

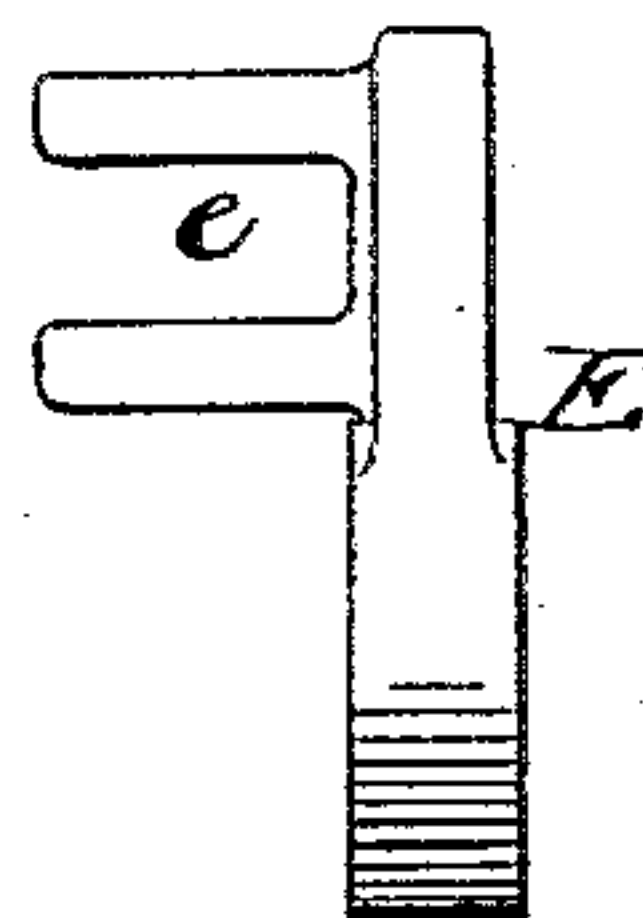
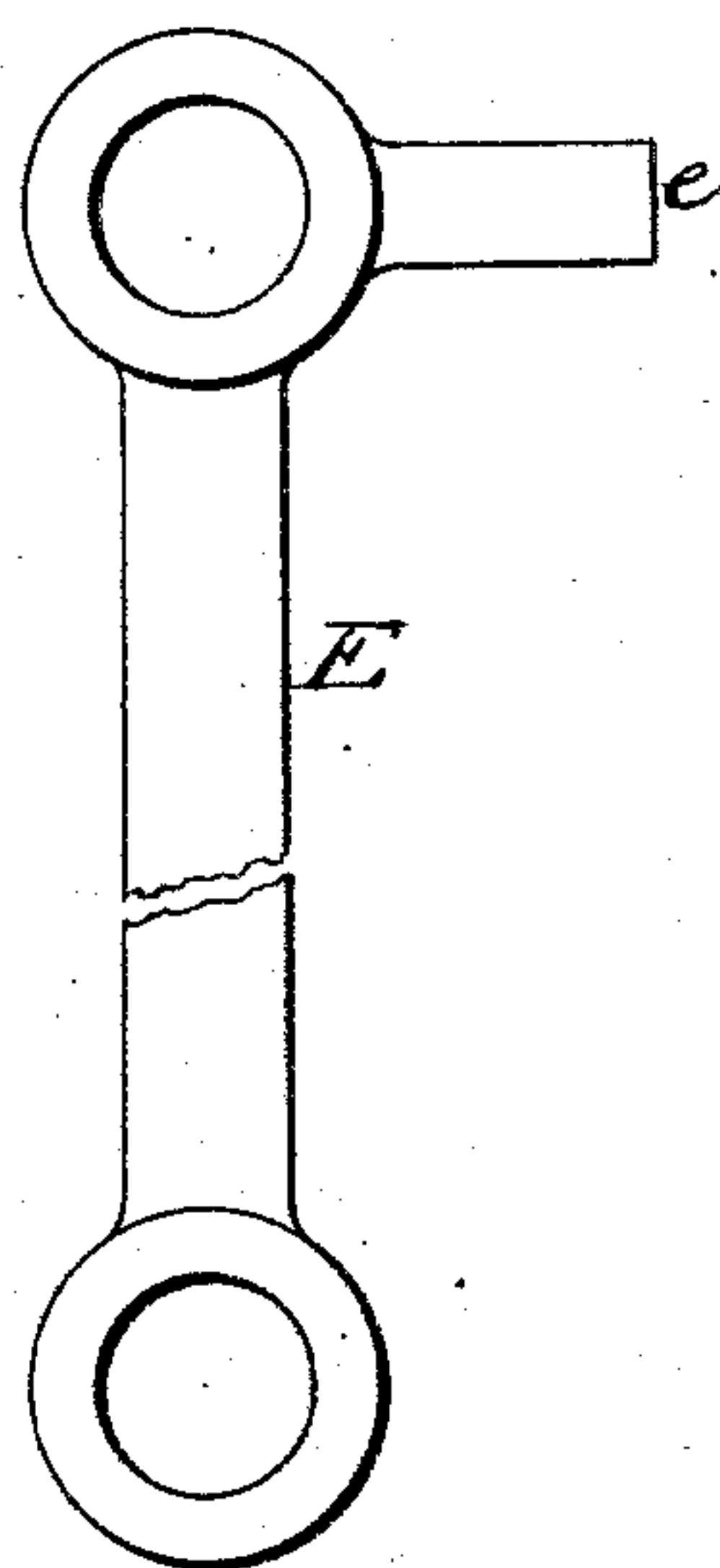
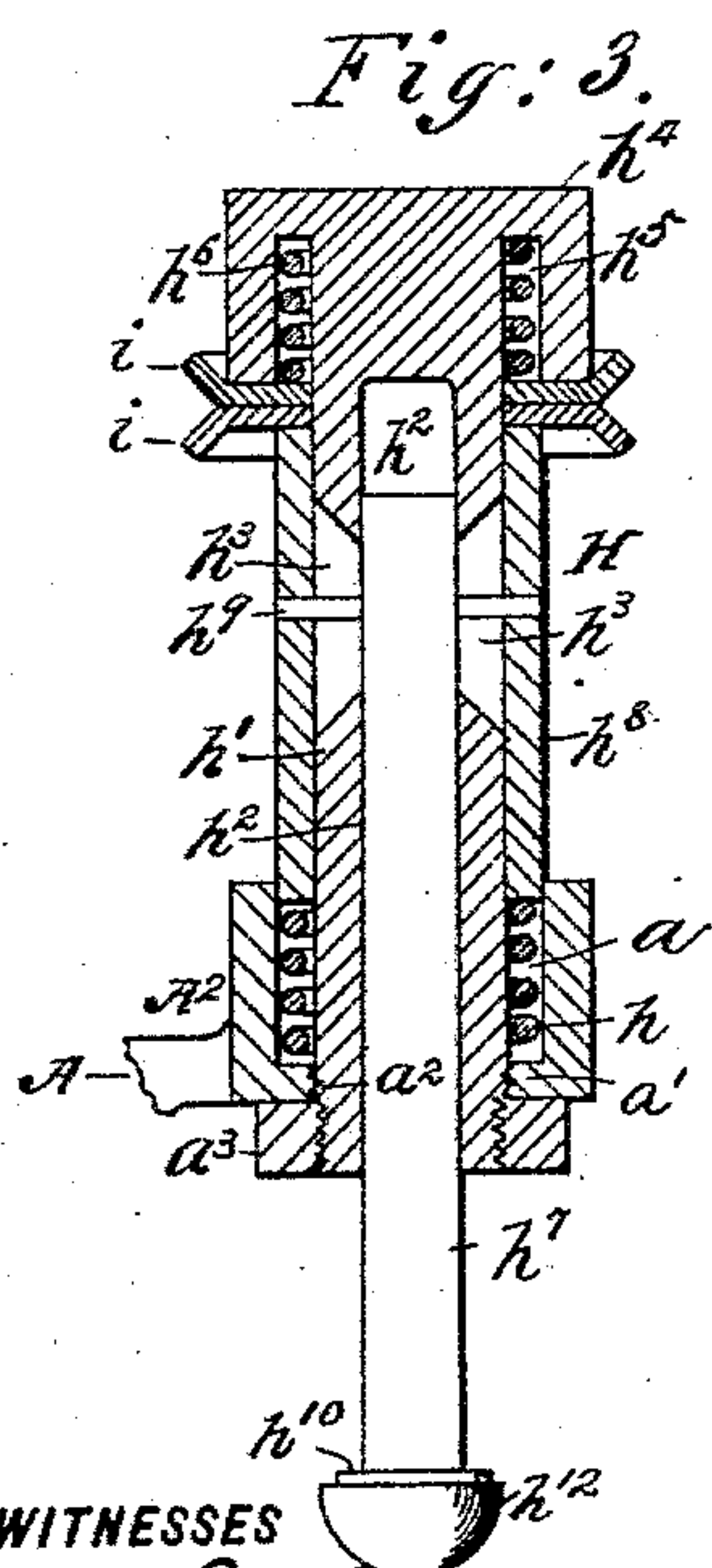
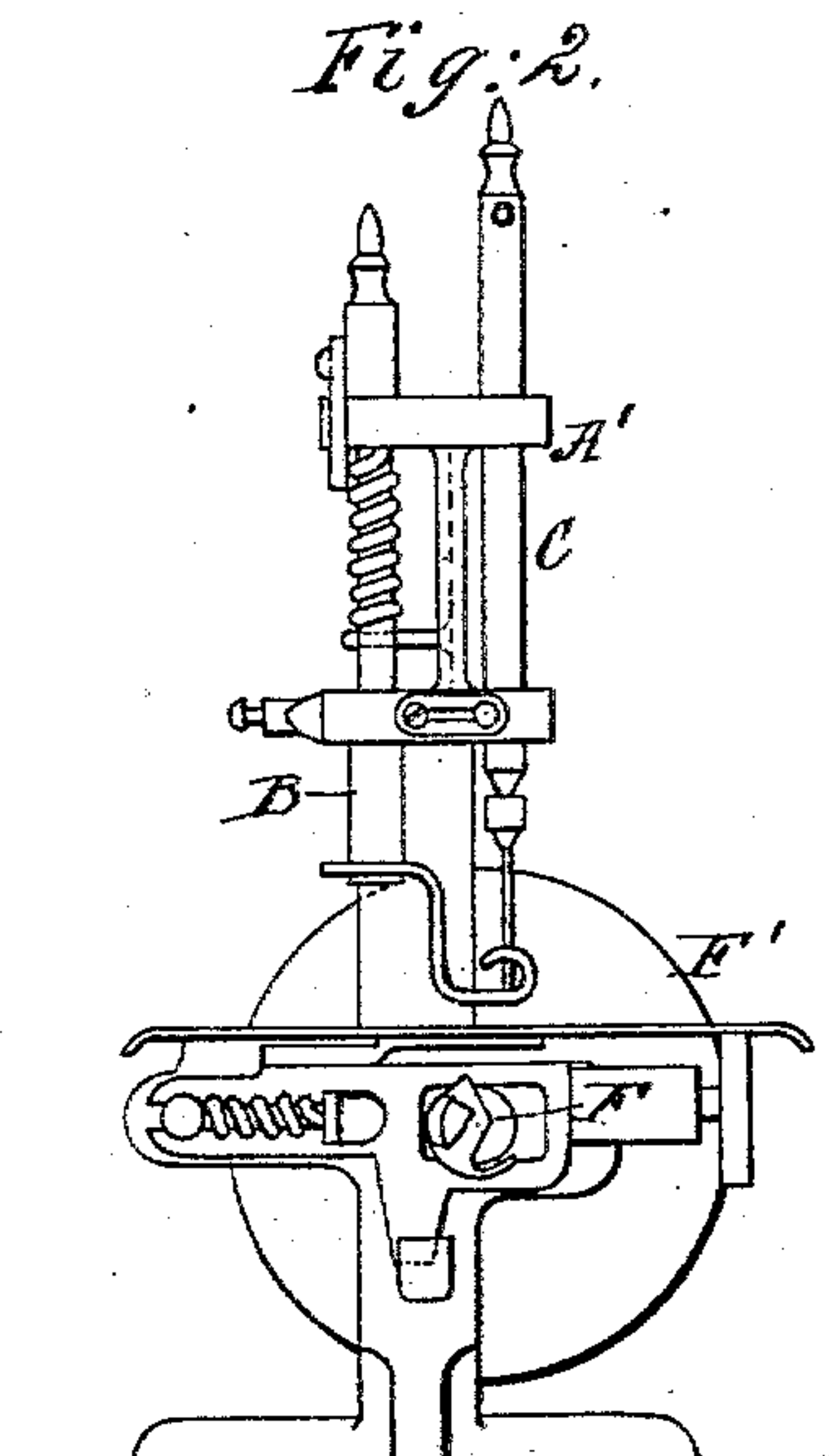
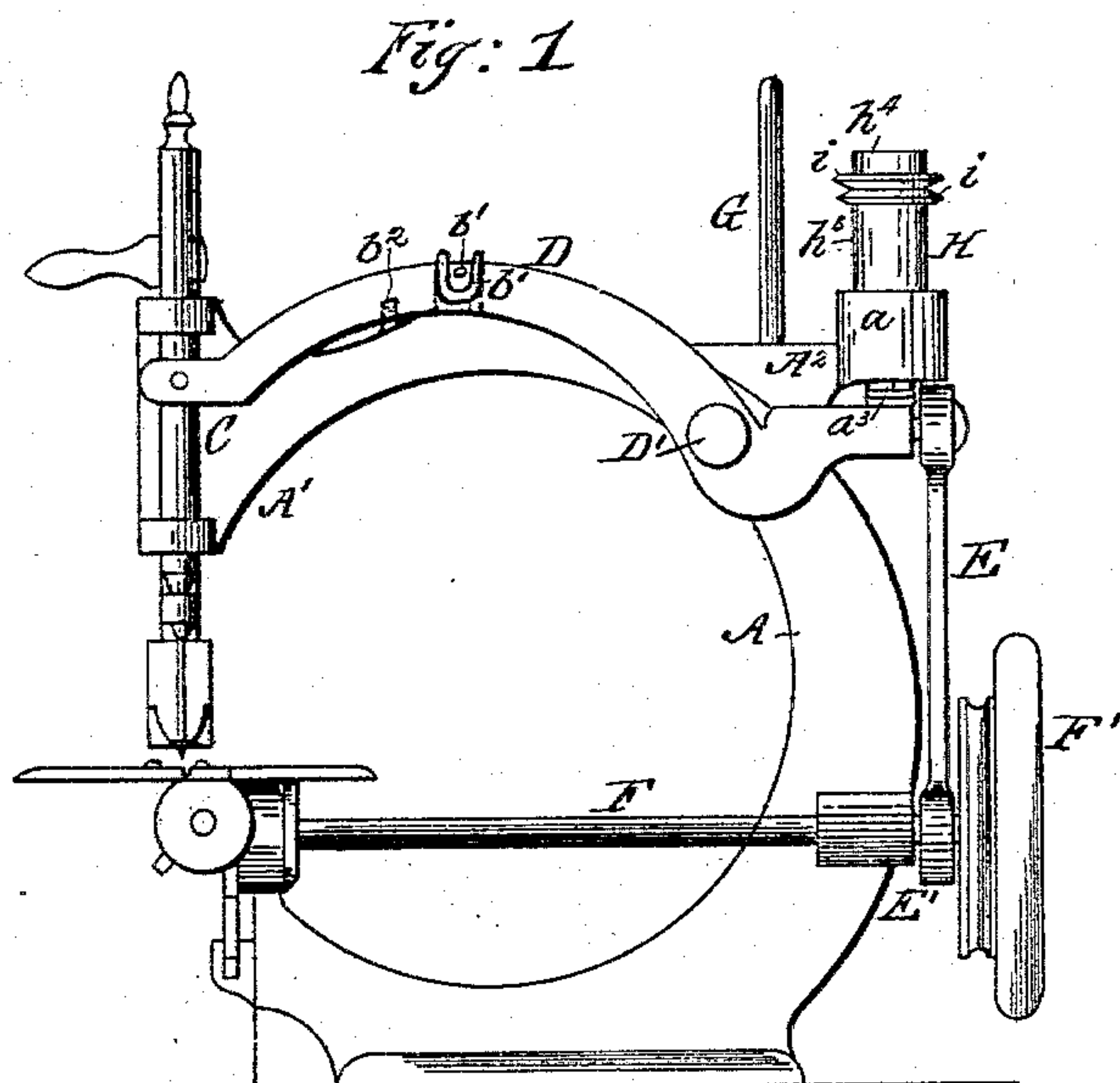
(No Model.)

A. W. JOHNSON.

TENSION OPERATING MECHANISM FOR SEWING MACHINES.

No. 561,790.

Patented June 9, 1896.



WITNESSES

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TENSION-OPERATING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 561,790, dated June 9, 1896.

Application filed January 16, 1896. Serial No. 575,677. (No model.)

To all whom it may concern:

Be it known that I, ALBERT W. JOHNSON, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

The object and nature of my invention is to improve the construction of sewing-machines in such manner that advantage is gained, *inter alia*, in the integral portions of the main frame and in the cost, efficiency, durability, and operation of the parts of the machine which compose the tension; and to this end the invention consists of the construction and operation of the said parts, all as hereinafter described and claimed.

In the accompanying drawings, to which reference is made, and which form a part of this specification, Figure 1 is a side elevation of a sewing-machine having my invention applied thereto. Fig. 2 is a front elevation of the machine. Fig. 3 is an enlarged sectional elevation of the tension mechanism and a portion of the main frame which forms the seat therefor; and Figs. 4 and 5 show, respectively, in enlarged side elevation and plan, the pitman construction for operating the tension.

A represents the main frame of the machine, the head A' of which supports the presser-bar B and the needle-bar C in the usual manner. The needle-bar C is operated by the needle-arm D, which, in the usual manner, is pivoted at D', and is operated by the pitman E, eccentric E', and band-wheel F', secured on the main shaft F. Adjacent to the pivot D' the main frame is formed with a projection or shelf A², which supports the spool-holder G and tension H, the latter to be operated by the said pitman E. The said shelf or projection A² of the main frame is constructed to form a seat or chamber *a*, partially closed at its bottom to form a support *a'* for the lower tension-spring *h*. The said bottom of the chamber *a* is tapped to form a screw-threaded aperture *a'*², in which is held the hollow spindle *h'*, which spindle is formed with a longitudinal passage or socket *h*², side slots *h*³, and head *h*⁴, which latter is under-

cut or chambered at *h*⁵ to form a seat for the upper tension-spring *h*⁶. *h*⁷ is the tension-operating bar which is placed in the said socket *h*² of the said spindle *h'*, and is keyed to the sleeve *h*⁸, placed loosely on the said spindle by a pin *h*⁹, which passes through the said sleeve, spindle, and tension-operating bar and works in the said side slots *h*³, as illustrated clearly in Fig. 4. The tension-disks *i i* are placed loosely on the spindle *h'* and are held between the upper end of the sleeve *h*⁸ and the head *h*⁴ of the spindle, and the proportions are such that the said tension-disks are caused by the comparatively heavy tension-spring *h* to firmly grasp the thread placed between the said tension-disks when no downdraft is applied to the tension-operating bar *h*⁷.

While the comparatively light upper tension-spring *h*⁶ serves to resist the normal upward pressure of the lower tension-spring, and thus assists somewhat in closing the tension-disks on the thread, its main object is to cause the upper tension-disk to follow the operation of the lower disk, and thus serves to prevent binding of the disks on the spindle and to obviate the necessity of depending on gravity for the downward movement of the said disks on the spindle and keeps a gentle tension on the thread when the heavy tension is removed. If gravity be depended upon for this purpose, it is advisable to slightly weight the disks or make one or both of them of somewhat thicker or heavier material, so that their action will be prompt and reliable.

The lower end of the tension-bar *h*⁷ is headed, as shown at *h*¹², or is otherwise properly formed to engage with the upper end of the pitman E, which has a complementary formation to effect its connection with said bar *h*⁷. As here shown, the said pitman is for this purpose formed or provided with an offset claw *e*, which embraces the said tension-bar *h*⁷ above its lower headed end, as clearly illustrated in the drawings.

In order to obviate noise, I deem it advisable to employ a cushion *h*¹⁰ between the contacting surfaces of the operating-bar and the pitman.

The adjustment of the tension mechanism

in the first instance, to the stroke of the pitman, and afterward to varying conditions of work and to compensate for wear, &c., is effected by screwing up or down, as the case may require, the spindle h' in the threaded aperture a^2 , wherein it may be firmly held at the proper position by a lock or jam-nut a^3 . When properly adjusted, it will be noticed that the tension mechanism is wholly independent of the other operative parts of the sewing-machine, except at the instant the pitman E reaches its lowest point and during the lateral motion of the lower end of the pitman, which causes the lateral claw e to "dip"—that is to say, to be carried downward—due to the rotary oscillation of the upper end of the pitman, which motion is utilized for operating the tension by merely adding to the machine the weight of the claw e .

20 The spool-spindle is held at the left and somewhat back of the tension, so that the thread is first carried through a hole b in the needle-arm over the staple b' , attached to the main frame, thence back between tension-

disks, thence through a guide b^3 to the needle-bar, and down to the needle. 25

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

In a sewing-machine, a needle-arm fulcrumed to the main frame to form a lever of the first class, a pitman provided with a tension-operating projection or claw and connected to the short arm of said lever and operated by an eccentric on the main shaft, and a tension seat or shelf formed on the main frame back of the said fulcrum, in combination with an intermittent tension mounted in said seat and provided with a depending tension-operating bar adapted to be engaged by the said tension-operating projection, or claw, on the downstroke of the said pitman, substantially as described. 30 35 40

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Witnesses:

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