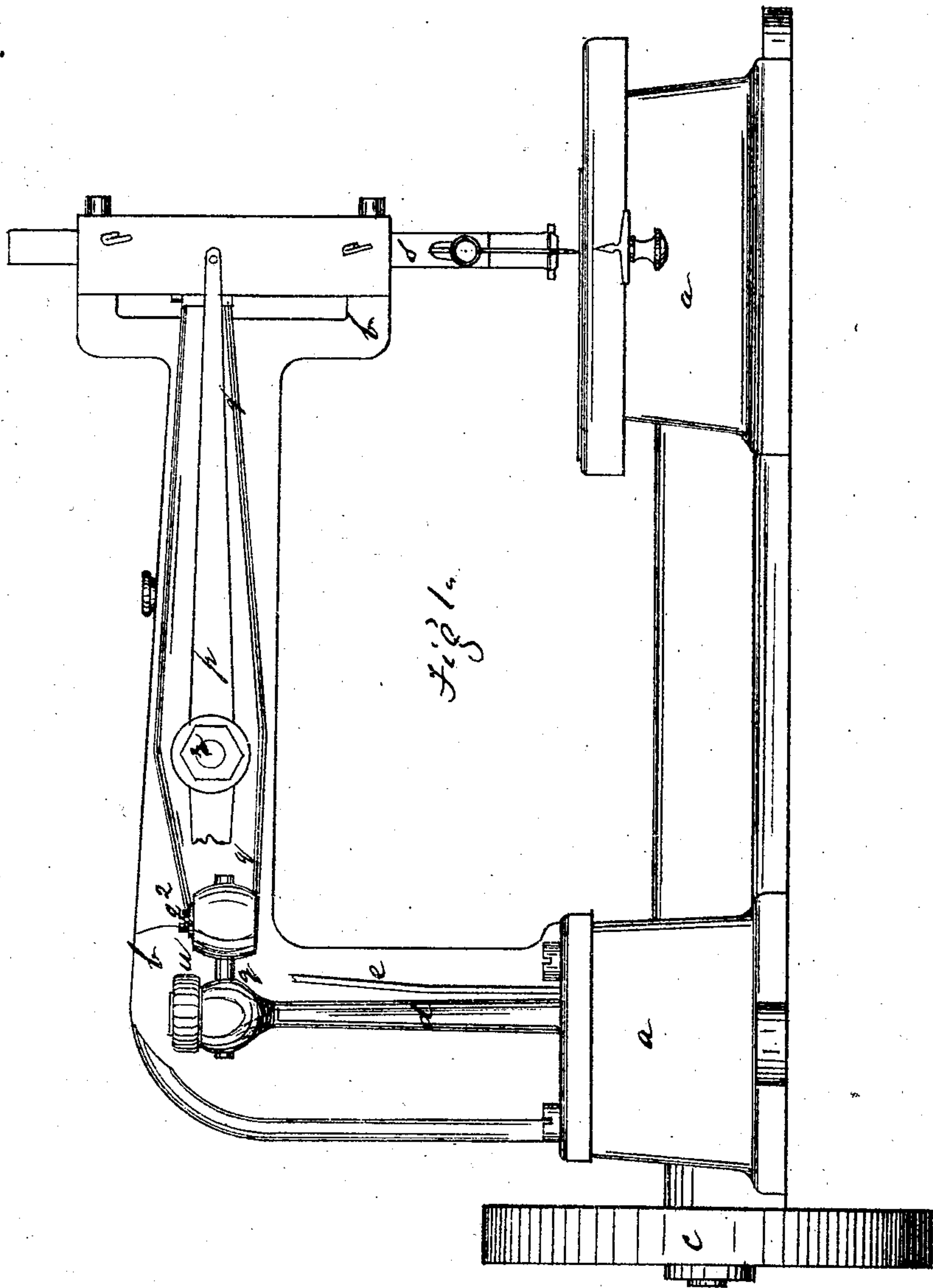


J. A. HOUSE.
Sewing-Machine.

No. 133,939.

Patented Dec. 17, 1872.



James A House

Inventor

per Henry B. Cunnick

attorney

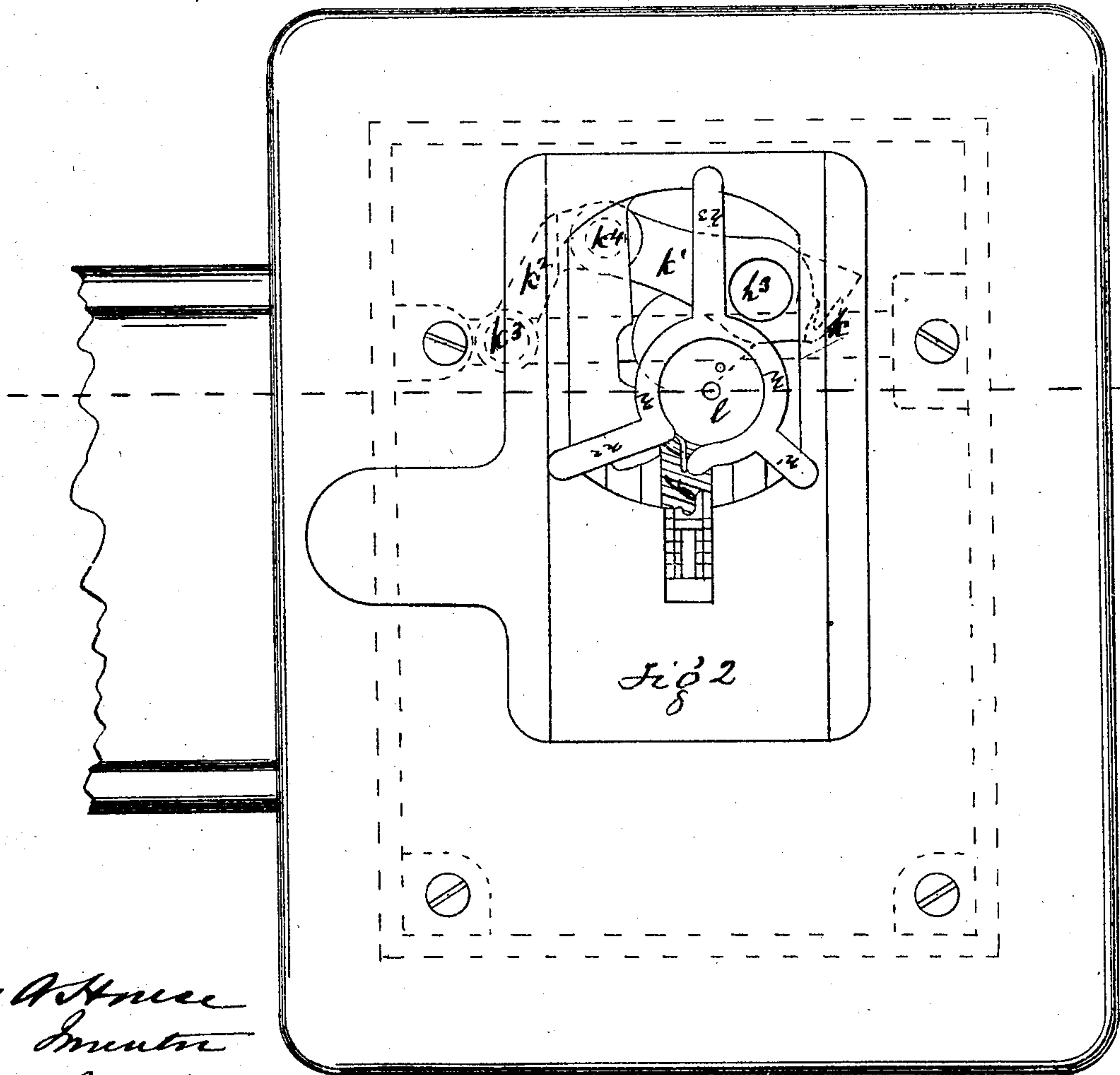
In presence of Louis Seaman

W. L. Bismarck

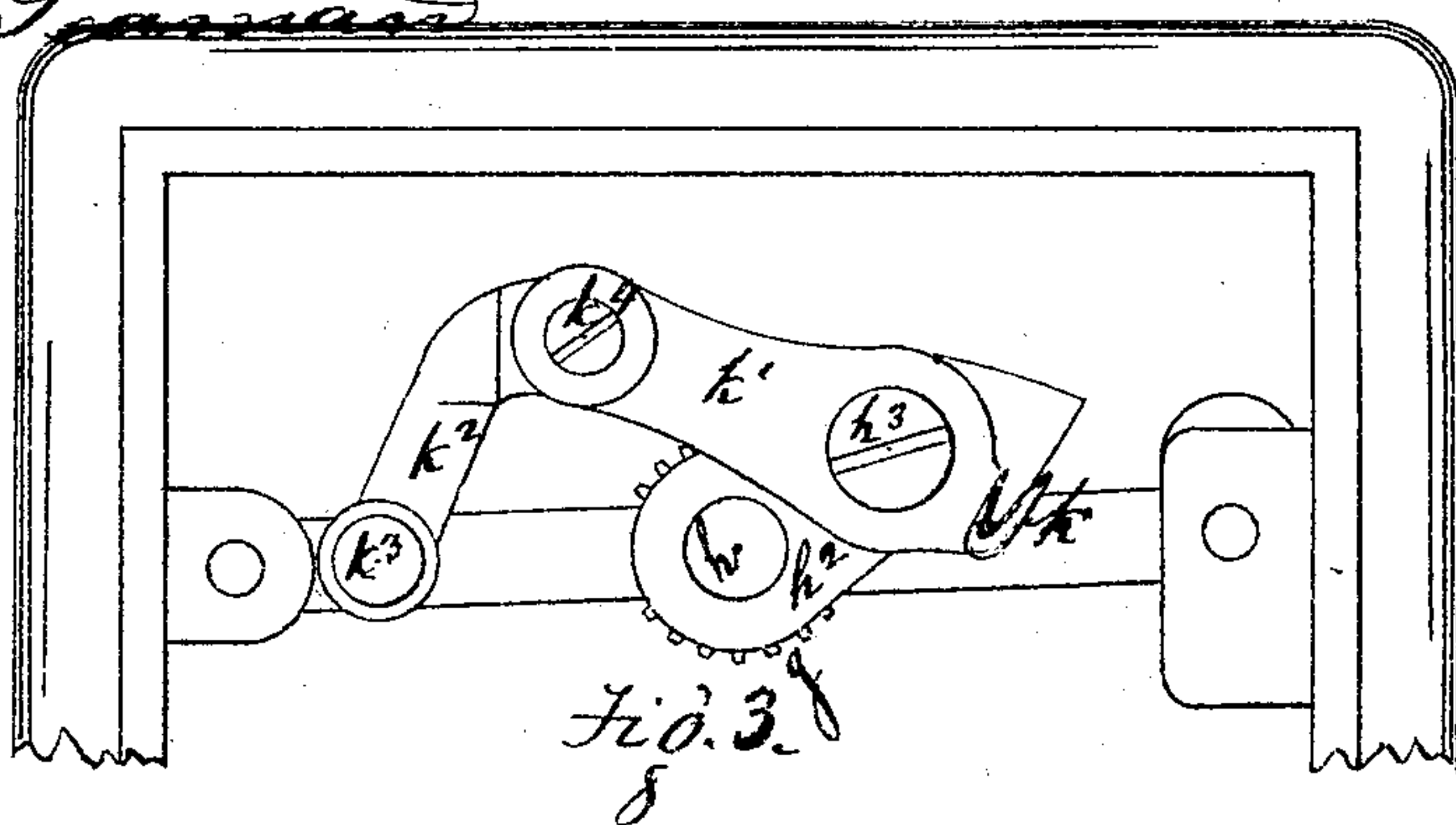
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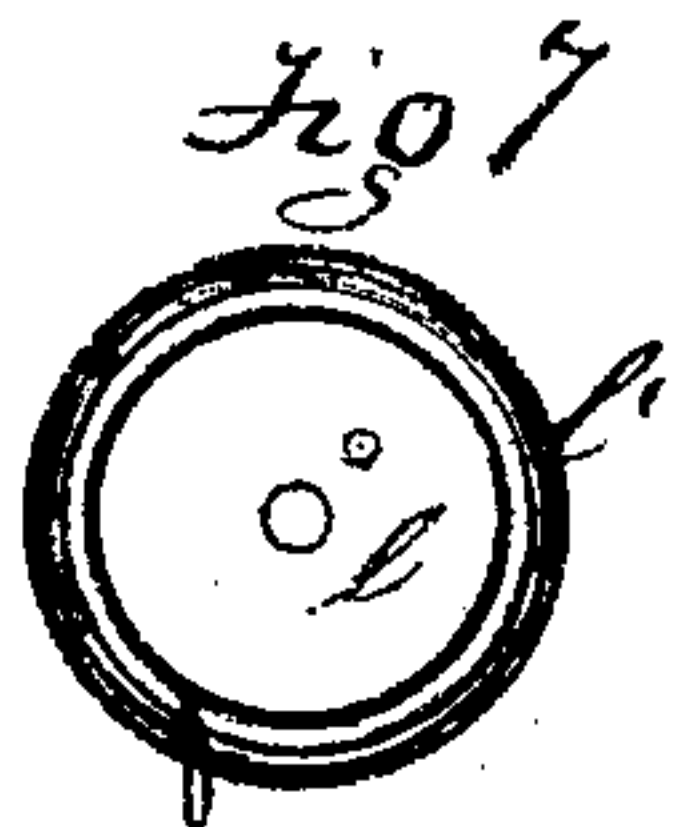
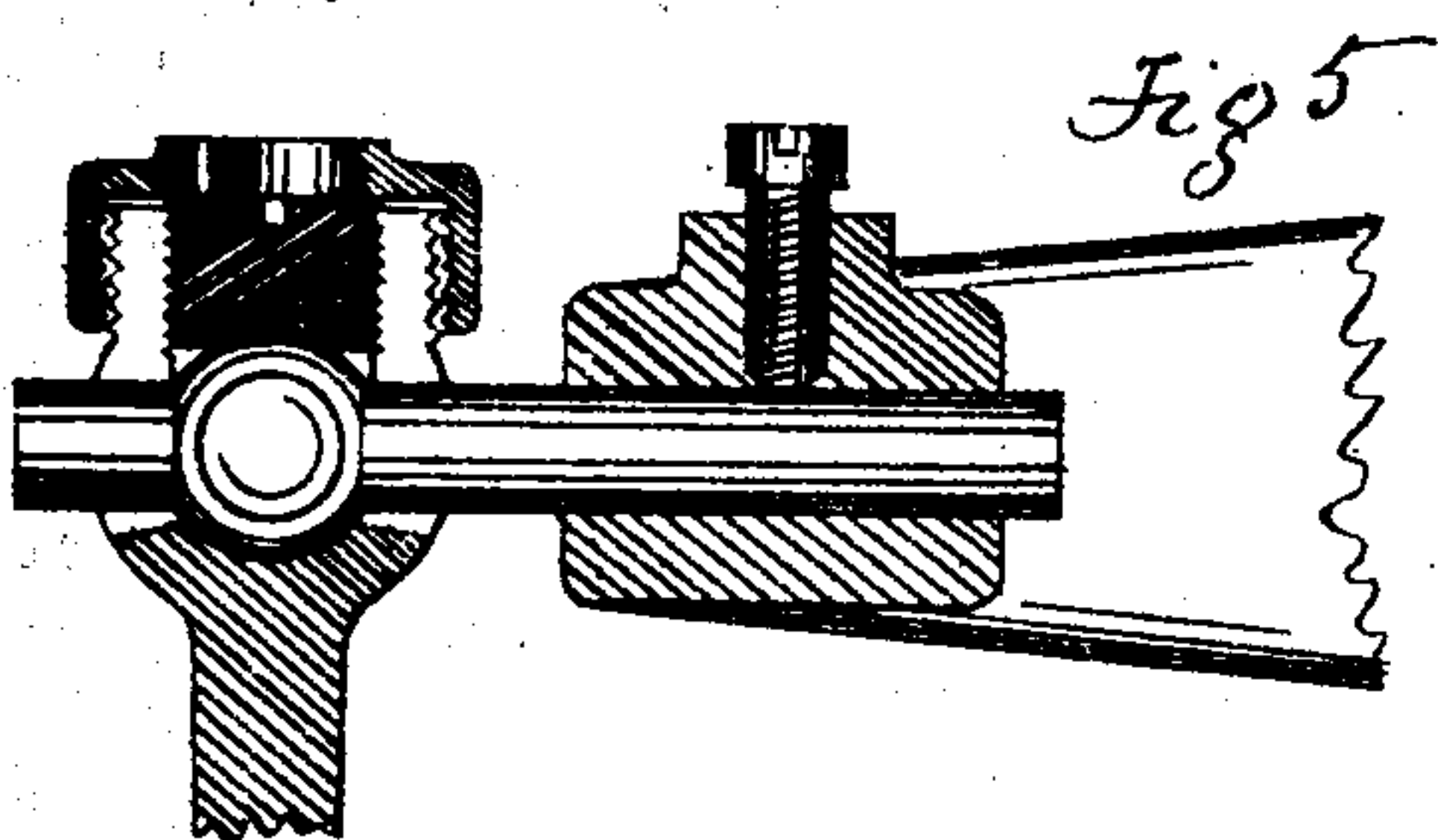
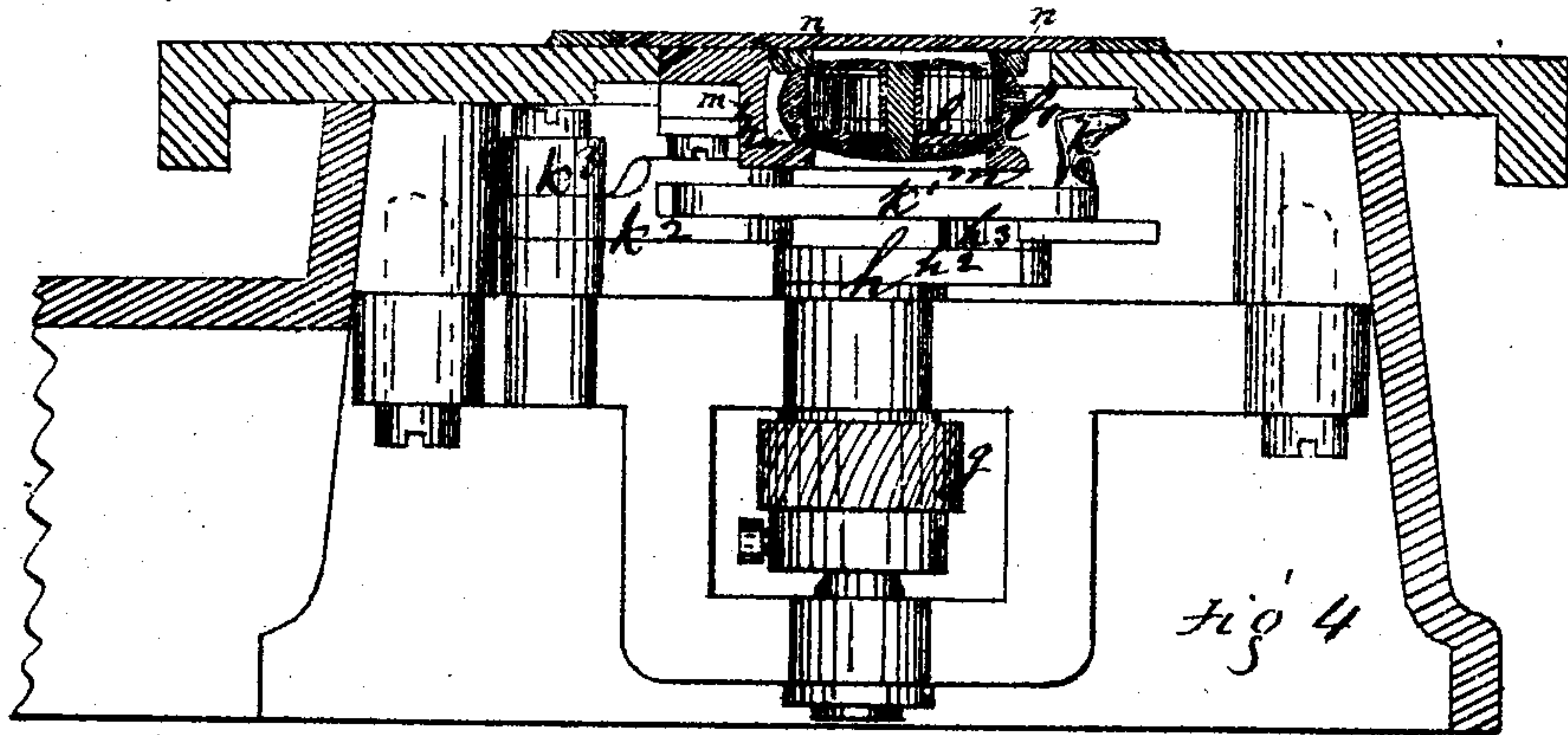
James A. House
Inventor
Per Henry B. Winnick
attorney
H. L. Besmer.
In presence of Louis S. ...



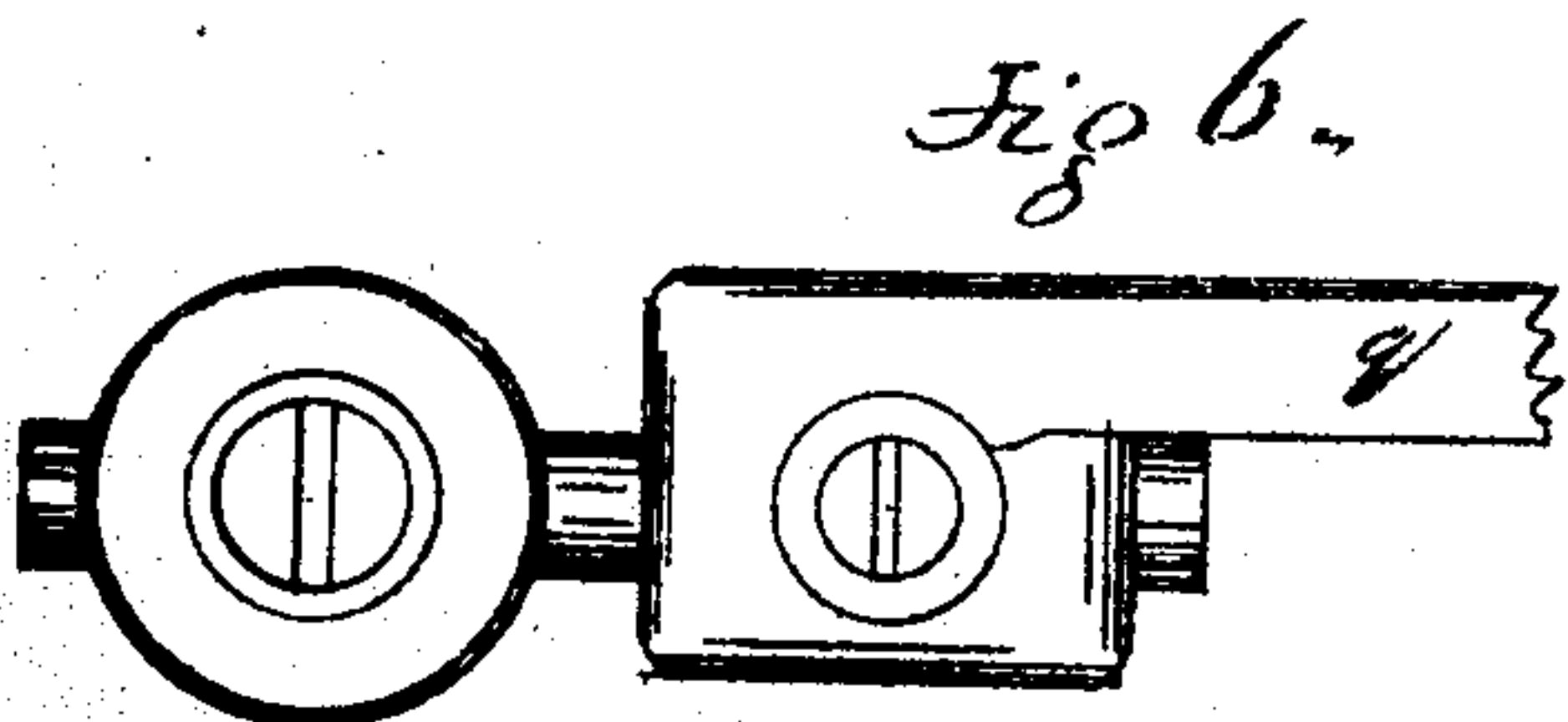
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In presence of Louis Seaman
H. L. Berne

UNITED STATES PATENT OFFICE.

JAMES A. HOUSE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 133,939, dated December 17, 1872.

To all whom it may concern:

Be it known that I, J. A. HOUSE, of Bridgeport, in the State of Connecticut, have invented certain new and useful Improvements in Sewing-Machines; and that the following, taken in connection with the drawing, is a full, clear, and exact description thereof.

In the drawing, Figure 1 is a side elevation of the machine; Fig. 2 is a plan of parts thereof, with the slide covering the bobbin and the bobbin-confiner removed; Fig. 3 is a plan of the elliptic hook, its radius-bar, driving-crank, &c; Fig. 4 is a vertical section through the bobbin and bobbin-case parallel to the bracket of the machine; Fig. 5 is a detail section through a ball-and-socket joint which connects a connecting-rod with the needle-arm lever; Fig. 7 is a plan of the bobbin; and Fig 8, an elevation of the same.

The object of the invention is similar to that of one formerly made by me, namely, to construct a machine upon the Wheeler & Wilson system—making a shuttle-stitch without using a shuttle—and capable of sewing either heavy or light goods; and at the same time using a bobbin which holds as much thread as the bobbins of ordinary shuttle-machines.

In this machine I employ that variety of the Wheeler & Wilson rotating hook which is commonly known as the elliptic hook or the hook of the elliptic machine, slightly changed in construction at the seizing part thereof. The hook known as the elliptic in its revolution describes an irregular ellipse as mine does; but in my machine the plane of the ellipse is horizontal and perpendicular to that in which the needle moves, while in the ordinary elliptic machine these two planes are both vertical. Further, in my machine I prefer to drive the hook at such relative speed to the moving parts of the machine that it shall make two complete revolutions between two succeeding descents of the needle into the cloth, so as to cast off the loop soon enough to enable a take-up to act properly.

I have also combined with the elliptic hook a take-up, so that there may be only one loop lying below the cloth at the same time; and have further devised certain improvements in a ball-and-socket joint, which are applicable not only to this but also to other machines.

The whole of the working parts of the machine are supported by and in a strong bed-plate, *a a*, and a bracket, *b b*, made fast thereto. In this bed-plate the main shaft, carrying at its end the fly-wheel or pulley *c*, is mounted, and provided with an eccentric, which actuates the main connecting-rod *d*, a cam which moves the take-up connecting-rod *e*, and with the ordinary cams for actuating the roughened feeding-surface; although I prefer to use two sets of such cams, one set lying on each side of the cog-wheel *f*, so as to avoid the friction upon the feed-bar and secure other advantages, as explained in an application for a patent filed by James A. and Henry A. House, now pending. This shaft also carries a cog-wheel, *f*, Fig. 2, through which motion is imparted to the cog-wheel *g*, mounted upon the hook-shaft *h*. These wheels may be of any kind, but I prefer screw-gearing, as shown in the drawing. The hook-shaft has mounted upon it a crank, *h*², with a crank-pin, *h*³. The hook proper, *k*, is made in one piece with its shank *k*¹, to which, at *k*⁴, is pivoted the radius-bar *k*², which itself swings upon the pivot *k*³. The hook proper is so formed (substantially as shown) as to take loops from a needle operating in a plane at right angles to that in which the hook moves; and is so timed in its motions and so adjusted relatively to the needle as to seize the loop of needle-thread formed during the ascent of the needle, and has such extent and contour of motion as to put this loop, when seized, around a bobbin and bobbin-case, and, consequently, the thread leading from that bobbin.

As before stated, I prefer to revolve the hook at such a speed that it shall make two complete revolutions between each two descents of the needle.

I prefer to support the bobbin *l* in a bobbin-case, *l'*, provided with a tension contrivance, such as a spring, or holes, or both a spring and holes, such case serving to support this apparatus, and also preventing loops of needle-thread from entering between the two disks of the bobbin; but I intend sometimes to use a bobbin without a case. This case or the bobbin rests upon a bobbin-supporter, *m*, which is a ring, supported by a hanger, *m'*. Upon this ring the bobbin-case

or bobbin-rests, and may be confined by another ring, n , provided with arms $n^1 n^2 n^3$, which rest in notches in the upper surface of the bed-plate. This confining-ring is notched, as shown in Fig. 2; and a small lug or projection, o , upon the bobbin-case enters this notch. The notch and lug prevent revolution of the bobbin-case, and, although not essential, conduce to the accurate working of the machine. The vibrating take-up lever is shown at p , one end being represented as if broken off, so as to show clearly the end of the needle-lever q . Both these levers are pivoted at r . The needle-lever is, as usual, connected at one end to the needle-bar s , and at the other to the connecting-rod d , which I prefer to make as an eccentric rod attached to a ring, whose bore is somewhat spherical, and which moves upon an eccentric of similar spherical contour, thus providing for pendulous vibrations of the rod in the plane of the needle-arm lever, or nearly so. The lever q is adjustable in its length, one end thereof, q^1 , being a rod sliding in the other part and retained in any desired position by a set-screw, q^2 . This rod has upon it a spherical boss, q^3 , which rests in a spherical cavity made in the top of the rod d . Above this cavity the rod is forked, (see Fig. 5,) and the adjacent surfaces of the forks are tapped so as to form a nut, into which the screw-plug t , slightly spherical at bottom, is screwed. A screw-cap, u , is screwed over a thread cut on the outside of the forks, and, if the threads of the plug be right-hand threads, the threads of the cap are left-hand, or vice versa. By reason of this construction any tendency of the plug to unscrew itself is prevented, as the unscrewing of the plug causes its upper surface to act upon the lower surface of the cap so as to screw the cap tighter. One end of the take-up lever is connected to the rod e in any ordinary manner, and the other end is provided with a hook or eye for the reception of the needle-thread, which is to lead from a bobbin through guides or eyes to the take-up lever, and thence through guides to the needle, in any ordinary way. The machine is to be provided with a spring presser-foot, roughened feeding-surface, and other usual necessary accessories of a sewing-machine.

I prefer so to lead the needle-thread that the slack loop is taken up by the ascent of the eye in the take-up lever while the connecting-rod e is descending, and to construct the cam-yoke or cam-bar, or equivalent, upon the rod e of such depth, in proportion to the cam, that when the thread is not in the eye of the take-up lever the other end of that lever may fall so far that the bottom of the cam-box shall be out of reach of the cam, and the rod and lever consequently remain at rest during the revolution of the main shaft. This

construction will permit the lever to remain at rest when not used, (for the machine will work especially on comparatively thin stuffs without the take-up,) but when the take-up is required and thread passed through its eye the drag of the thread will hold up the cam-box so that the cam acts upon it.

This machine works like the ordinary elliptic machine, except that the hook pulls out the loops horizontally at right angles to the vertical line in which the needle works, instead of vertically, and nearly parallel to that same line, as in the elliptic machine. This new mode of operation enables me to draw out a triangular loop with a wide base extending from the under side of the hook to the under side of the cloth, and therefore capable of surrounding a thick bobbin.

I prefer, further, and at variance with the construction of the elliptic machine, to use in my machine a take-up apparatus, and also to cause the hook, for reasons before explained, to revolve twice for each stitch; and, further, to use a bobbin case or ring surrounding the bobbin, and provided with holes for purposes of tension, as in shuttles, and also with a spring-ring (see Fig. 4) sliding in a groove in the hollow of the case, so as to produce tension upon the bobbin-thread in a known manner.

The machine may be used without this case, and with a bobbin uncased, as in the elliptic machine; but I prefer to use the case.

This machine, as proved by actual trial, will sew either fine muslin or sole-leather, and do its work well; but its speciality is as a cloth and leather machine.

I claim as my own invention—

1. The combination of a needle moving substantially in a vertical plane with an elliptic hook moving substantially in a horizontal plane, when the two are connected, substantially as described, by gearing, so that the hook makes two complete revolutions in the time elapsing between two successive lowest positions of the needle, substantially as set forth.

2. A take-up apparatus, substantially such as described, in combination with a vertically-reciprocating eye-pointed needle and a horizontally-revolving elliptic hook, the combination being substantially as herein described.

3. A ball-and-socket joint made substantially as described, the distinguishing characteristic of which is the combination of a plug and cap with screw-threads cut the one right and the other left handed.

Witness my hand this 27th day of January, A. D. 1871.

JAMES A. HOUSE.

Witnesses:

CHARLES H. DIMOND,
GEO. H. DIMOND.