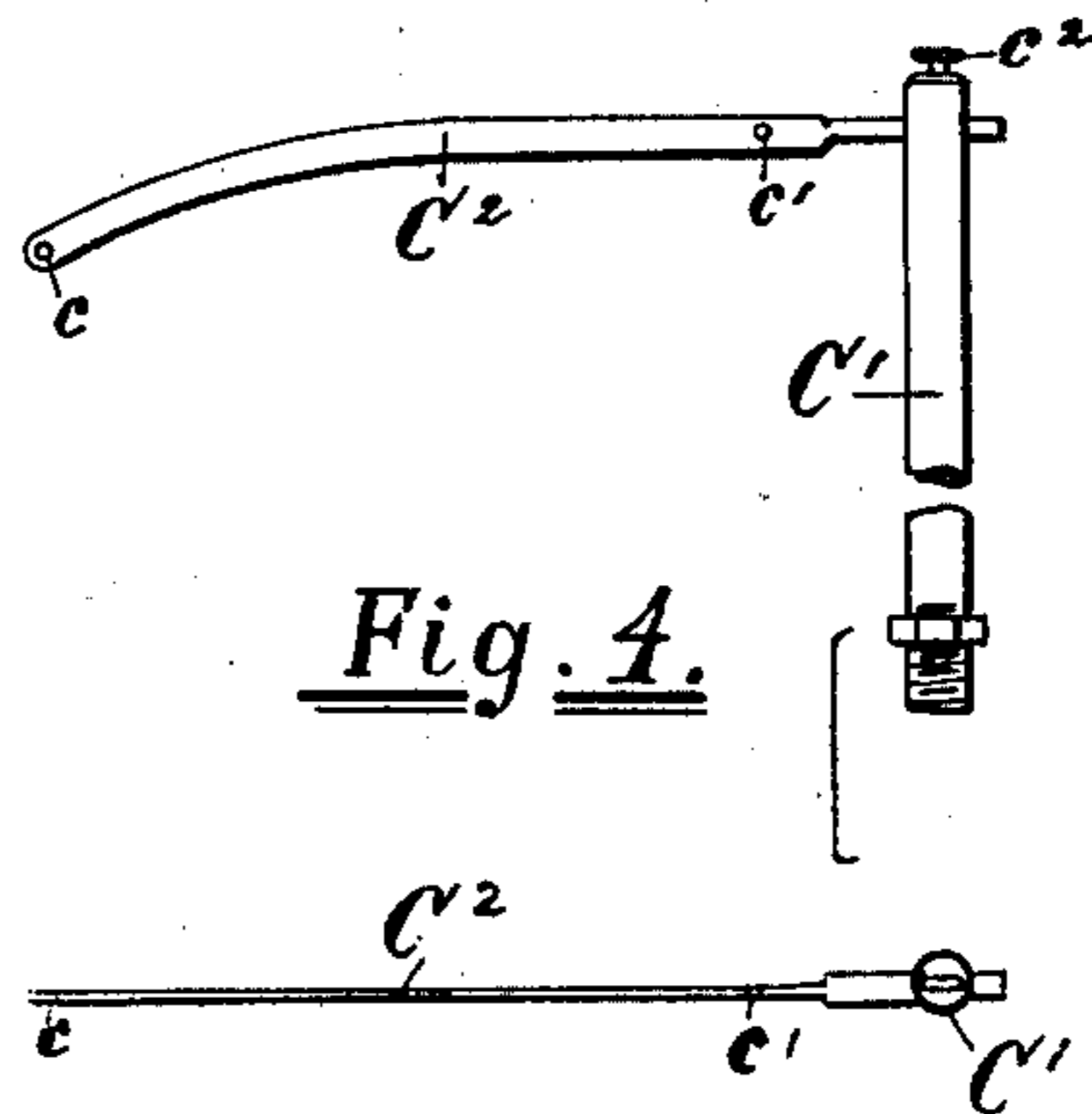
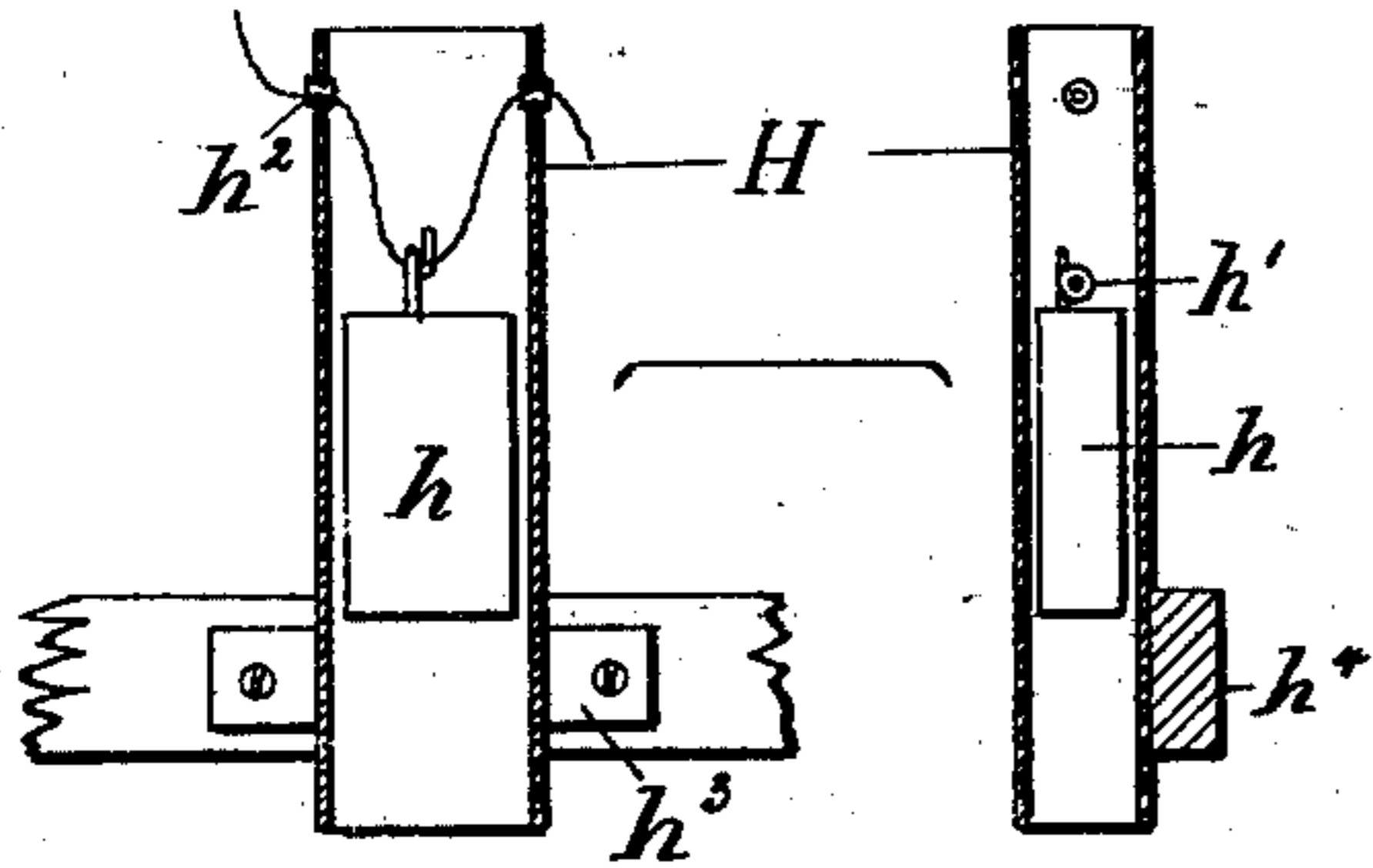


Fig. 4.

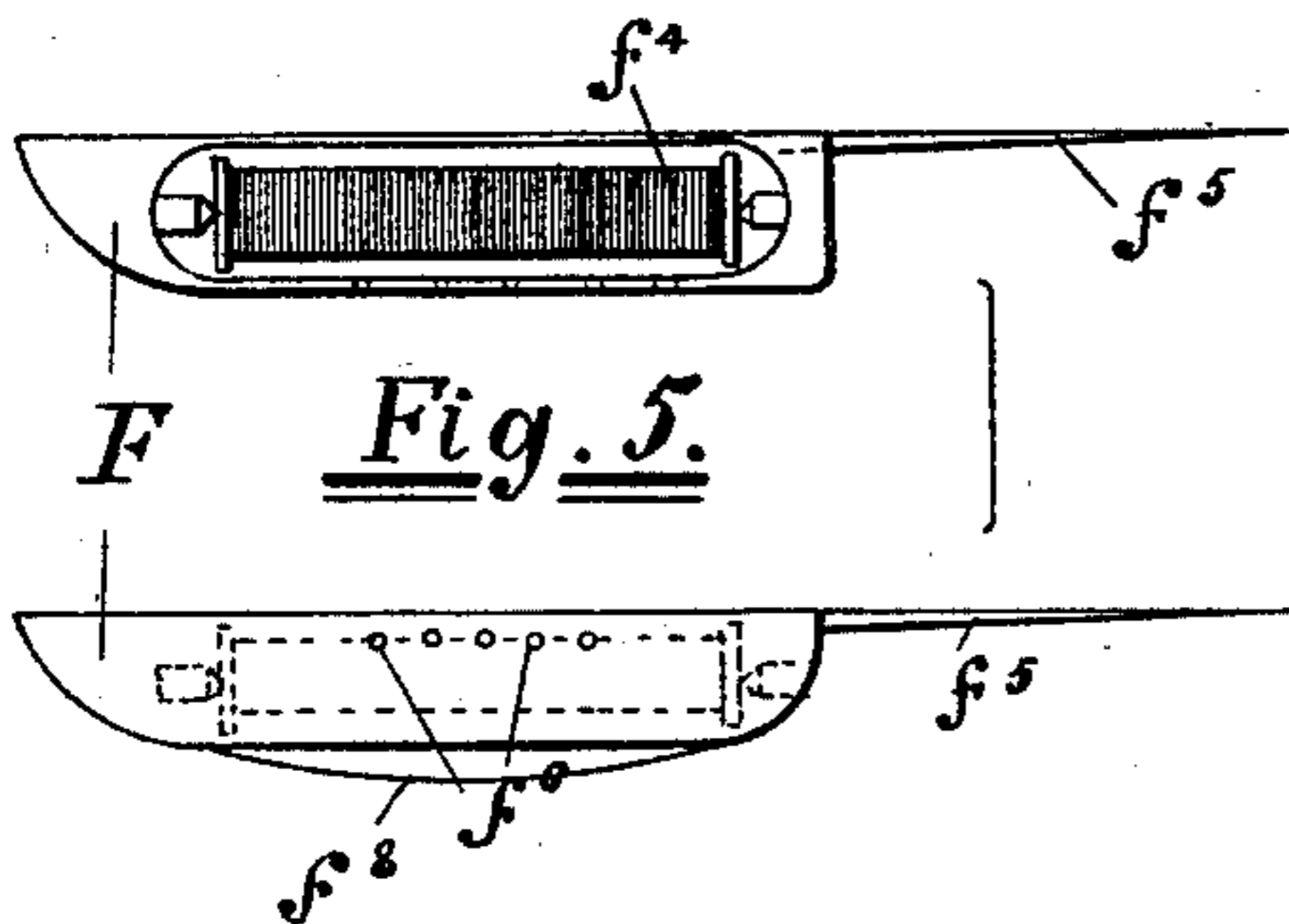


Fig. 5.

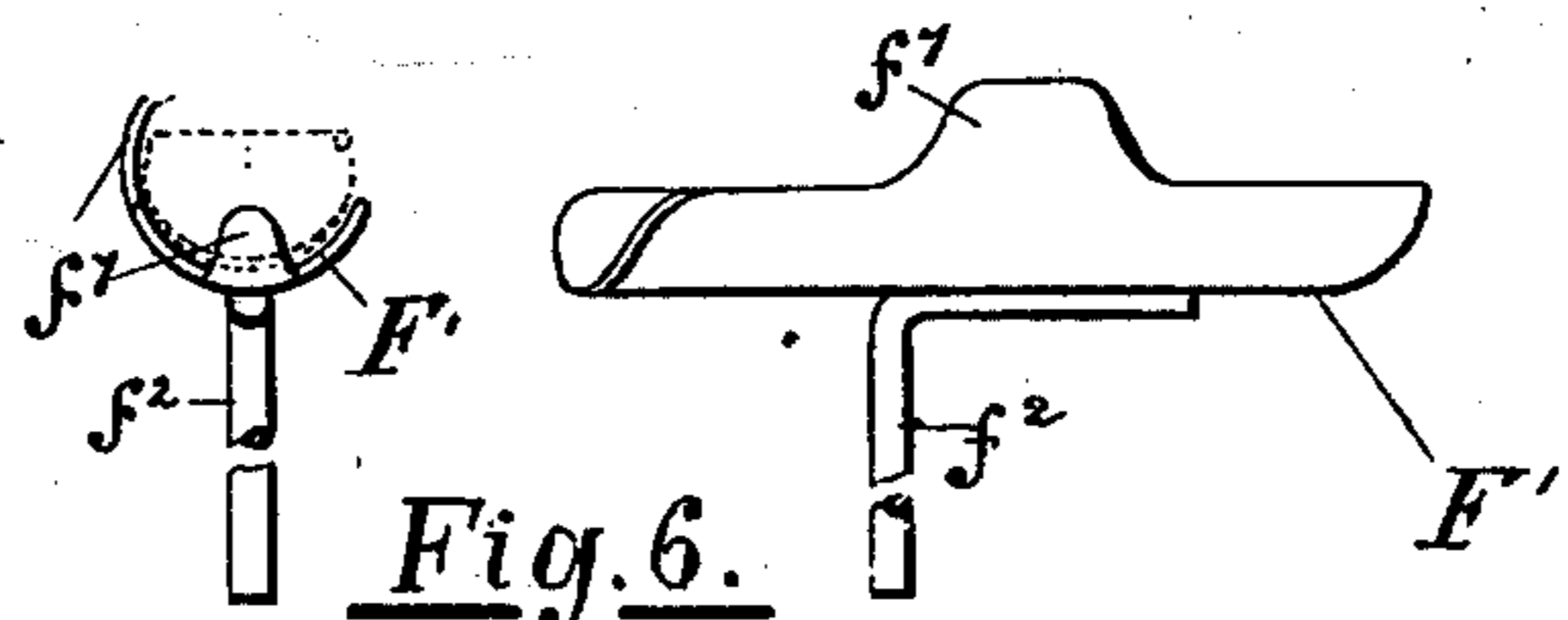


Fig. 6.

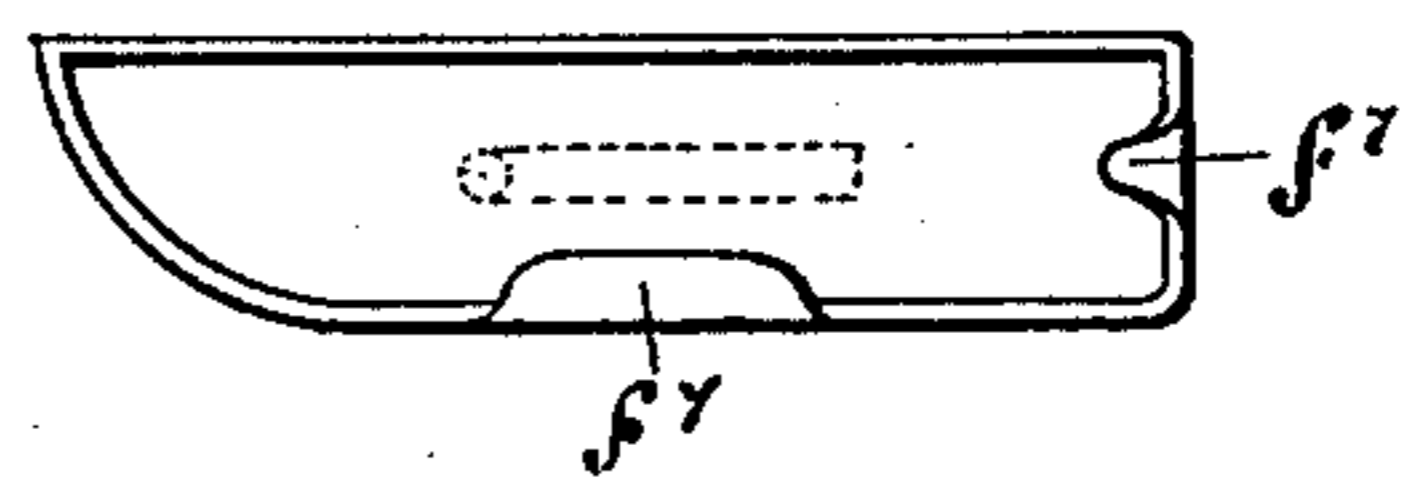


Fig. 7.

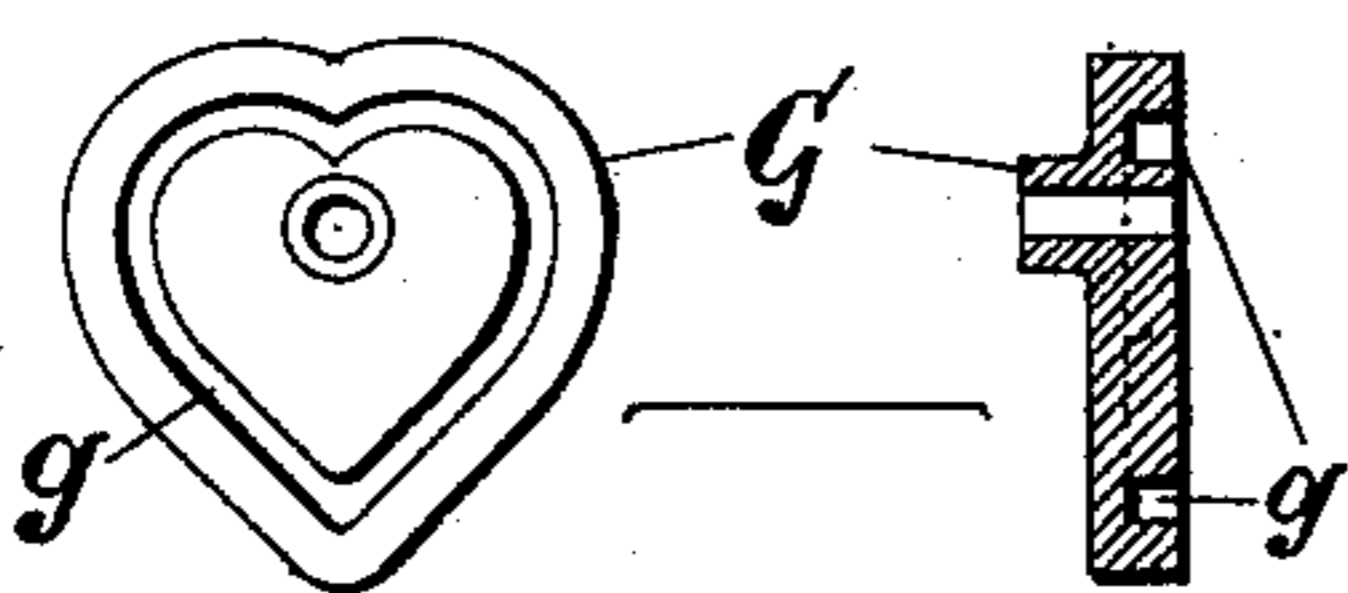
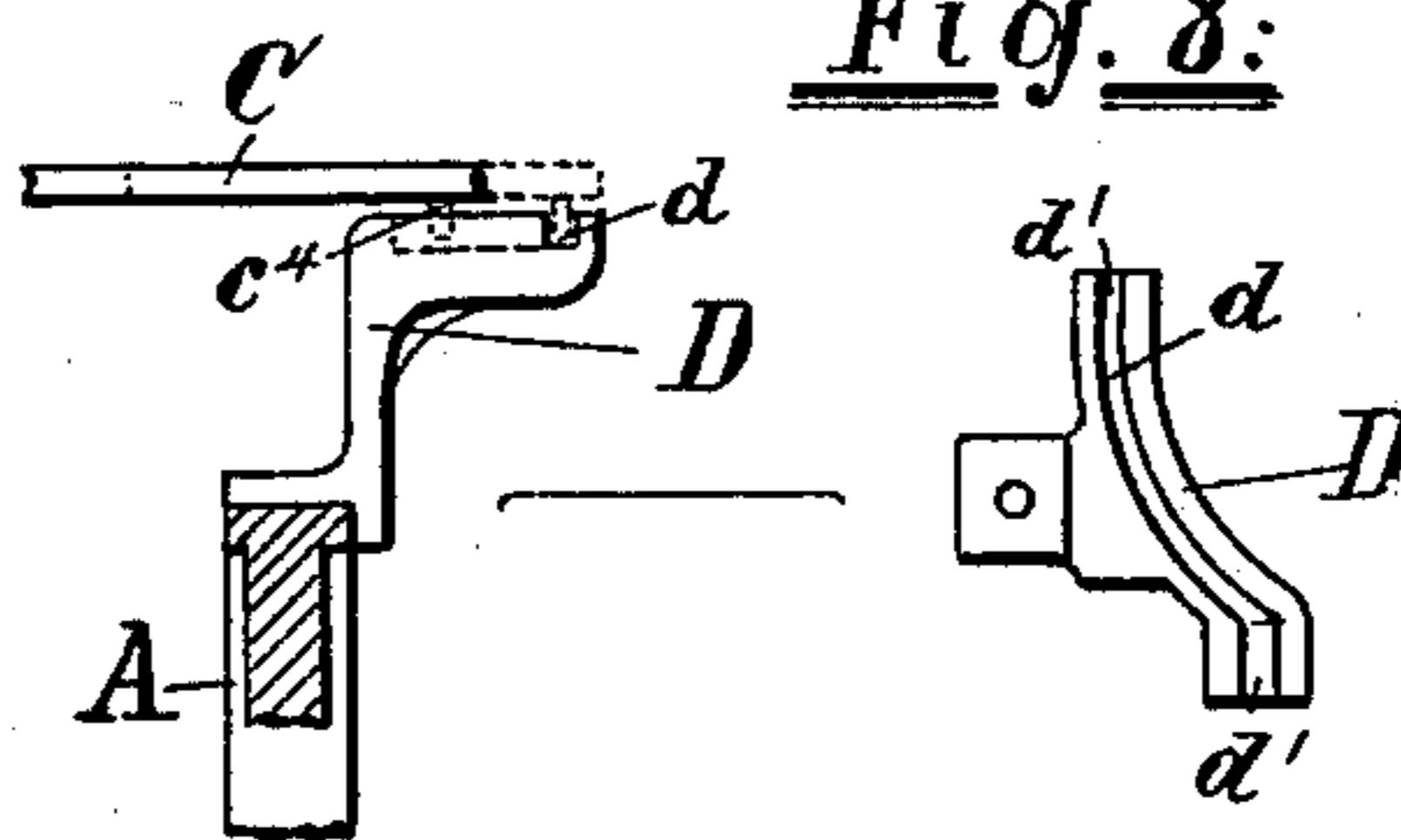


Fig. 8.



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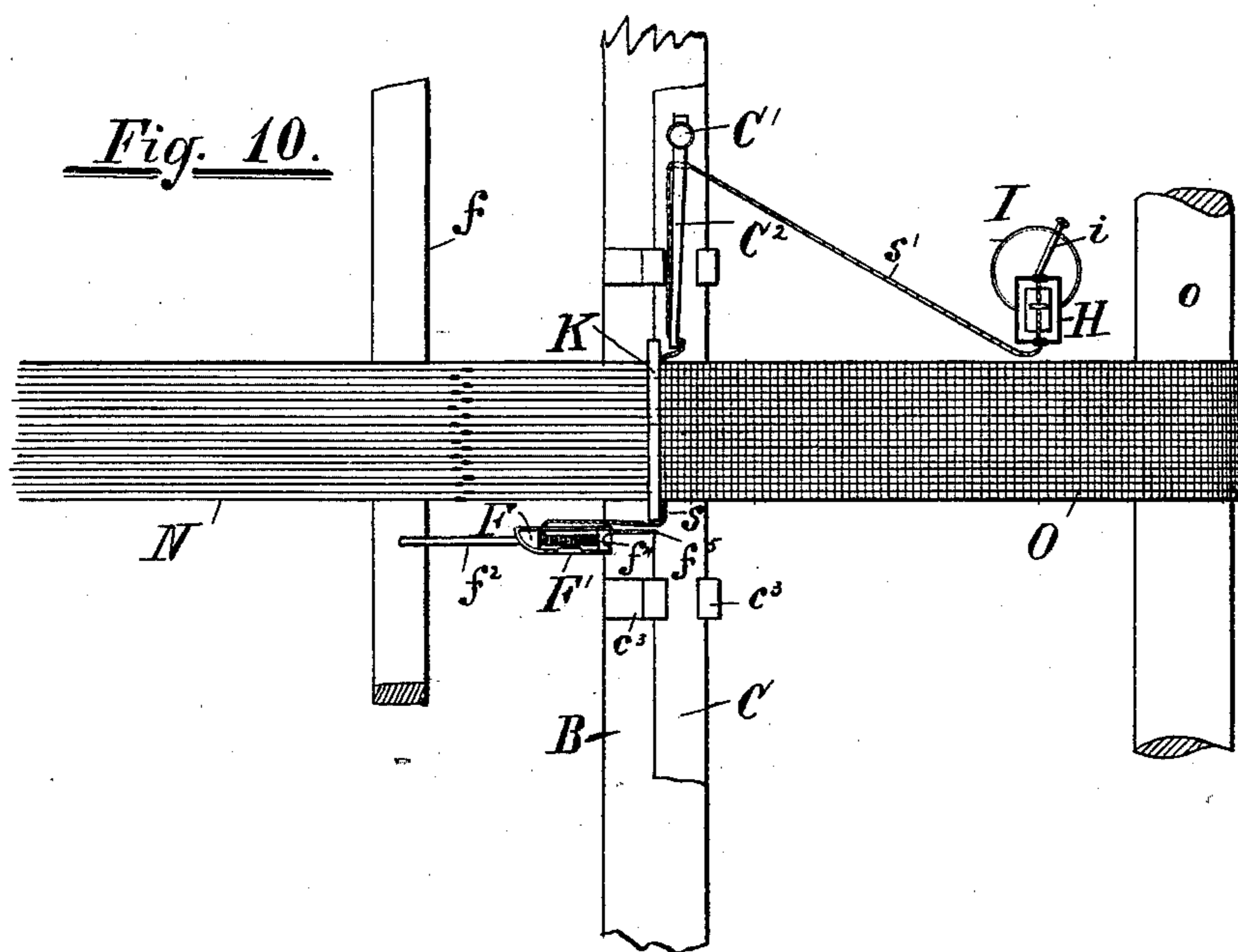
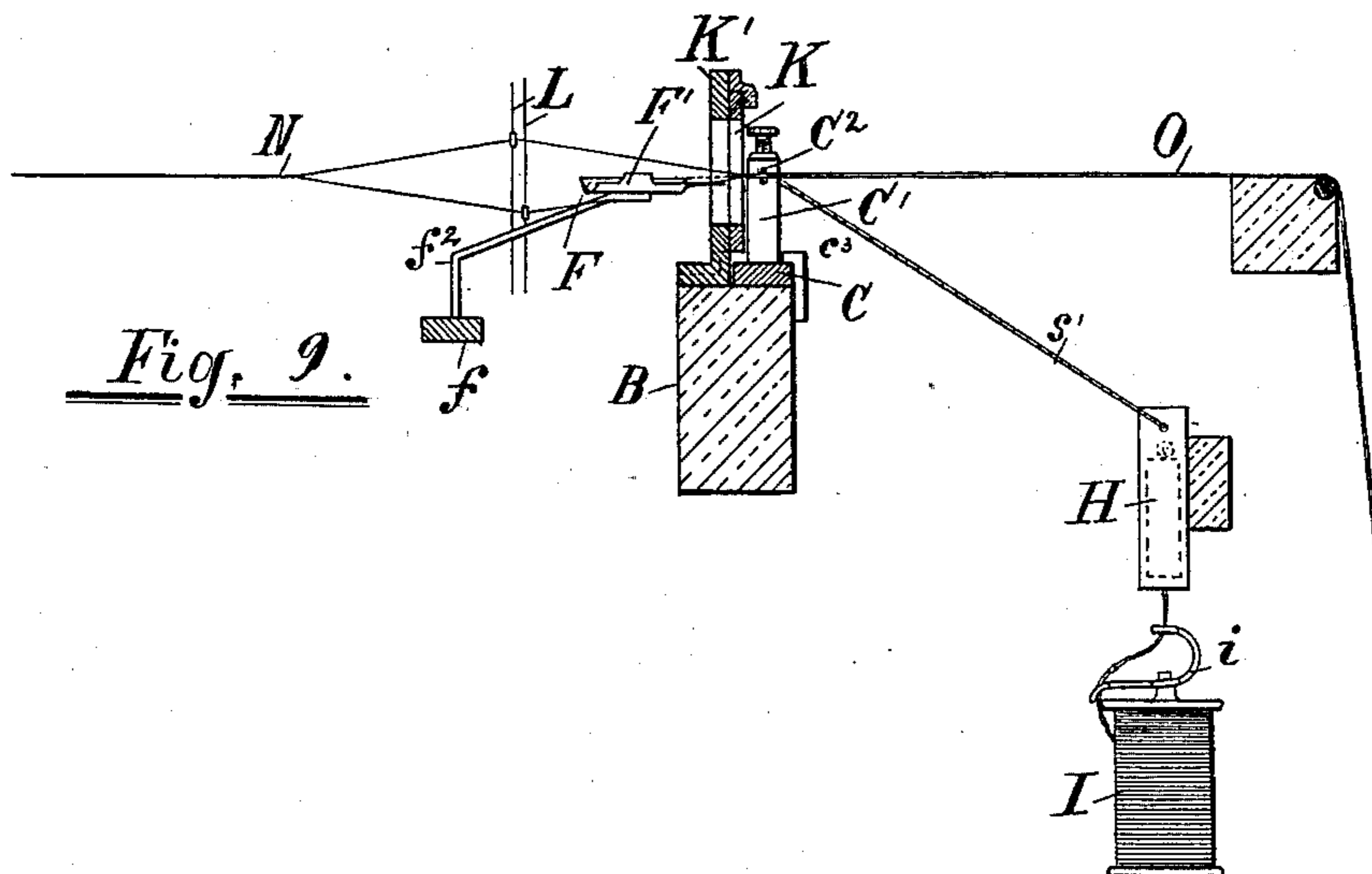
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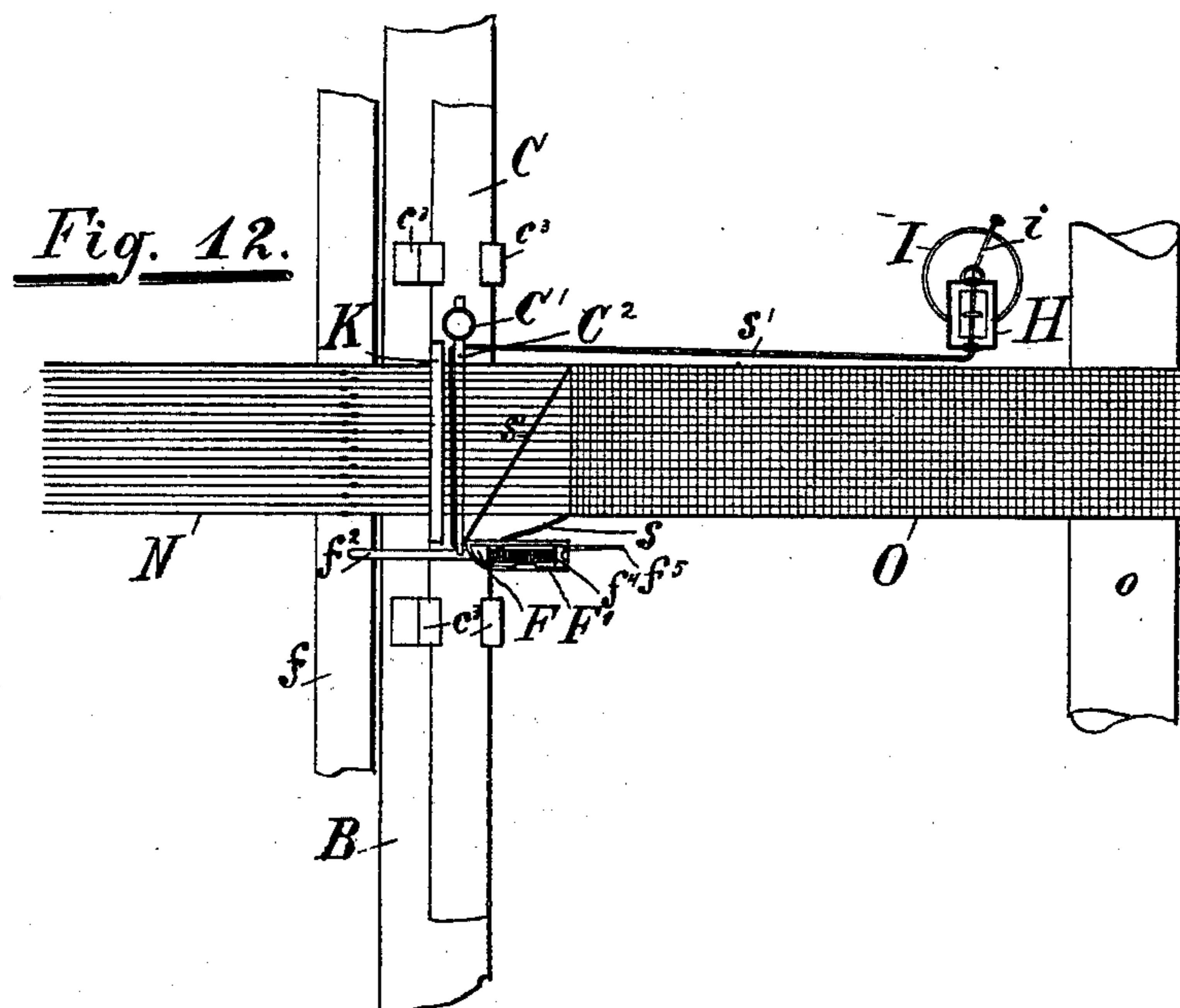
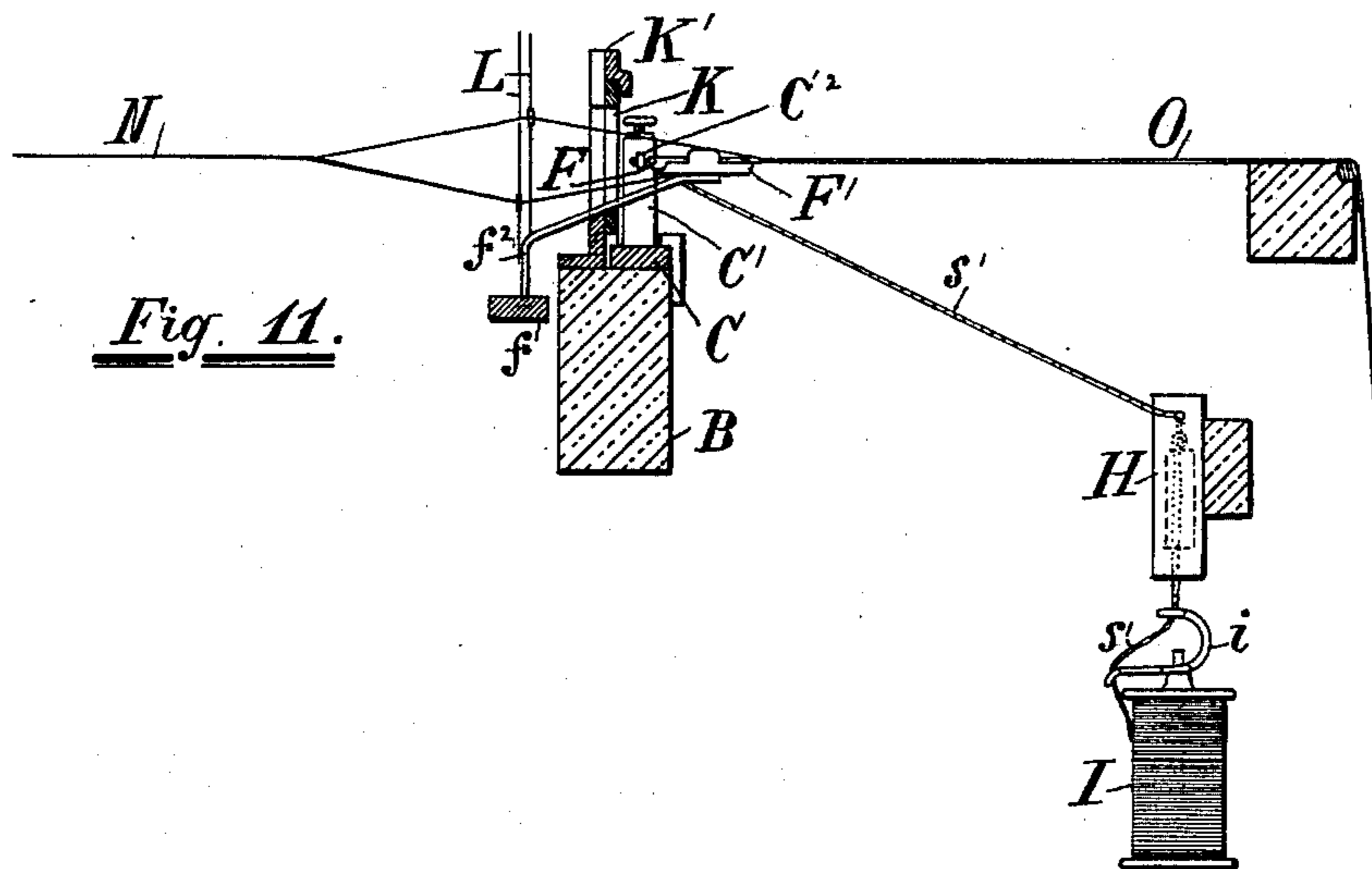
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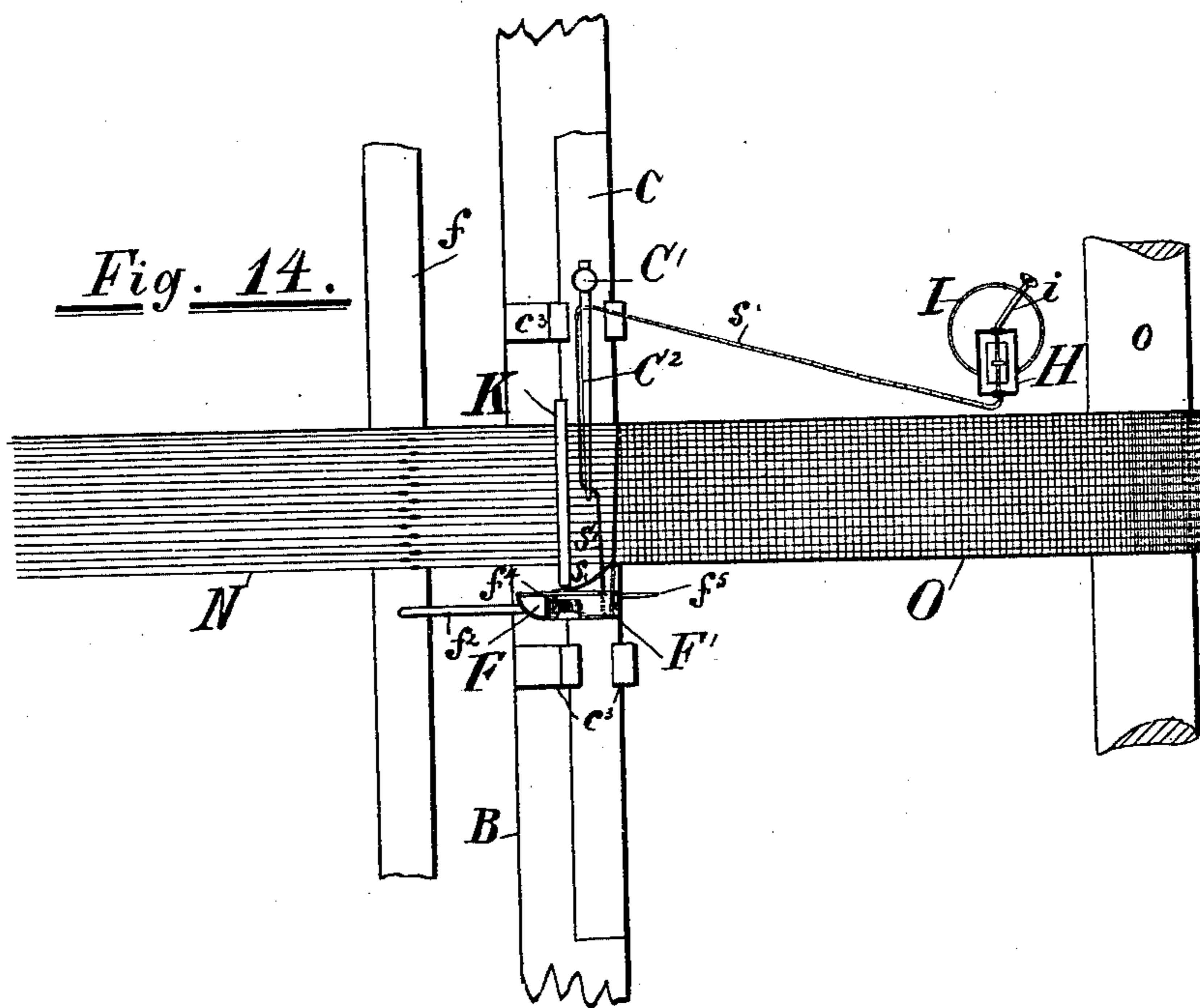
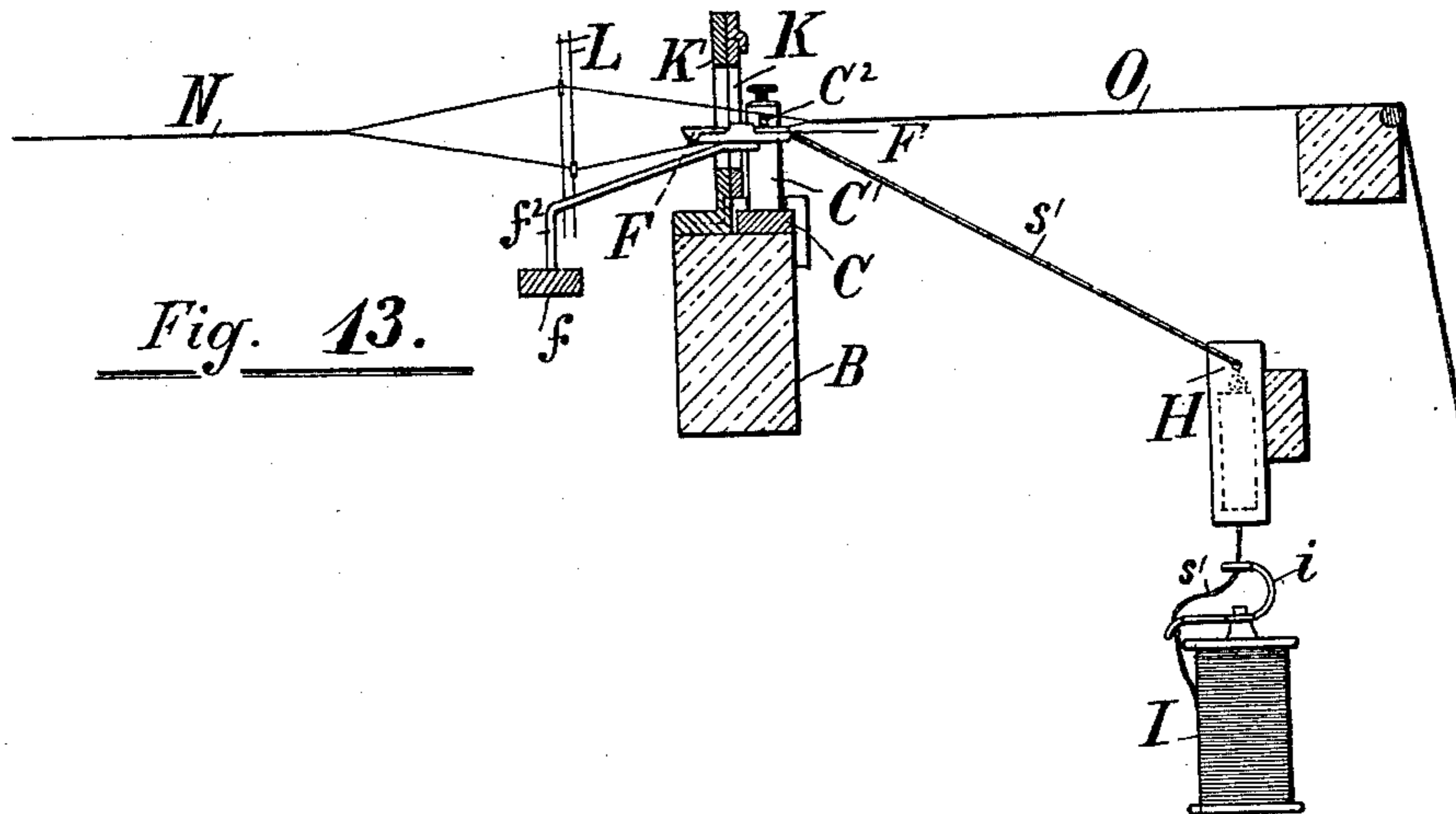
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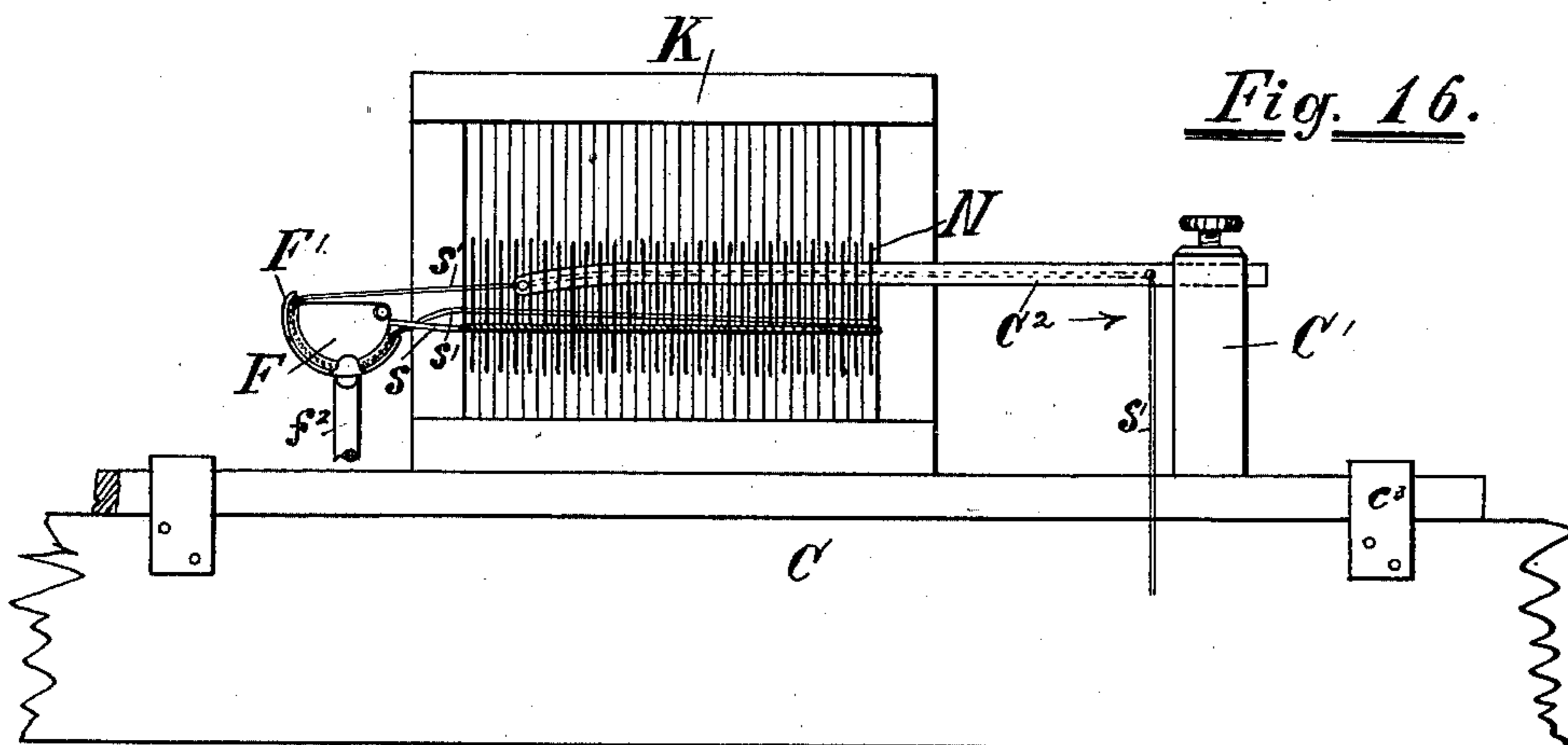
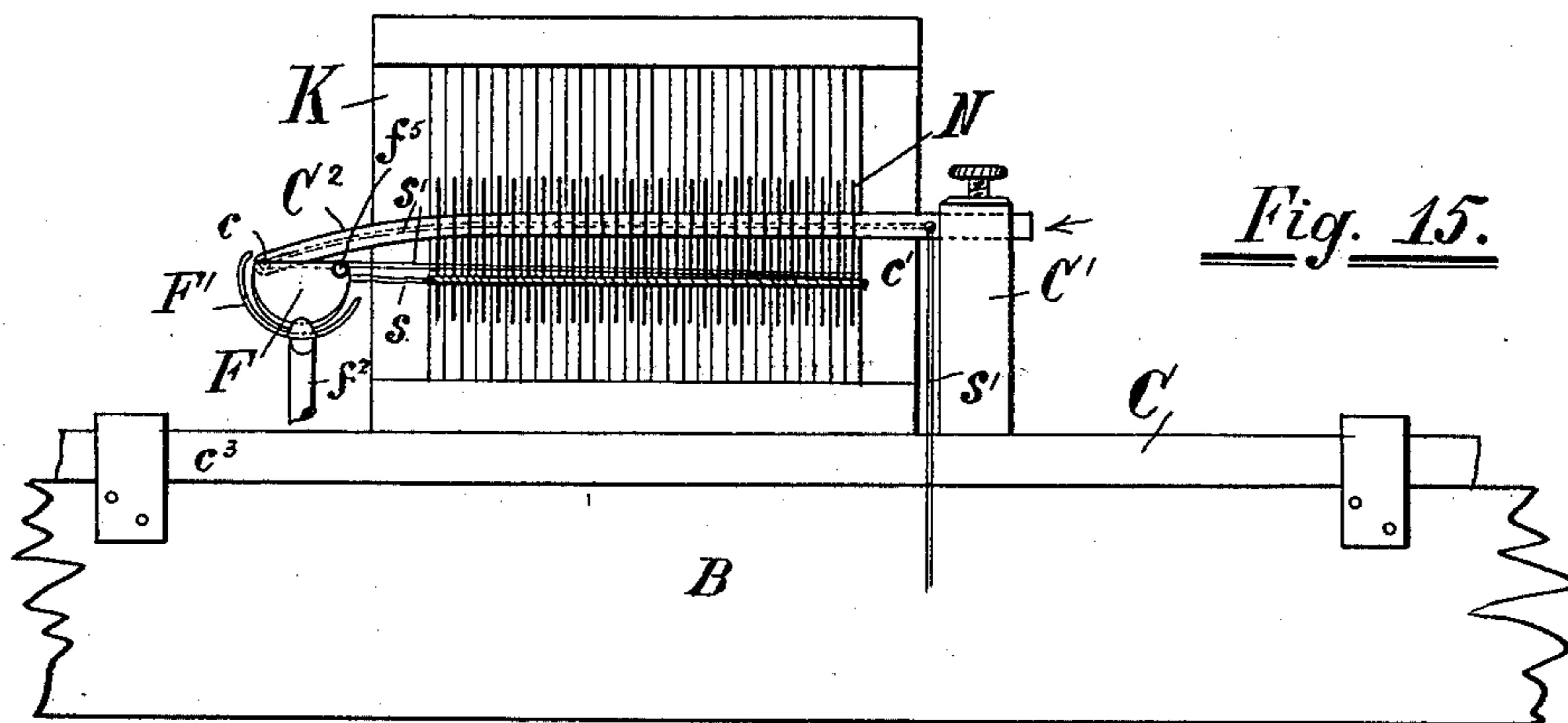
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UNITED STATES PATENT OFFICE.

EMIL HAAST, OF PATERSON, NEW JERSEY.

NARROW-WARE LOOM.

SPECIFICATION forming part of Letters Patent No. 671,624, dated April 9, 1901.

Application filed October 10, 1900. Serial No. 32,622. (No model.)

To all whom it may concern:

Be it known that I, EMIL HAAST, a citizen of the United States, residing at No. 4 Laurel street, in the city of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Narrow-Ware Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to that class of narrow-ware looms known as "needle-looms," in which the weft or filling is carried by a hook or needle through the warp-shed to engage or be engaged by a selvage thread or threads, so as to make what is commonly termed a "fast edge," said selvage-thread being upon a carrier or shuttle which sometimes has been movable and operated by appropriate mechanism to carry the selvage-thread through the successive loops of filling and sometimes has been stationary and combined with some means for carrying the successive filling-loops over or around it, so as to engage the selvage-thread. The means hitherto adopted have been more or less complicated and expensive, and the friction between the filling and selvage-thread and the strain upon the latter during the weaving operation have frequently resulted in the breakage of the thread and a consequent loose and uneven selvage.

The object of my invention is to provide in a needle-loom a simple and comparatively inexpensive means whereby the said difficulties are overcome and a fast and even selvage is insured. This object is accomplished by my invention, which consists of the parts and combinations hereinafter described in connection with the accompanying drawings, forming part of this specification and subsequently pointed out in the claims.

In forming the selvage I employ one or more of the warp-threads from the side of the warp, and the thread or threads so selected are wound upon a bobbin and will hereinafter be designated by me as the "selvage-thread." This bobbin or selvage-thread I place in a box to be termed the "selvage-shuttle," which is carried and guided by and is adapted to tilt easily in a suitable movable support, which will be called the "selvage-shuttle holder." The rod which carries the filling or weft through the warp-shed will be appropriately

called a "needle." The selvage-shuttle holder is reciprocated in a line parallel with the warp and contiguous thereto, so as to cross at or substantially at right angles the course traversed by the weft-carrying needle, which is curved in order to carry the weft under the nose of the selvage-shuttle.

The selvage-shuttle is constructed so as to tilt or rock slightly and ride over the weft-thread and is provided with a tapering tail, which takes the slack weft-thread until the slack has been taken up by the tension devices, when it is withdrawn and the weft is beaten up. When the warp-shed is opened, the weft-carrying hook carries the weft through the open shed, throws it around the nose of the selvage-shuttle, which rides through it and then withdraws with the weft, which has now passed around the selvage-thread, from the warp-shed, whereupon the shed is changed by the harness forming a new shed. Two strands of weft are thus laid in each shed, where only one is carried through in a shuttle-loom.

The desired reciprocation may be given to my weft-carrying needle and selvage-shuttle holder, respectively, in any suitable manner and by any appropriate mechanism without departing from the spirit and scope of my invention.

I employ no vertical or substantially vertical needles; but a weft-carrying needle and a selvage-shuttle holder, both of which reciprocate in a horizontal plane, the one a little above the other, simultaneously approaching and passing each other and then returning to the original starting-point after each crossing of the warp-threads by the harness to form a new shed.

In the drawings, Figure 1 is a side elevation of so much of a loom as is needed to illustrate my invention. Fig. 2 is a plan of same, parts being broken away and omitted, showing three positions of the lay, the weft-carrying needle, and the selvage-shuttle holder. In the position to the left-hand side the lay has completed its backward movement and the selvage-shuttle holder its forward movement. In the right-hand portion of this figure the lay has completed its forward movement, the selvage-shuttle holder its backward movement, and the weft-carrying needle has

withdrawn from the warp-shed. In the middle portion of this figure is shown a position half-way between the other two positions, the lay going backward, the selvage-shuttle holder coming forward, and the weft-carrying needle entering the open warp-shed. Fig. 3 is a detail, front and side view, in sections, of tension device for filling. Fig. 4 is a detail view of the weft-carrying needle and stand therefor. Fig. 5 is a top and side view of the selvage-shuttle. Fig. 6 is a top, end, and side view of the selvage-shuttle holder. Fig. 7 is a front view and side sectional view of cam for movement of the selvage-shuttle. Fig. 8 is a top and side view of the cam for the movement of the weft-carrying needle. Figs. 9 and 10 are respectively a cross-sectional view and a plan view of parts of a loom, showing one position of the parts in relation to the selvage and weft threads. Figs. 11 and 12 are cross-sectional and plan views, respectively, showing another position of the working parts in connection with the selvage and weft threads. Figs. 13 and 14 are like views showing a different position of the same. Fig. 15 is a front elevation, partly diagrammatic, showing the weft-carrying needle to have conducted the weft to the farthest point through the shed past and under the nose of the selvage-shuttle, which is ready to ride over the weft upon the backward movement of the selvage-shuttle holder, as appears in Fig. 16, in which the weft is shown as passing between the selvage-shuttle and the selvage-shuttle holder onto the tail of the selvage-shuttle, from which it is drawn by the backward movement of the weft-carrying needle and the backward movement of the selvage-shuttle holder.

To the loom-frame A are secured brackets, such as indicated by the letter *a*. The lay B, with lay-sword B', is hinged to the loom-frame and is driven by suitable mechanism.

The weft-carrying needle C² is bent, provided with eyes *c* and *c'*, and is secured in a stand C' by means of a screw *c*². The stand C' is provided at its upper end with an opening, through which the end of the needle C² is passed, so that it may be secured to regulate the distance the said needle is to travel through the warp-shed. The stand C' is secured to the traverse-bar C, which is mounted to slide upon the lay B in guides *c*³ or any other suitable device for guiding the same. Under the end of the traverse-bar C is a pin or roller *c*⁴, adapted to be engaged by and to move in the partly-curved and partly-straight groove *d* *d'* in the cam D, the parts of the said groove indicated by *d'* being parallel with the side of the loom. A traverse motion is thus imparted to the traverse-bar C, which carries the weft-carrying needle C² by the cam D at each backward or forward movement of the lay B.

The selvage-shuttle F, which holds the bobbin *f*⁴, containing the selvage-thread, is of novel and peculiar construction, being tapering from the nose or forward end toward the bottom and slightly beveled to the center of

the bottom, from which central point it is slightly beveled and rounded to the rear end. From the inner upper side of the rear end projects a tapering needle-pointed tail *f*⁵. The beveled portion of the bottom of the selvage-shuttle is indicated by the letter and numeral *f*⁸. The selvage-shuttle is so balanced that when the weft-thread is passed around it to the point where the beveled portions of the bottom meet it is easily tilted, and it rides over the weft-thread which passes onto the said tail *f*⁵, which carries it until the slack is taken up by the weft-tension device. (Shown in Figs. 1 and 3 and 9 to 14, inclusive.) Side eyes are provided in the selvage-shuttle for the passage of the selvage-thread, as indicated by *f*⁶.

The selvage-shuttle F rests snugly, but loosely, in a selvage-shuttle holder F', which has a rounded bottom and confines the selvage-shuttle by the two lips *f*⁷ and its semicircular formation. Said holder F' is open at one end where one of the sides slopes and is lower than the other, as shown in Fig. 6. The holder F' is fixed to and carried by the stand *f*², which is secured in the top of the bar *f*, which is adapted to be moved toward and away from the lay in suitable guides *f*³ on the sides of the loom-frame. On each end of the bar *f* is a pin or roller *f*¹, adapted to be engaged by and travel in a substantially heart-shaped groove *g* in the heart-shaped cams G G, one of which is mounted on a stud on each side of the loom-frame. To each cam G is secured a sprocket-wheel *g*¹, which is operated or driven by a sprocket-chain from a sprocket-wheel *e* on the crank-shaft E.

When the loom is started, the lay B and the bar *f* simultaneously approach each other. The shed is formed by the harness, the bar *f* carrying the selvage-shuttle containing the selvage-thread and the traverse-bar C carrying the weft-needle C² to the positions shown in Figs. 12 and 15. When the lay B and the bar *f* begin to move away from each other at the same time, the weft-thread, having been passed around the selvage-shuttle F and between the selvage-shuttle F and the selvage-shuttle holder F', as shown in Figs. 14 and 16, the weft-needle C² returning and the selvage-shuttle F, also as shown in said figures, until they arrive at the original starting-point, as shown in Fig. 10, when the weft-thread is beaten up by the reed K.

A tension device H is provided to take up the slack of the weft-thread *s*¹, which is taken from the bobbin I to the flier *i* on the spindle *i*², which is mounted on the cross-beam *i*². The tension device H is secured by means of a bracket *h*³ to the cross-beam *h*⁴ and is provided with an eye *h*² on each side. The weft-thread passes from the flier *i* through one of the eyes *h*², then through the eye *h*¹ on the weight *h* in the tension device H, then out through the opposite eye *h*² to the eyes in the weft-carrying needle C².

M is a tension device for the warp-threads

N; n, a beam for the warp; K', the reed-holder, and L the harness.

O represents the woven ribbon, and o a roller for the same.

5 While intended especially for narrow-ware looms, my invention may be applied to other looms.

With this description of my invention, what I claim is—

10 1. In a needle-loom, a selvage-shuttle carrying a bobbin, and provided with thread-eyelets, the said selvage-shuttle having a tapering nose, a curved under side portion whereby the shuttle is adapted to tilt, and a selvage
15 pin or needle projecting from the rear of the shuttle, substantially as described.

2. In a needle-loom, a selvage-shuttle carrying a bobbin, and provided with thread-eyelets, the said selvage-shuttle having a tapering nose, a curved under side portion whereby the shuttle is adapted to tilt, and a selvage
20 pin or needle projecting from the rear of the shuttle, and means for passing said shuttle through the loop of weft-thread, substantially as set forth.

3. In a needle-loom, a selvage-shuttle carrying a bobbin, and provided with thread-eyelets, the said selvage-shuttle having a tapering nose, a curved under side portion whereby the shuttle is adapted to tilt, and a selvage
30 pin or needle projecting from the rear of the shuttle, and means for passing said shuttle through the loop of weft-thread, a weft-needle and means for operating the same to insert a loop of weft in the shed, substantially
35 as set forth.

4. In a needle-loom, a selvage-shuttle holder, a selvage-shuttle carrying a bobbin, and provided with thread-eyelets, the said
40 selvage-shuttle having a tapering nose, a curved under side portion, whereby the shuttle is adapted to tilt in the holder, and a selvage pin or needle projecting from the rear of the shuttle, substantially as described and
45 set forth.

5. In a needle-loom, a selvage-shuttle holder, the selvage-shuttle carrying a bobbin, and provided with thread-eyelets, the said selvage-shuttle having a tapering nose,
50 a curved under side portion, whereby the shuttle is adapted to tilt in the holder, and a selvage pin or needle projecting from the rear of the shuttle, and means for passing said shuttle through the loop of weft-thread, substantially as set forth.

6. In a needle-loom, the selvage-shuttle

holder, the selvage-shuttle carrying a bobbin, and provided with thread-eyelets, the said selvage-shuttle having a tapering nose, a curved under side portion, whereby the shuttle is adapted to tilt in the holder, and a selvage pin or needle projecting from the rear of the shuttle, means for passing said shuttle through the loop of weft-thread, a weft-needle and means for operating the same to insert a loop of weft in the shed, substantially as set forth.

7. In a needle-loom, a selvage-shuttle carrying a bobbin, and provided with thread-eyelets, the said selvage-shuttle having a tapering nose, a curved under side portion, whereby the shuttle is adapted to tilt, and a selvage pin or needle projecting from the rear of the shuttle, and means for passing said shuttle through the loop of a weft-thread, in combination with a weft-needle, means for operating the same to insert a loop of weft in the shed, a bobbin of any suitable size to hold the weft and located in the lower portion of the loom-frame, and between the said weft-bobbin and weft-needle an intermediary tension device, or means for the purpose of taking up the slack of the loops formed in the weft or filling for the passage of said shuttle, and of tightening the filling around the selvage-threads, substantially as set forth.

8. In a needle-loom, the selvage-shuttle holder, the selvage-shuttle carrying a bobbin, and provided with thread-eyelets, the said selvage-shuttle having a tapering nose, a curved under side portion, whereby the shuttle is adapted to tilt in the holder, and a selvage pin or needle projecting from the rear of the shuttle, means for passing said shuttle through the loop of weft-thread, a weft-needle, and means for operating the same to insert a loop of weft in the shed, a bobbin of any suitable size to hold the weft and located in the lower portion of the loom-frame, and between the said weft-bobbin and weft-needle an intermediary tension device, or means for the purpose of taking up the slack of the loops formed in the weft or filling for the passage of said shuttle, and of tightening the filling around the selvage-thread, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EMIL HAAST.

Witnesses:

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