

(No Model.)

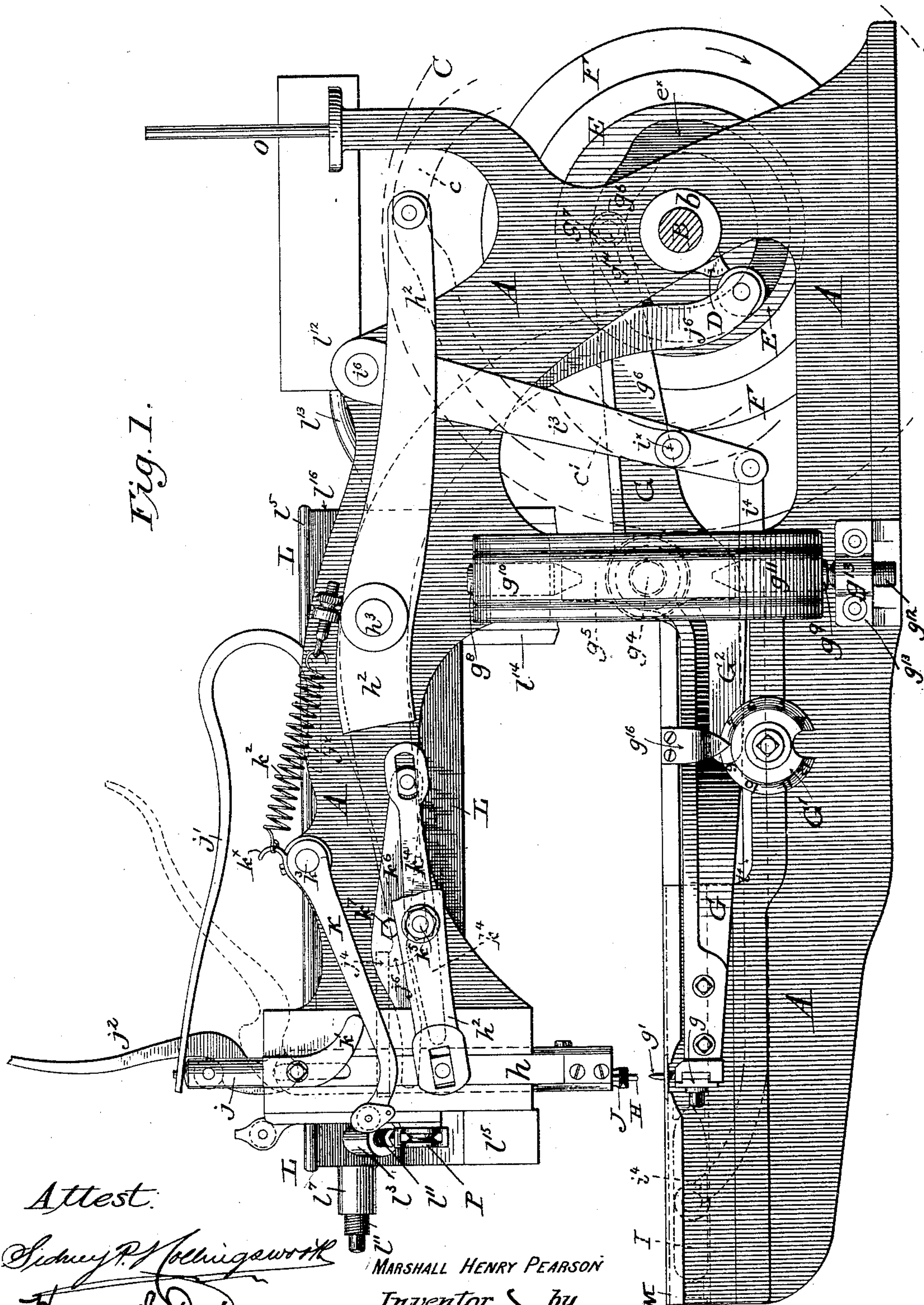
3 Sheets—Sheet 1.

M. H. PEARSON.

THREAD CONTROLLING DEVICE FOR SEWING MACHINES.

No. 462,580.

Patented Nov. 3, 1891.



Attest.

Sidney P. Hollingsworth
Horace A. Dodge.

MARSHALL HENRY PEARSON

Inventor,

by

Hodges & Sons,

Attorneys.

(No Model.)

3 Sheets—Sheet 2.

M. H. PEARSON.

THREAD CONTROLLING DEVICE FOR SEWING MACHINES.

No. 462,580.

Patented Nov. 3, 1891.

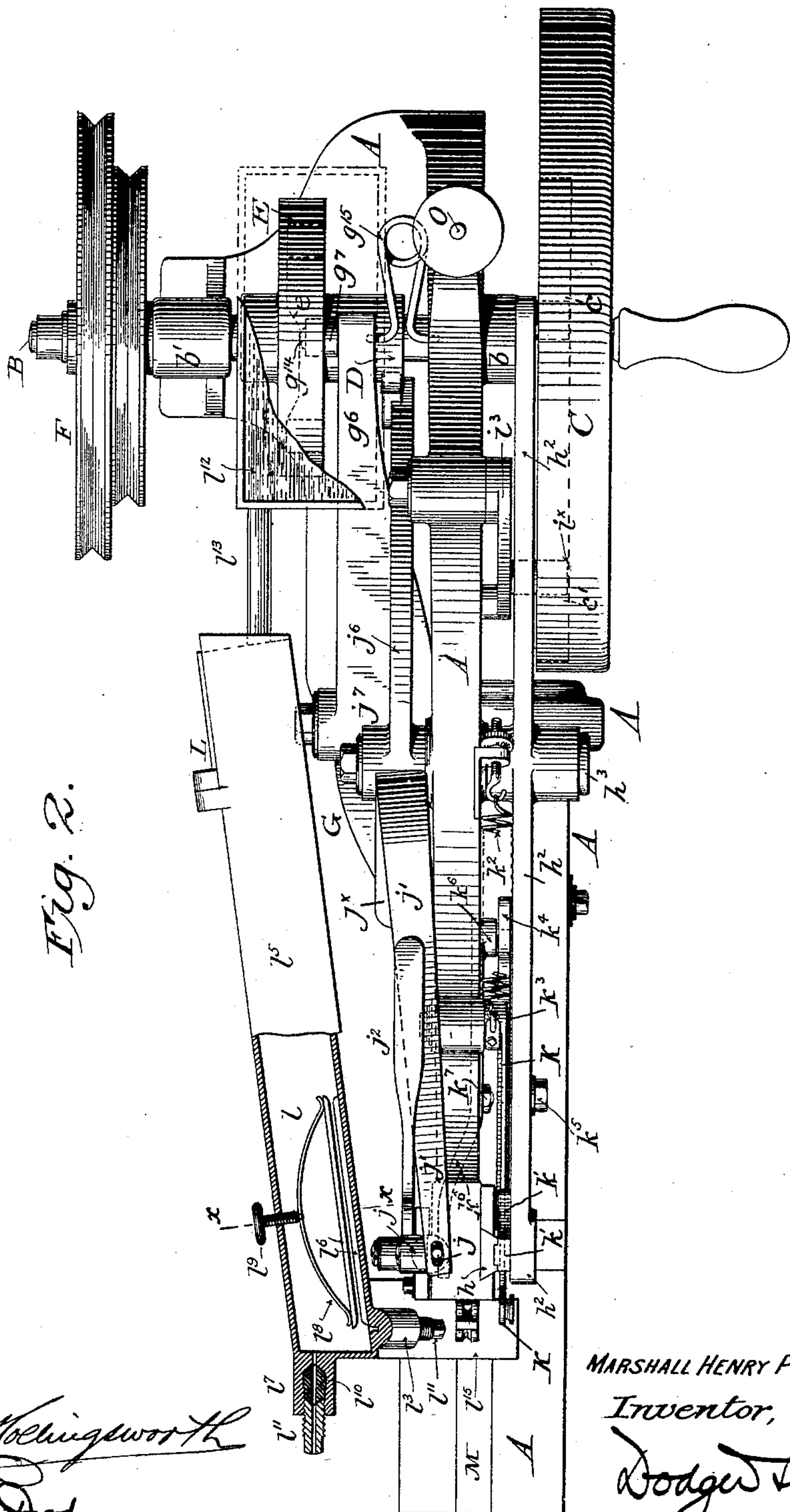


Fig. 2.

Attest.

Siruy P. Mellingworth
Forace A. Dodge.

MARSHALL HENRY PEARSON
Inventor, by
Dodge & Sons,
Attorneys.

(No Model.)

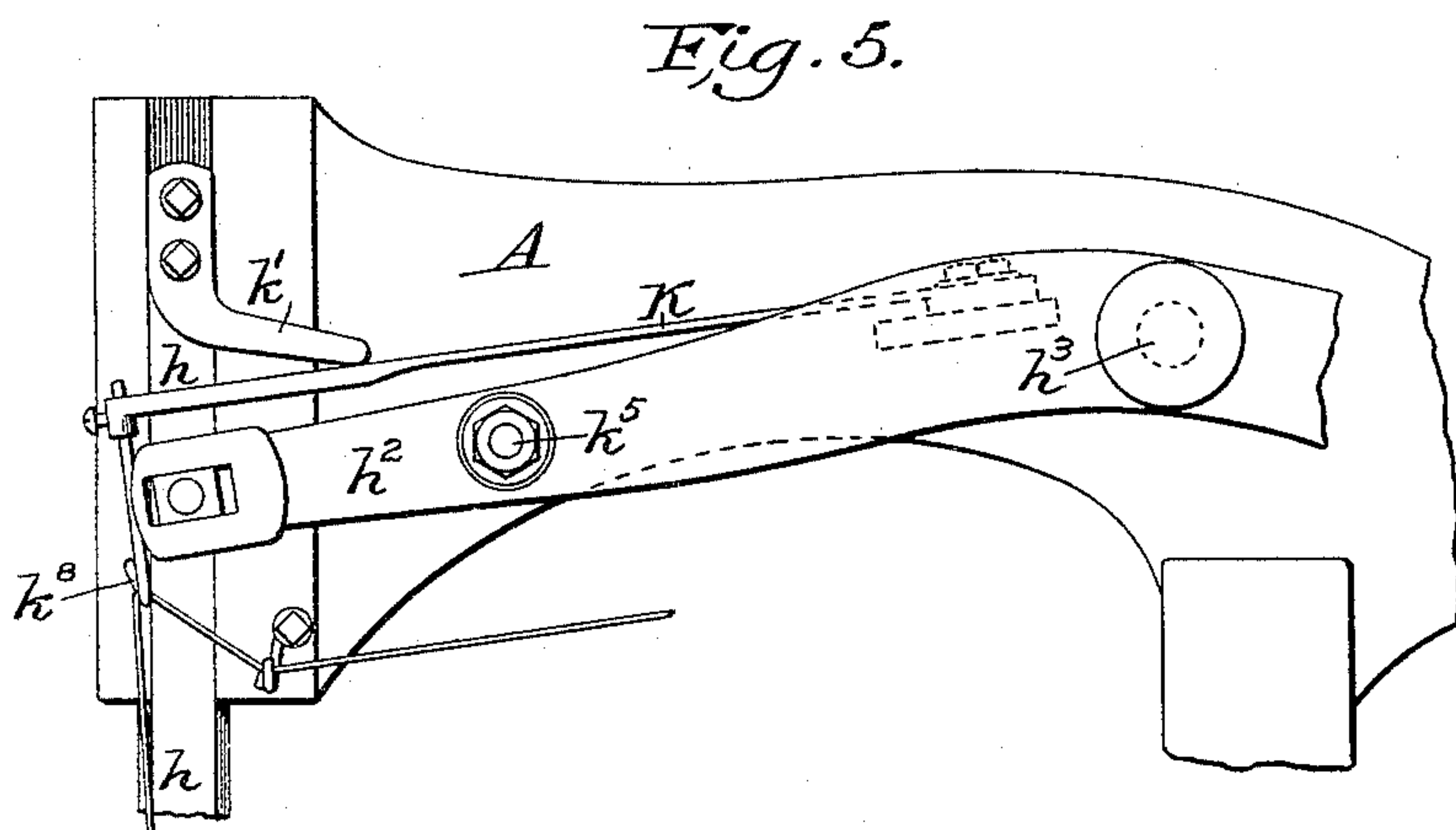
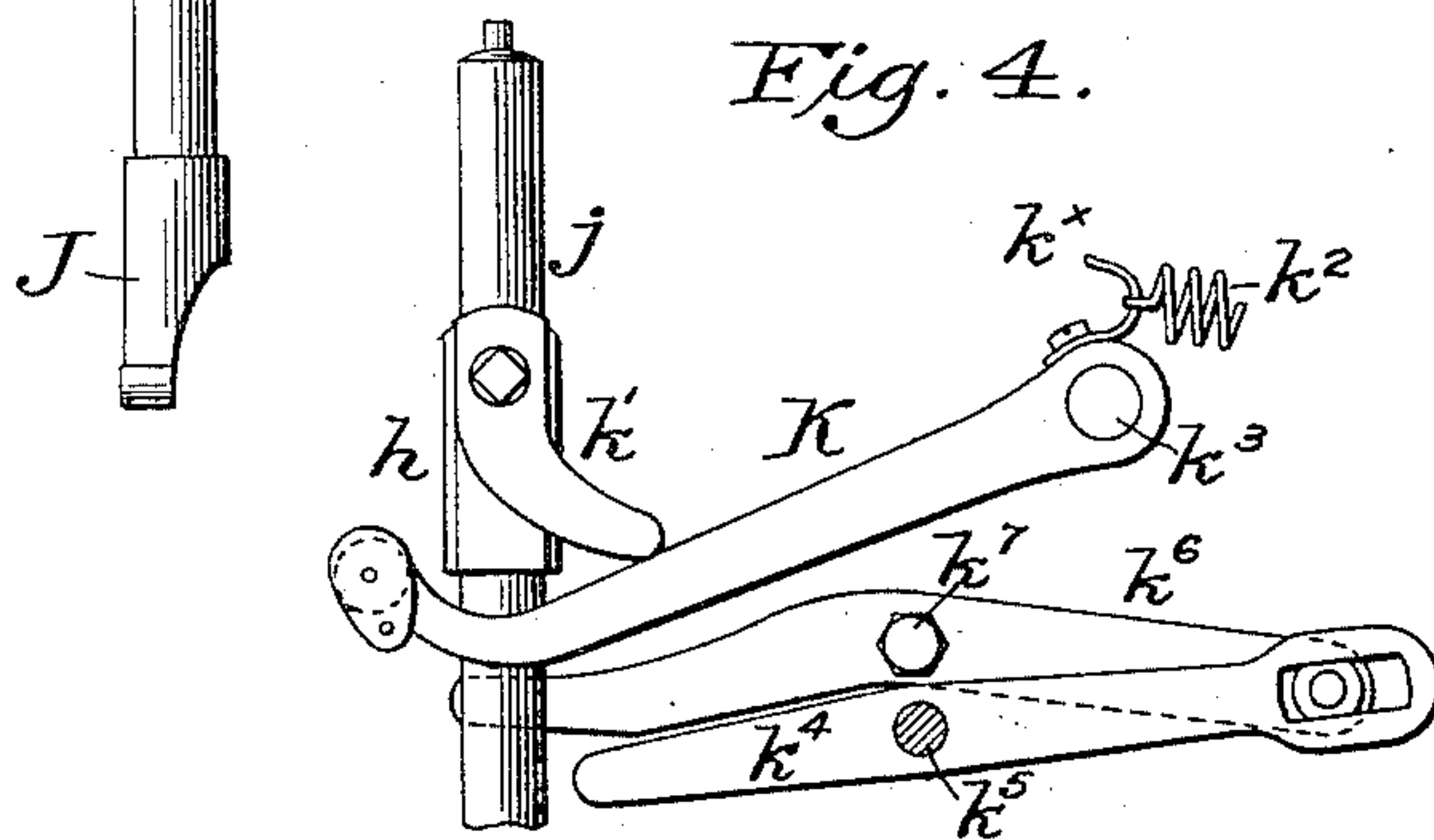
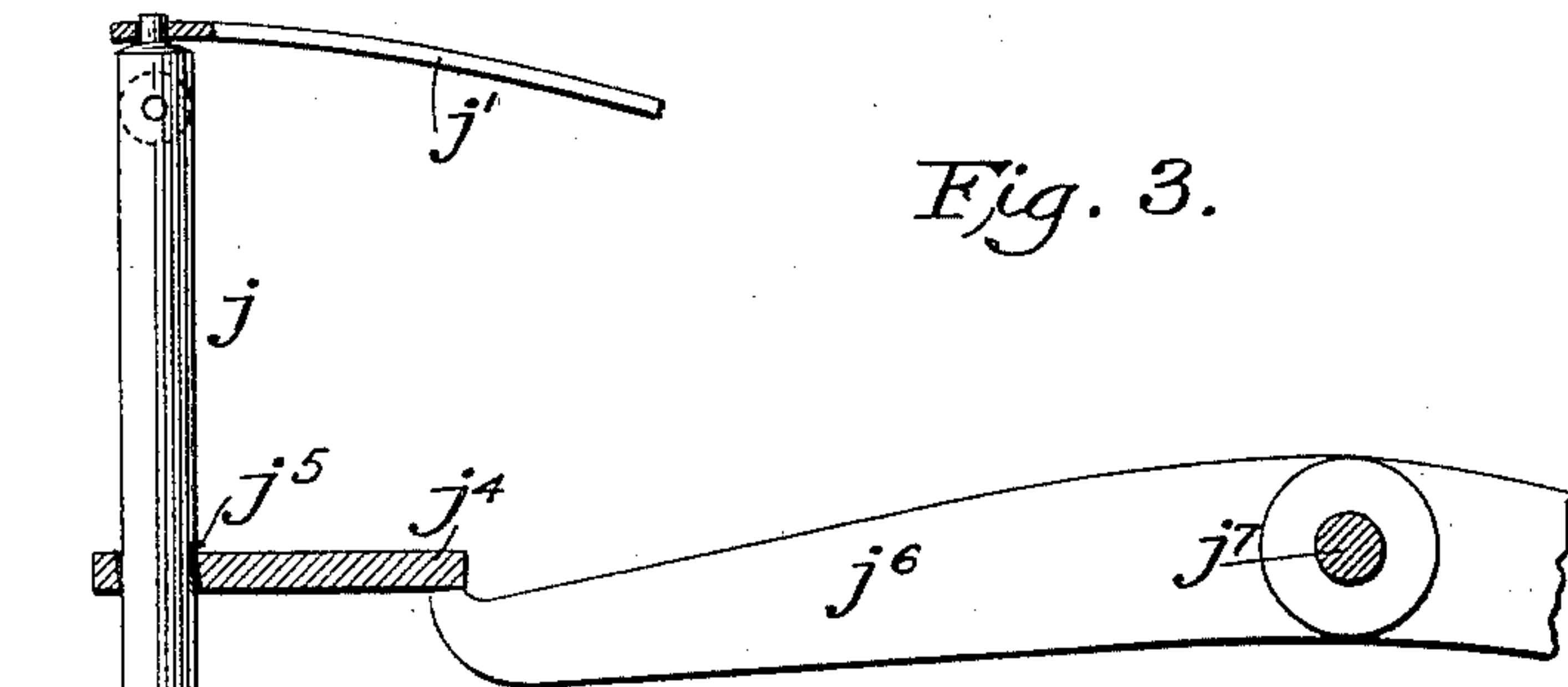
3 Sheets—Sheet 3.

M. H. PEARSON.

THREAD CONTROLLING DEVICE FOR SEWING MACHINES.

No. 462,580.

Patented Nov. 3, 1891.



Witness:

James F. Duhamel
Horace H. Dodge.

MARSHALL HENRY PEARSON,
Inventor,

by Dodge & Sons,
Attys.

UNITED STATES PATENT OFFICE.

MARSHALL HENRY PEARSON, OF LEICESTER, ENGLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE JOHN O'FLAHERTY COMPANY, OF MONTREAL, CANADA.

THREAD-CONTROLLING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 462,580, dated November 3, 1891.

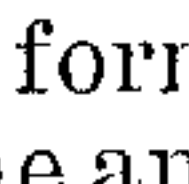
Application filed January 13, 1891. Serial No. 377,595. (No model.) Patented in England June 28, 1889, No. 10,481.

To all whom it may concern:

Be it known that I, MARSHALL HENRY PEARSON, a citizen of England, residing at Leicester, in the county of Leicester and Kingdom of England, have invented certain new and useful Improvements in Sewing-Machines, (for which I have received Letters Patent in England, No. 10,481, dated June 28, 1889,) of which the following is a specification.

This invention relates to a novel arrangement of wax-thread sewing-machine for making what is known as the "lock-stitch;" but parts thereof are applicable to machines using a plain or unwaxed thread.

In the drawings, Figure 1 is a face view of my improved machine with the main actuating-cam (shown in dotted lines) removed. Fig. 2 is a top plan view, partly in section; Fig. 3, a view of the presser-bar and part of its actuating mechanism; Fig. 4, a view illustrating the automatic thread-regulating devices; Fig. 5, a view illustrating a modification of the thread-lever.

A A is the main framing of the machine, cast preferably in one piece and of a  form, one limb forming the base of the machine and the other the horizontal bracket-arm.

B is the cam-shaft turning in bearings *b b'* of the main framing. On the cam-shaft are keyed the double-grooved cam C, the vibration-lever cam D, the awl-cam E, and the band-pulley F, Figs. 1 and 2, which serves to transmit motion to the working parts of the machine.

G is the oscillating awl-lever, pivoted to the vertical rocking fulcrum-post *g⁵* and fitted with clamps *g*, in which the awl *g'* is adjustably mounted for piercing and for feeding forward the work.

G', Fig. 1, is the stitch regulator or cam, of circular form, so mounted upon the base of the main framing that an arm G² (projecting from the fulcrum-post *g⁵*, to which the oscillating lever G is connected) is made to strike it.

H is the needle mounted on a needle-bar *h*, which slides in vertical guides fitted to the bracket-arm of the machine and reciprocated by needle-lever *h²*.

I is the shuttle mounted in the race *i*, formed in the base of the machine.

i' is the shuttle picker or driver carried in the groove on slide *i²* of the race, and which "picker" receives a reciprocating motion from the double-grooved cam-plate C through pendulum-lever *i³* and connecting-rod *i⁴*.

J, Figs. 1 and 3, is the presser-foot carried by a round bar *j*, mounted in bearings in the bracket-arm and held down by a curved spring *j'* and raised when required by a handle *j²* or automatically by lever *j⁶*, toggle-plate *j⁴*, and vibration-cam D.

K, Fig. 1, is the thread-lever, pivoted at *k³* to the bracket-arm of the machine. Its free end is depressed by a cam *k'*, fixed to the upper end of the needle-bar *h*, and it is partially raised after each depression by means of a spiral or other spring *k²*, fixed to the bracket-arm of the machine.

The eyed needle H, which receives its thread from the thread-lever K, is preferably clamped to the left-hand edge of the needle-bar *h*, which is operated by a groove *c*, Fig. 1, in the cam-plate C through the lever *h²*, fulcrumed on the bracket-arm at *h³* and connected to the needle-bar *h* by a slot and die in the ordinary manner. The needle is timed to follow the awl point to point until the latter is below the work, when the awl is returned by the means described to its normal position, the needle meanwhile continuing its descent to its lowest point, and then rising to form the loop in the usual manner, through which the shuttle passes.

The shuttle is preferably in **D** form, as shown in Fig. 3, for containing a bobbin or cop *i⁵* of waxed thread, which is made to drop into the shuttle and is held in position in the usual manner. The shuttle is reciprocated in the race *i*, motion being imparted thereto from groove *c'*, Fig. 1, in cam-plate C through runner *i^x* on pendulum-lever *i³*, which is pivoted at *i⁶* to the bracket-arm A, connecting-rod *i⁴*, and the picker or driver *i'*, carried in slide *i²*. As the cam-plate C revolves the groove therein imparts a reciprocating motion to the shuttle. The race *i* is closed by a plate M in the ordinary way.

The presser-foot J, which is secured to the end of the round bar j , is held down to its work by a curved spring j' , attached to the frame-work at j^x , and is capable of being raised by a handle j^2 or automatically when in operation during the lateral movement of the awl by a similar arrangement of lever and toggle-plate such as has been used on prior sewing-machines. In this arrangement the rod j is encircled by the head of the toggle-plate or lever j^4 , Fig. 3. This plate j^4 is provided with a hole j^5 rather larger than the presser-bar j , (that is, just large enough to permit of the toggle-plate being moved upon the bar,) and its tail rests upon the front end of a lever j^6 , fulcrumed on the bracket-arm at j^7 on the same pin or stud, but on the opposite side of the bracket-arm as that on which the needle-bar h^2 is fulcrumed. The vibrator-lever j^6 receives a slight rocking motion from a cam D on the shaft B. When the front end of the vibrator-lever j^6 commences to rise, the first portion of its motion causes the upper and lower opposite edges of the toggle-plate j^4 to bind or bite upon the presser-bar j and then to afterward lift it.

The thread-lever K may be pivoted to the bracket-arm A at k^3 , and its free end may be depressed by a cam-shaped piece k' , fixed to the upper end of the needle-bar h , and it may be partially raised after each depression by means of a spiral or other spring k^2 , connected at one end to a hook k^x on the boss of lever K and at the other to the bracket-arm of the machine, as shown in Fig. 1, or to any other part or parts of the machine. The thread-lever K receives the thread as it issues from the wax pot or melter L.

k^4 , Figs. 1, 2, and 6, is a rocking lever fulcrumed to the needle-lever h^2 at k^5 , and connected at its tail end by a die and slot with a lever k^6 , fulcrumed at k^7 to the bracket-arm and connected at its front end with the presser-bar j .

When a stitch is completed and the needle-bar is at its highest point, the arm k' will be above the free end of the thread-lever K when the latter is at its highest point, it being understood of course that the force of the spring k^2 is such as to cause the lever K to take up only the slack thread. Now as the needle-bar descends to make a stitch, and just as the eye of the needle enters the leather, this arm k' overtakes the thread-lever and forces it down to its lowest point, when sufficient slack is given to permit the shuttle to pass through the loop of the needle-thread, the whole of such slack being used by the shuttle. During the initial movement of the needle-bar, as just described, and until the arm k' overtakes the thread-lever, the thread has been held taut by the action of the spring k^2 , as otherwise the thread would drop loose behind the needle. As soon as the shuttle has passed through the loop and the needle begins to rise, the spring k^2 , acting upon the thread-lever K, draws up

the slack thread required for the passage of the shuttle, and does this just about the time the eye of the needle has reached the under side of the leather. Up to this time the spring has kept the thread-lever in contact with the arm k' . While the eye of the needle is passing through the leather there must not be any upward pull on the needle-thread. Consequently the spring is not given sufficient force or power to pull up the thread and the thread-lever remains at rest; but the lever remains at rest for a short time only, as the collar on the needle-bar stud comes in contact with the under side of the lever K and carries the latter up during the last part of the upward movement of the needle-bar. This final upward motion of the thread-lever causes the latter to draw up the slack thread and to draw a fresh supply through the wax-pot for the next stitch.

The foregoing is the action of the machine in sewing its thinnest work.

When the material to be sewed is thicker, the presser-foot stands higher, and as the lever k^6 is connected with the presser-foot the lever will rock slightly and will also rock or tip the lever k^4 and throw its outer end upward above the position it occupied previously. Of course the thicker the material being sewed the higher the free end of lever k^4 will be thrown, the lever k^4 then acting upon the thread-lever K to give the latter its final upward movement. As the lever k^4 rises higher than the collar of the needle-bar stud under the previous adjustment, this results in the thread-lever drawing off a longer length of thread for the next stitch, this extra length of thread corresponding to and varying with the extra thickness of material under the presser-foot.

The spring has a twofold function: first, to hold the thread taut as the needle is descending and until it has entered the surface of the leather, when it becomes incapable of action by reason of its being overtaken by the arm k' . Its other function is to raise the thread-lever quickly as the needle begins to rise, so that it may draw up the slack thread through which the shuttle has passed before the eye of the needle reaches the under side of the material. The spring is strong enough to act on the slack thread only, but not strong enough to draw in the shuttle-thread. Hence it does not act on the thread (in making each stitch) from the time that the eye of the needle is level with the bottom of the leather until the lever K is raised, either by the collar on the needle-bar or by the lever k^4 , or, in other words, until the needle-eye has emerged from the upper side of the leather.

It is of great importance that the thread-lever K should be forced down to slacken the thread just at the time that the eye of the needle is entering the top of the leather, and this is done on every thickness by the arm k' . As this arm k' has a constant and fixed mo-

tion, it follows that if the thread-lever K is lifted to different heights it will be forced down proportionately sooner by the arm k' .

In some cases, instead of employing the spring k^2 and pivoting it to the bracket-arm of the machine, as described, the thread-lever may be formed of a long steel spring (shown at Fig. 5) attached directly to the needle-lever h^2 and armed with a thread-eye k^8 at its free end. This arrangement of thread-lever partakes of the motion of the needle-lever and receives the necessary amount of upward motion from a similar arrangement of automatic levers, as previously described, and the extra amount of downward movement from the cam-piece k' .

Other parts of the machine not particularly explained may be of ordinary construction.

The construction and mode of operation of the various parts of the machine having been explained, it only remains to describe the action of certain parts in relation to each other.

In Figs. 1 to 4 the relative position of the needle-bar, presser-bar, and awl are drawn, as shown, for convenience; but in practice the awl would be in its lowest position and would have moved backward when the needle-bar is in the lowest position. The shuttle would then have been moved to the left and have drawn off from the shuttle-reel sufficient thread for the next stitch. The thread-lever will then be in its lowest position, and the presser-foot would be on the point of descending again onto the material—the feed having taken place—prior to the needle being raised and the thread drawn into the material for completing the formation of the stitch.

No claim is made or intended to be made herein to any feature or features but the thread-lever K and the controlling or actuating mechanism therefor.

Having thus described my invention, what I claim is—

1. In combination with a thread-lever and a needle-bar for depressing the same, a presser-foot bar, a lever h^2 for actuating the needle-bar, the levers k^4 and k^6 , combined and arranged, substantially as shown and described, to effect the final raising of the thread-lever in conformity to the thickness of the material being sewed and a spring to act upon the thread-lever and possessing the twofold function of holding the thread taut as the needle is descending and until it enters the surface of the material and also to raise the thread-lever quickly as the needle begins to rise, so as to take up the slack thread through which the shuttle has passed before the eye of the needle reaches the under side of the material.

2. In combination with a thread-lever and a needle-bar for depressing the same, a spring put under tension by the depression of the thread-lever and adapted to impart to the said lever its initial upward movement, and means, substantially such as shown and described, adapted to impart to the thread-lever a final upward movement corresponding to the thickness of the material being sewed.

3. In combination with the thread-lever K, needle-bar h , presser-bar j , needle-lever h^2 , levers k^4 and k^6 , pivoted to each other and pivoted, respectively, to the needle-lever and main frame, and means for actuating the parts.

In witness whereof I hereunto set my hand in the presence of two witnesses.

MARSHALL HENRY PEARSON.

Witnesses:

FRANK ERNEST WHEELER,
WILLIAM THOMAS REST.