

J. G. BRADEEN.  
SEWING MACHINE.

No. 9,380.

Patented Nov. 2, 1852.

Fig. 9.

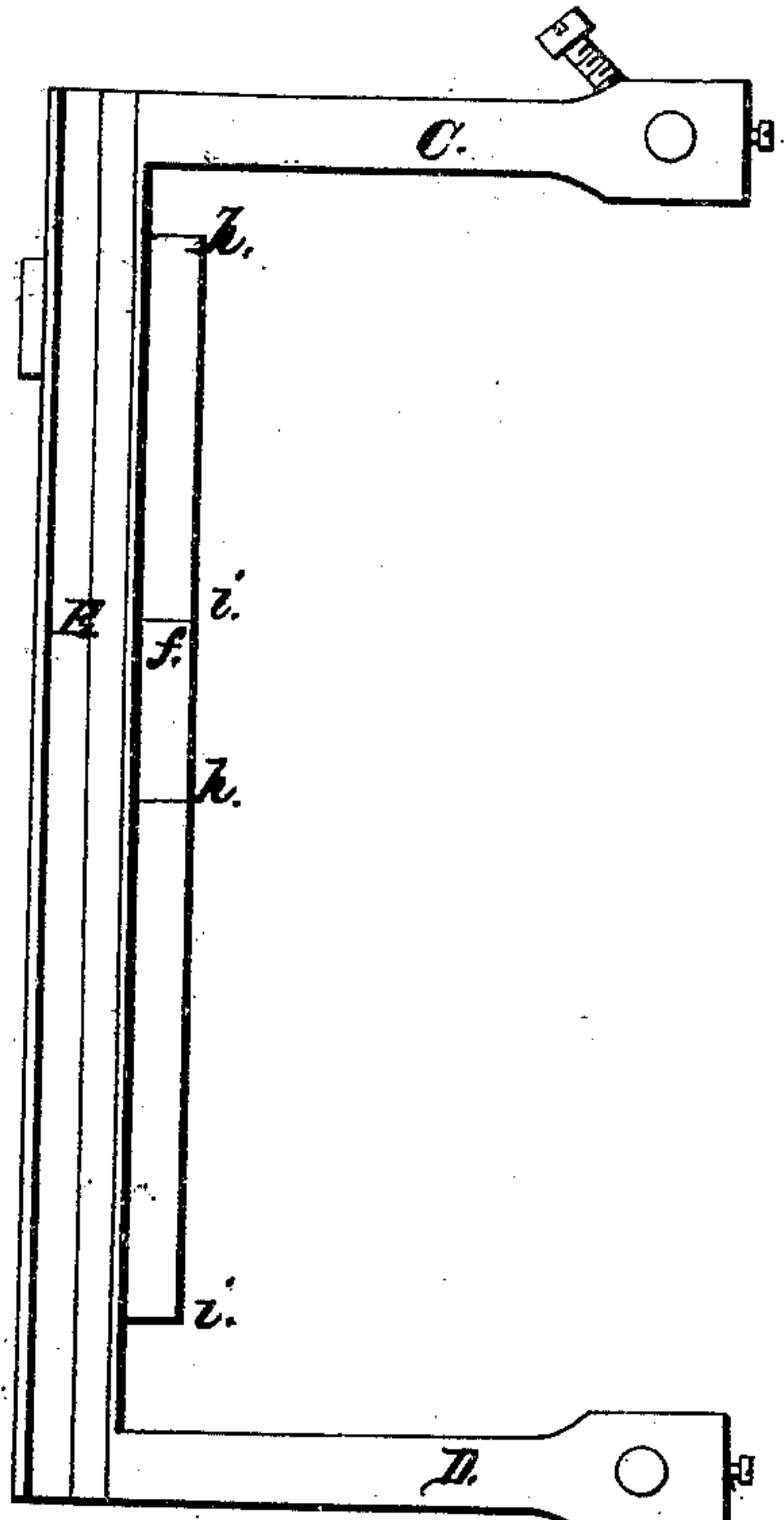


Fig. 8.

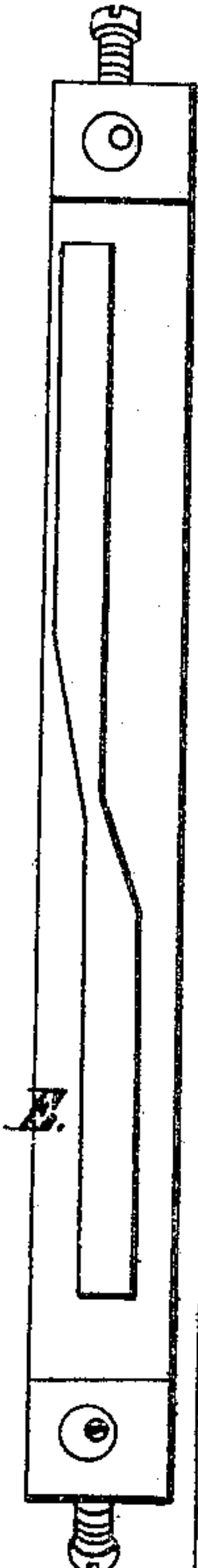


Fig. 10. Fig. 11.

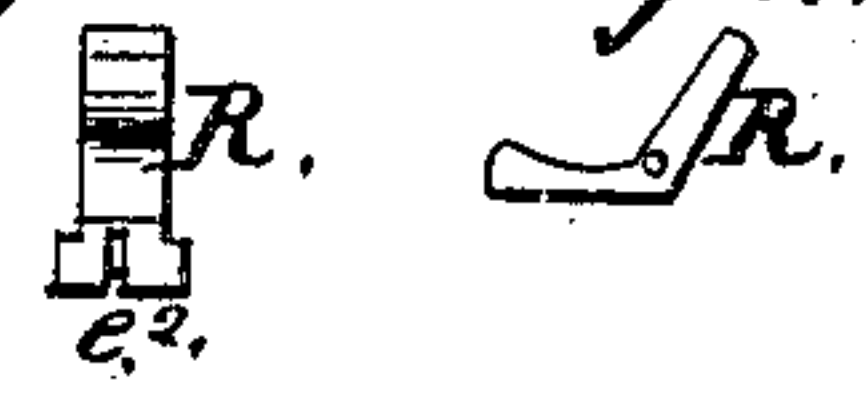
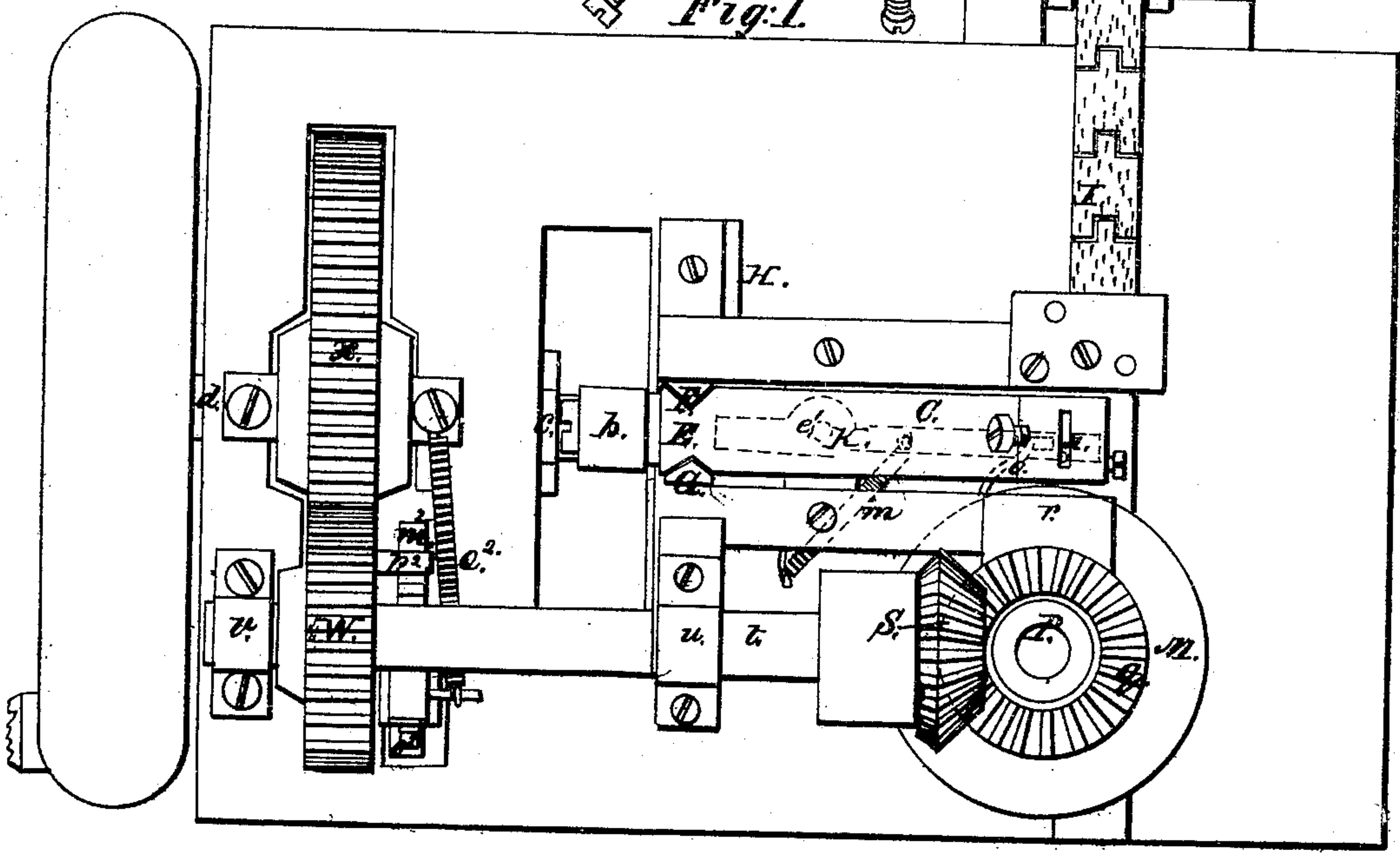


Fig. 1.

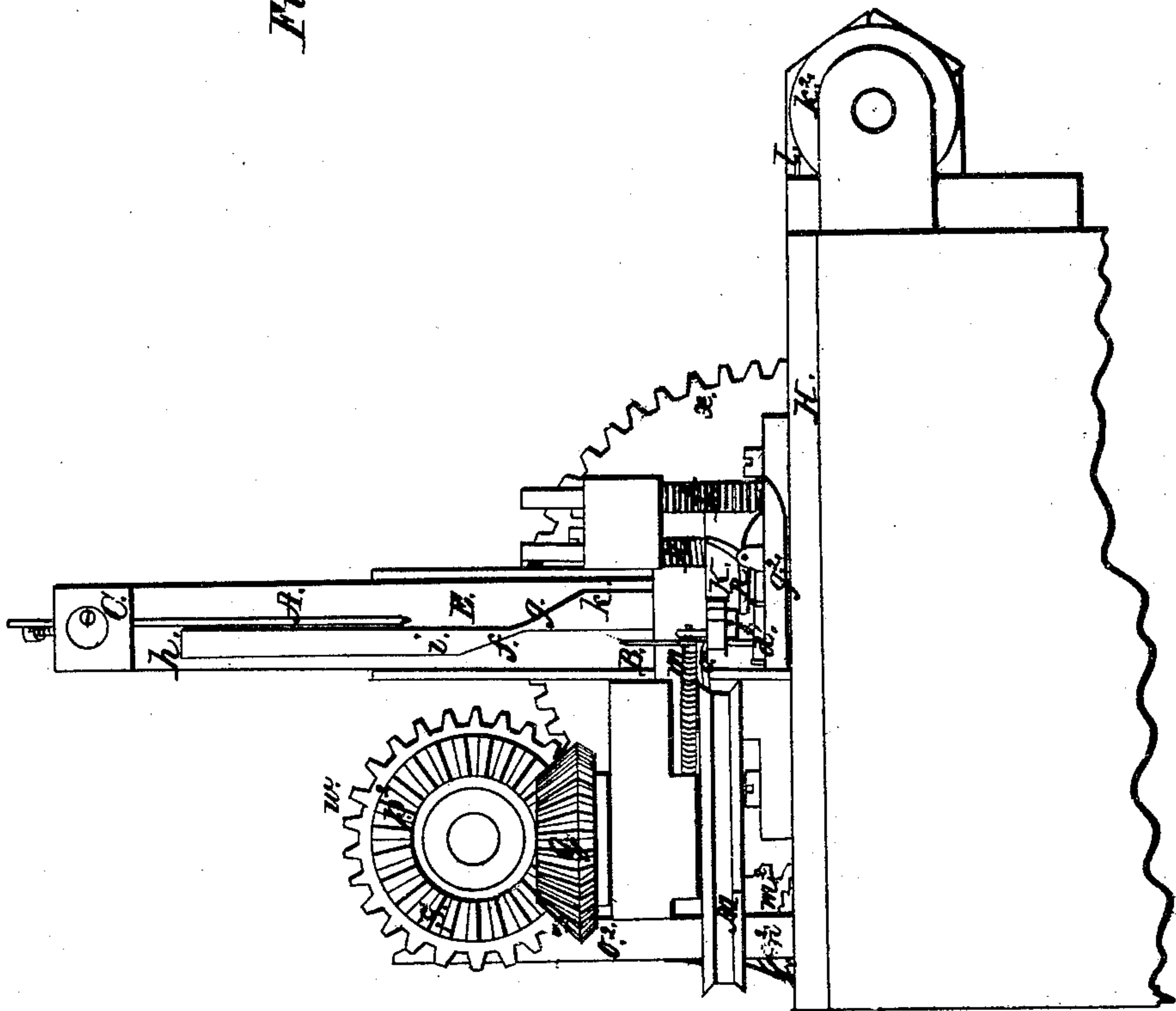


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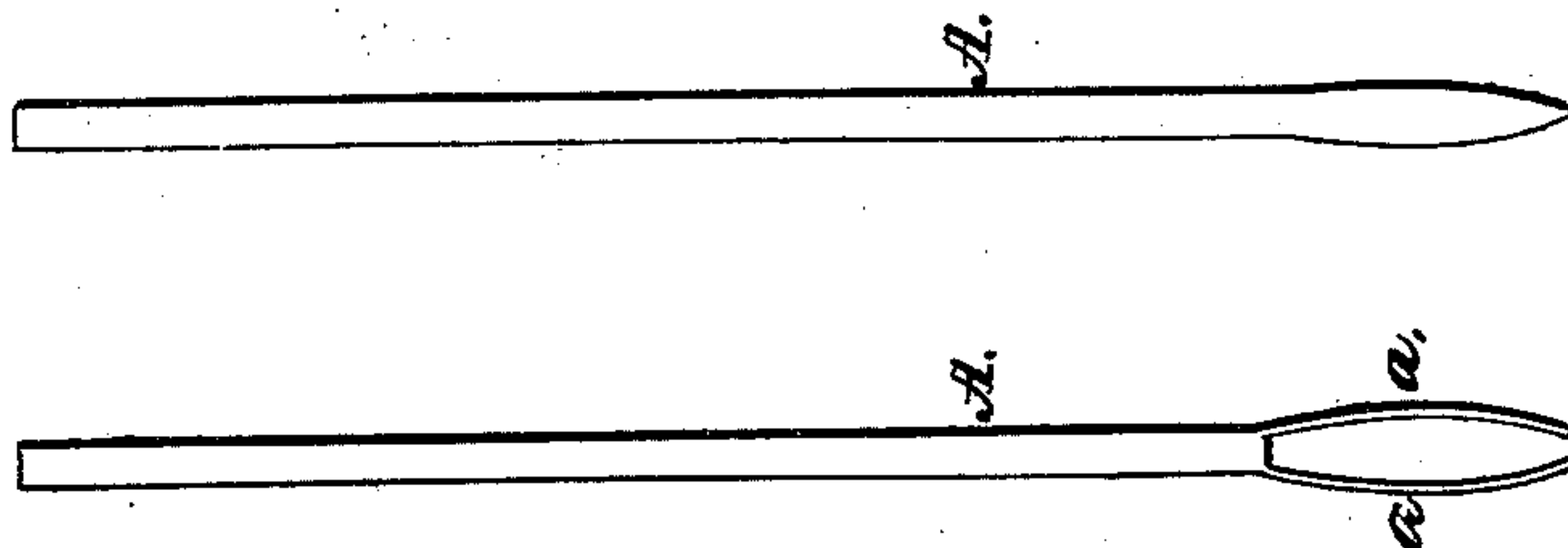
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*Fig. 2.*



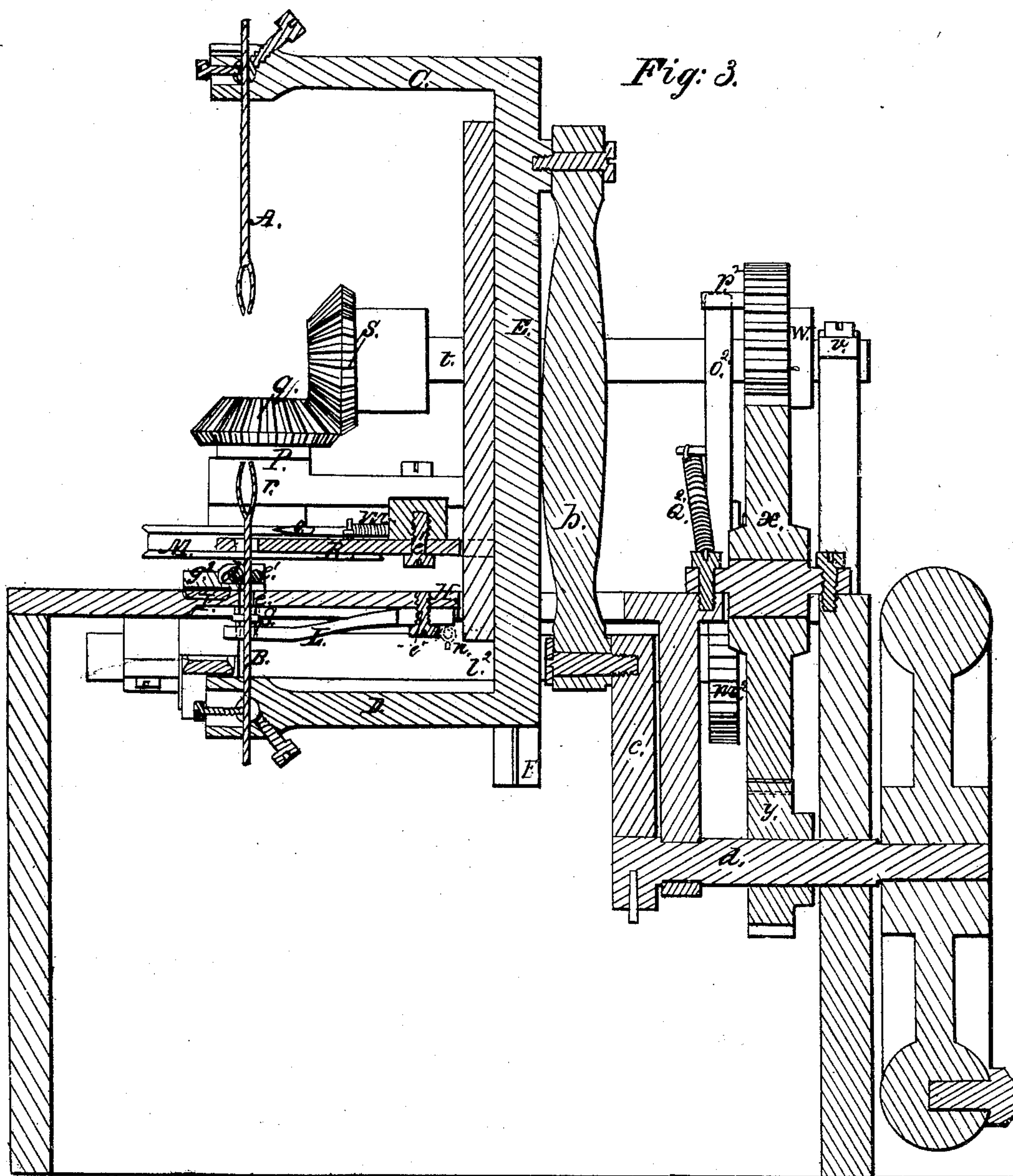
*Fig. 6. Fig. 7.*



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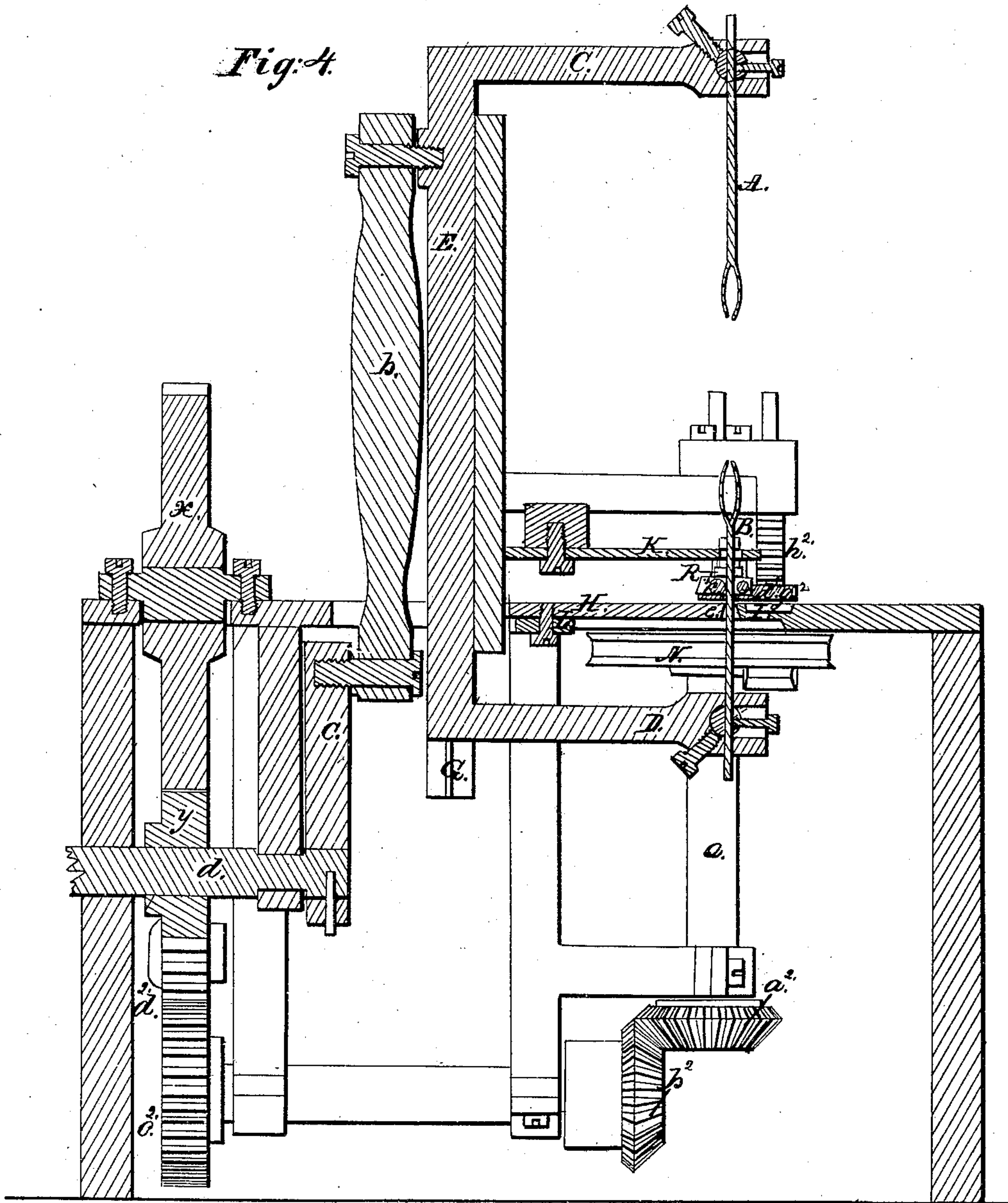




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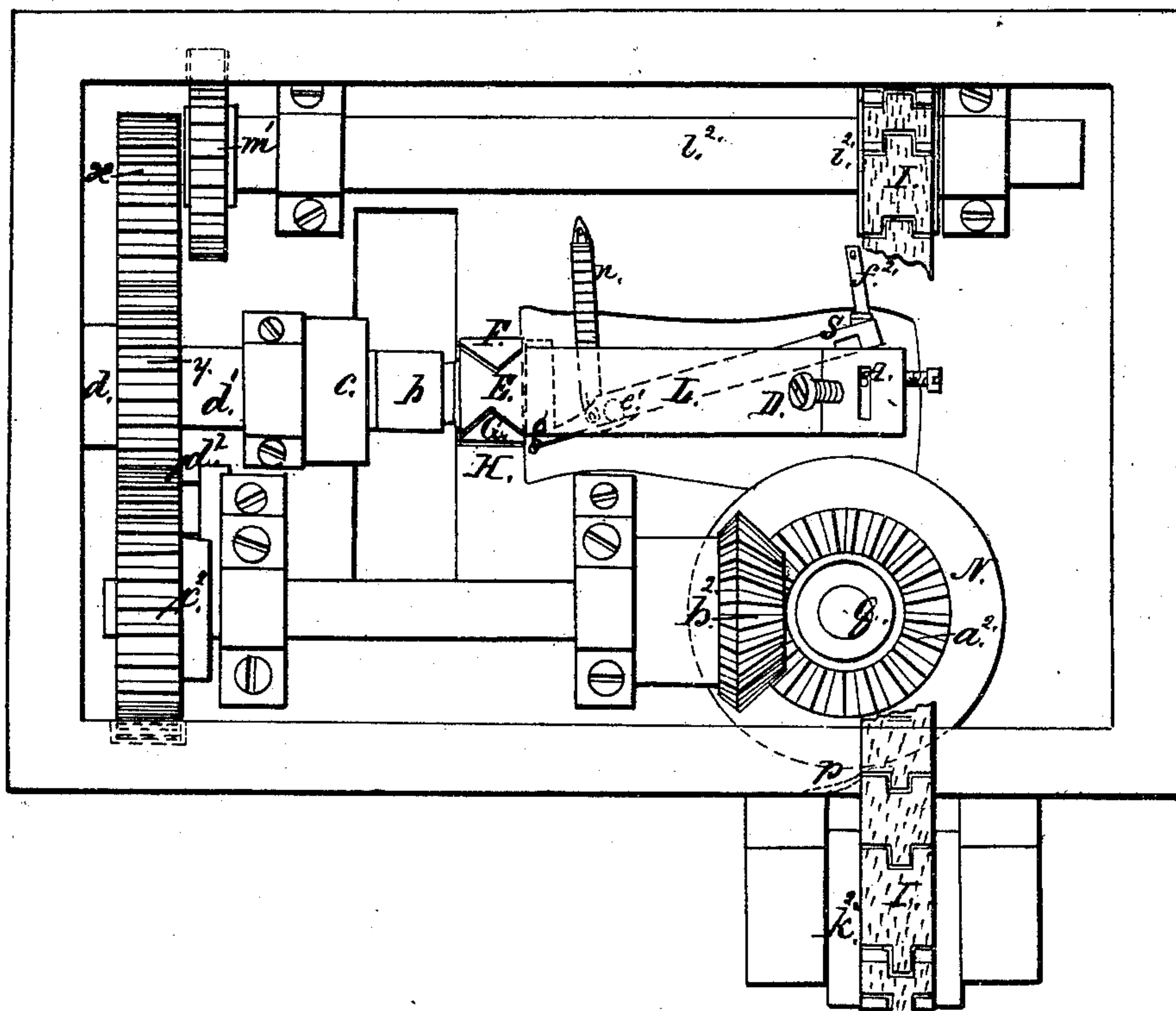


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*Fig:5.*







# UNITED STATES PATENT OFFICE.

JOHN G. BRADEEN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO J. G. BRADEEN AND G. PERKINS.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 9,380, dated November 2, 1852.

*To all whom it may concern:*

Be it known that I, JOHN G. BRADEEN, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Machinery for Sewing Cloth; and I do hereby declare that the same are fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a top view of my improved sewing-machine. Fig. 2 is a front end elevation of it. Fig. 3 is a vertical and longitudinal section of it as taken through the upper needle, and showing on one side of the middle of the machine the mechanism for drawing the thread through the cloth. Fig. 4 is a vertical and longitudinal section taken so as to show the mechanism on the opposite side of the center of the machine. Fig. 5 is an under side view of the machine. Fig. 12 is a transverse and vertical section of it, taken through the endless-chain cloth-carrier.

The machine containing my improvements operates somewhat on the principle of action, and forms the same kinds of stitches or sewing, as that of Frederick R. Robinson, for which Letters Patent of the United States were granted on the 10th day of December, A. D. 1850. In the machine of the said Robinson the thread is drawn through the cloth entirely by the needle. In the practical operation of such machine great difficulty has been experienced in making the needles endure the wear of the thread, a very short time sufficing to wear them so as to cause their barbs to break off. Besides, the continual working of the needles between the rollers of the thread-guides and mouth-pieces has a tendency to heat and burnish the needles and more or less injure them. My improvements are calculated to obviate the said difficulties.

In my improved machine the thread is not drawn through the cloth by the needle; but it is pushed through it a short distance by the needle, while the remainder of the thread is drawn through the cloth by a contrivance separate and distinct from the needle. The needle may be made and operated so as to draw the thread through the cloth for a short distance, or part of the thread, the remainder of the thread being drawn through the cloth

by the draft-hook or contrivance above stated. One essential improvement or part of my invention, however, consists in the peculiar mode of making and operating the needles and thread-guides so that each needle shall push the thread through the cloth.

Another feature of my invention is to be found in the mode of constructing and operating the thread-guide, by which I am enabled to dispense with rollers and springs at the end of the same, as used in the said Robinson's machine, whereby I get rid of the injurious effects of such on the needles. Another part of my improvement consists in a rocker-guide or lifter of the thread, applied and made to operate as hereinafter described.

In the said drawings, A and B denote two needles, each of which is made straight and formed at its lower end with two pointed barbs, *a a*, as seen in Figs. 6 and 7, which exhibit on an enlarged scale side views of a needle. These needles are respectively fastened to two horizontal arms, C D, that project at right angles from a vertical slide, E, that is retained by and plays or slides freely between vertical and parallel guides F G, that are fastened to the horizontal bed or top plate, H, of the machine. A reciprocating vertical movement is to be given to the slide E and the needles, so as to cause each needle to alternately pass or be pushed through the cloth and be drawn back out of it, the cloth to be sewed being laid on the top plate, H, and an endless-chain cloth-carrier, I. The machinery which gives reciprocating vertical movements to the slides E consists of a connecting-rod, *b*, a crank, *c*, and a shaft, *d*, the crank being fastened on the inner end shaft and made to rotate with and by it. The connecting-rod is jointed both to the end of the crank and to the slide E.

Both above and below the bed on which the cloth rests pressers or contrivances for closing the barbs or points of each of the needles together before it enters the cloth are to be employed and suitably constructed and arranged. The upper presser in the drawings is represented as composed of two small rollers, *e' d'*, while the lower one is a simple passage or slot, *e*, made through the top plate.

To each needle there is a thread-guide, K or L. Each of the thread-guides, arranged as



shown in the drawings, is composed of a lever having a simple eye or slot through its front end, large enough for the needle to pass through without touching the sides of the slot. Each of these guides is made to turn on a pin or fulcrum, as seen at  $e'$ , and to have its rear end acted on at a proper time by a cam-surface,  $f$  or  $g$ , each of which is connected with two parallel surfaces,  $h i$  or  $k l$ , as seen in Figs. 8 and 9, formed on and projected from the front side of the slide E, the said Fig. 8 representing a front view of such slide, while Fig. 9 is a side view of it.

To each thread-guide a spring,  $m$  or  $n$ , is applied, so as to draw its front arm toward the machinery by which the thread is drawn through the guide, which machinery I shall now proceed to describe.

To each needle there is a hook,  $o$  or  $p$ , which is made to project from the periphery of one of two grooved rollers, M N, that are arranged as seen in the drawings, and respectively fixed on the ends of two upright shafts, P Q. The upper shaft, P, is sustained by a bracket,  $r$ , and has a beveled gear,  $q$ , fixed on its upper end. This gear engages with another beveled gear,  $s$ , fixed on a horizontal shaft,  $t$ , that is supported in bearings, as seen at  $u v$ , and has a spur-gear,  $w$ , fixed on it. The said spur-gear is made to engage with another and larger gear,  $x$ , that is put in revolution by a pinion,  $y$ , affixed on the main or fly wheel shaft  $d$ . The hook  $o$  thus gets a rotary motion around the axis of the shaft P when the main shaft is put in revolution. The shaft Q is put in rotation by means of a train of gears,  $a^2 b^2 c^2 d^2$ , arranged and connected with the shaft Q and the gear  $y$ , as seen in the drawings. By such means the hook  $p$  gets a rotation around the axis of the shaft Q.

Two small rocker-guides or thread-lifters, R S, are arranged with respect to the needles and pressers, as seen in the drawings. Each of these lifters or rockers consists of a small bent lever (a top view of one of which is given in Fig. 10 and a side view of it in Fig. 11) that turns or rocks on a fulcrum at its angle or bend, and has one of its legs so disposed as to be struck by the adjacent thread-guide during its next movement after a needle has passed through it. This movement of the thread-guide against the lever tilts it so as to move the opposite leg against that part of the thread which lies immediately between the cloth and the thread-guide. This movement of the leg against such part of the thread lifts the thread and holds it in a proper position for it to be received between the barbs of the needle that next passes over and takes or forces it through the cloth. A notch for the reception of the thread is formed in the lifter, as seen at  $e^2$  in Fig. 10. To each thread-lifter a spring,  $f^2$ , is applied, and made to operate so as to tilt the lever in an opposite direction when the thread-guide next moves in an opposite direction. The cloth is held down upon the cloth-carrier I by means of a plate or bearer,  $g^2$ , that is forced

downward by one or more springs,  $h^2$ . The upper thread-lifter is placed on the top of this plate. The endless-chain cloth-carrier I has its upper or outer surface studded with points or made rough, and works around a polygonal roller,  $i^2$ , and another one,  $k^2$ , the former being fixed on one end of a shaft,  $l^2$ , on whose opposite end there is fixed a ratchet-wheel,  $m^2$ , that is rotated by the conjoint operation of a spring-pawl,  $n^2$ , a lever,  $o^2$ , and a pin,  $p^2$ , the latter being projected from the side of the spur-gear  $w$ . A spring,  $q^2$ , is employed to draw the lever  $o^2$  toward the shaft of the gear  $w$ .

In the operation of my machine we will suppose a thread laid between the barbs of the lower needle, and the mechanism put in action. The needle will be forced upward through the lower pressers, by which its barbs will be closed together. Continuing upward, it will pass through the cloth and the eye of the upper thread-guide, which latter will in the meantime have been so moved as to come directly over the path of the needle. The thread will thus be carried through the cloth in the form of a loop, and with the upper part of the loop above the top surface of the upper thread-guide. The draft-hook next comes around and passes over the thread-guide and between one part of the loop and the needle, and thus catches the thread and draws on it until it is drawn through the cloth. The needle next descends below the cloth, and while so doing, and before the upper needle can pass into its presser, the cloth is moved forward the width of a stitch, or a proper distance for the formation of one. In the meantime the upper thread-guide is moved laterally, and trips the thread-lifter under it, so as to elevate that part of the thread that is directly between its eye or slot and the cloth high enough above the presser to enable the barbs of the upper needle to straddle or receive such part of the thread between them before the points of their barbs enter their presser. The upper needle next descends through its presser and the cloth, and passes down through the eye or slot of the lower thread-guide, carrying the thread again through the cloth and the lower part or middle of the loop of it, below the lower surface of the lower thread-guide. The lower draft-hook next comes around below the said thread-guide, and passes between the loop and the needle, and draws on the thread and pulls it entirely through the cloth and away from the upper draft-hook. The lower thread-guide next moves laterally, so as to tilt the lower thread-lifter, and thereby move the thread far enough from the lower presser to enable the lower needle during its next ascent to embrace the thread before the barbs are contracted by the presser.

From the above it will be seen that only a small portion of the thread is put through the cloth by the operation of the needle, the remainder of the thread being drawn through the cloth by the operation of a rotating draft-hook entirely separate from the needle. Con-



sequently the wear of the thread on the needle is greatly lessened in comparison with what is the case when the entire thread is drawn through the cloth by the operation of the needle alone.

It is therefore that I claim as my improvement—

1. The two rotating draft-hooks, (or their equivalents,) separate from the needle, in combination with the two needles and two thread-guides, made to operate together substantially as specified.

2. The improvement of so constructing and operating the needles and thread-guides that each needle, directly after passing into and through the cloth, shall pass through thread-guide which is on that side of the cloth opposite to the side of it in which the needle first

enters, meaning to claim the arrangement of each needle and its thread-guide, respectively, on opposite sides of the cloth, they being constructed and operated in the manner specified. In F. R. Robinson's machine they are arranged and made to operate on the same side of the cloth.

3. The combination of the rocking thread-lifter or its equivalent with the needle and presser, the said thread-lifter being operated, as described, by the thread-guide lever or any other proper means.

In testimony whereof I have hereto set my signature this 12th day of June, A. D. 1852.

JOHN G. BRADEEN.

Witnesses:

R. H. EDDY,

G. W. CUTLER.