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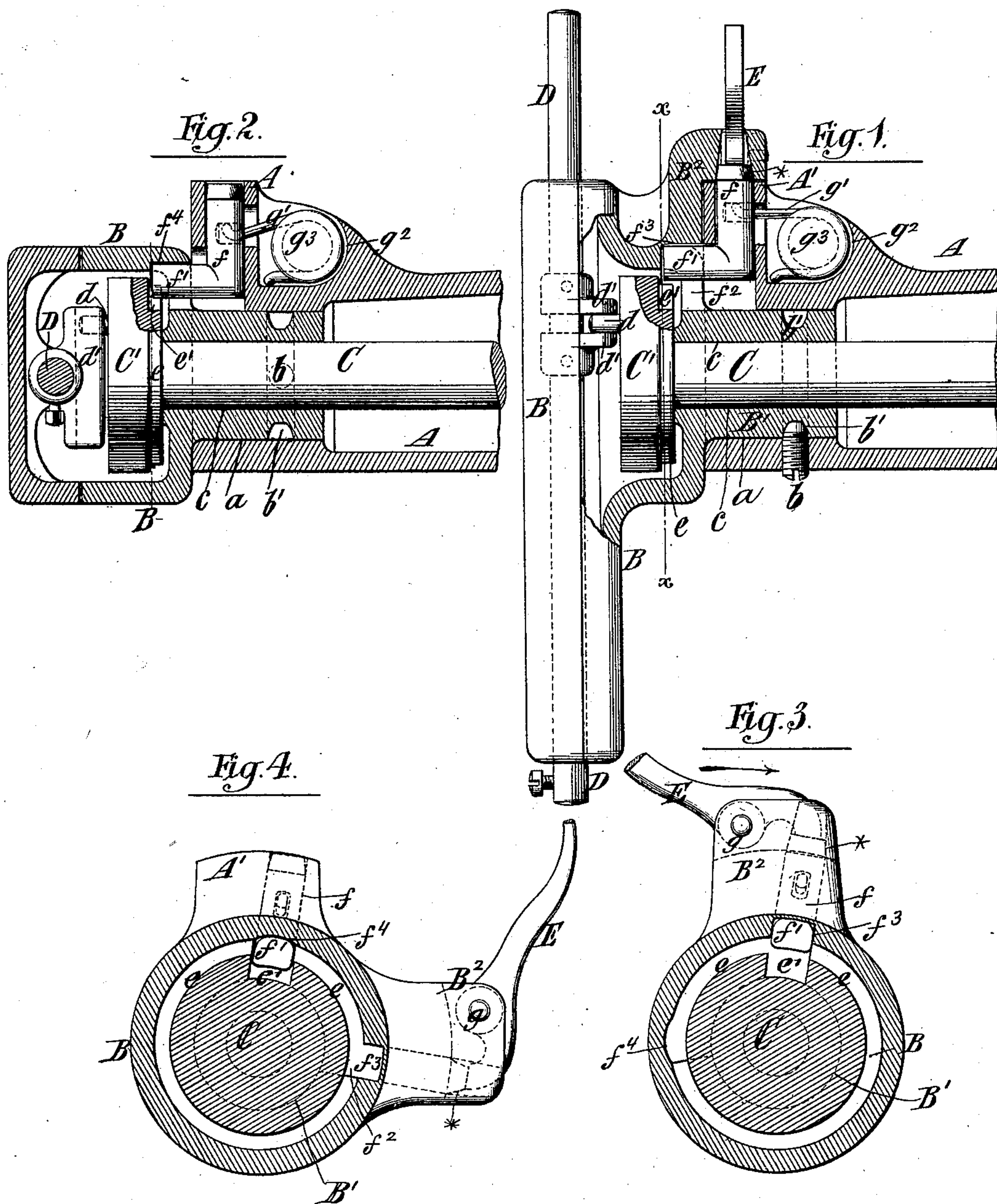
2 Sheets—Sheet 1.

W. H. PALMER, Jr.

SEWING MACHINE.

No. 364,769.

Patented June 14, 1887.



Witnesses:-

Louis M. I. Whitehead.

C. Sundgren.

Inventor:-

Wm. H. Palmer Jr.
By his Atty
Brown & Hall

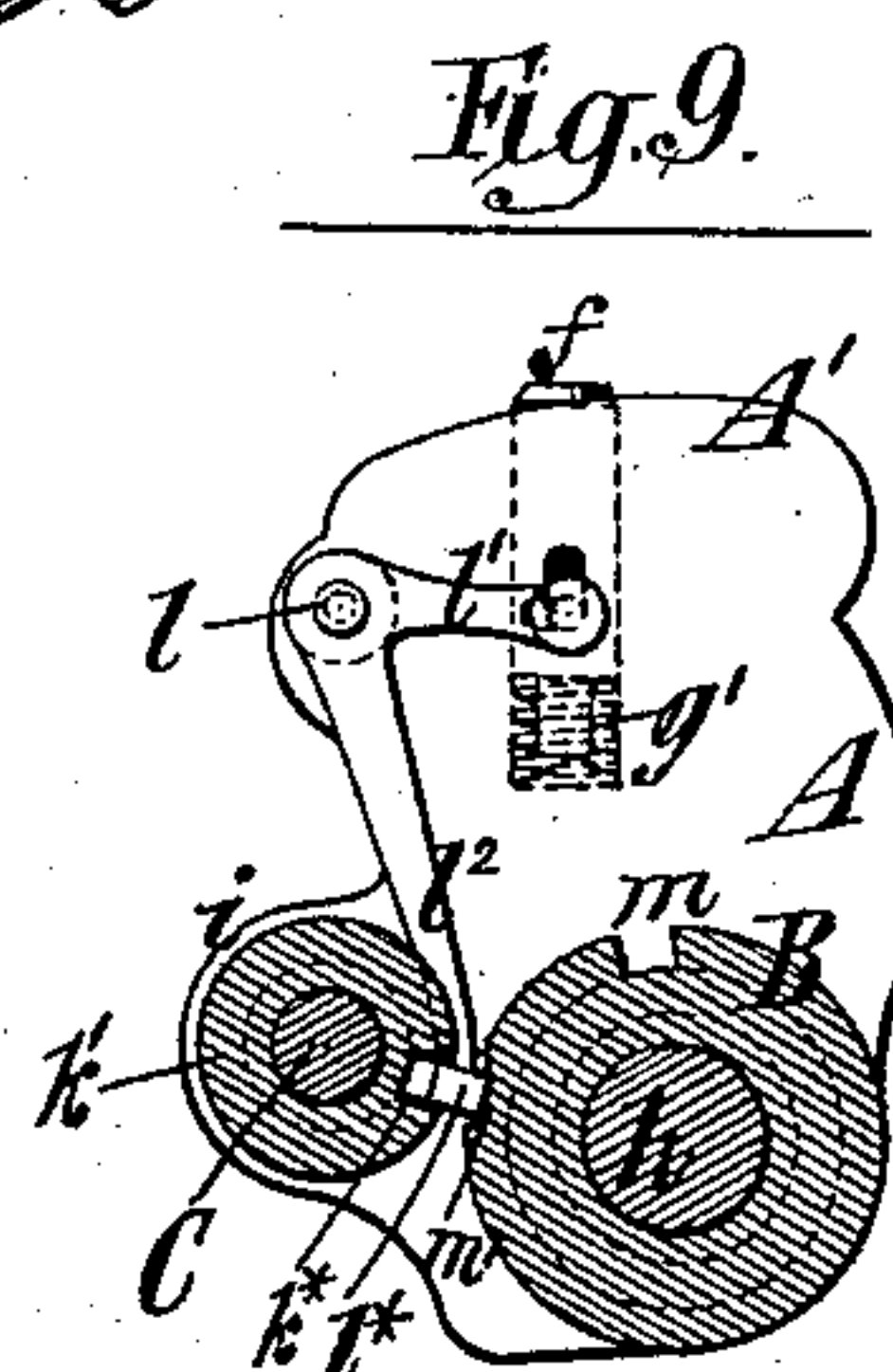
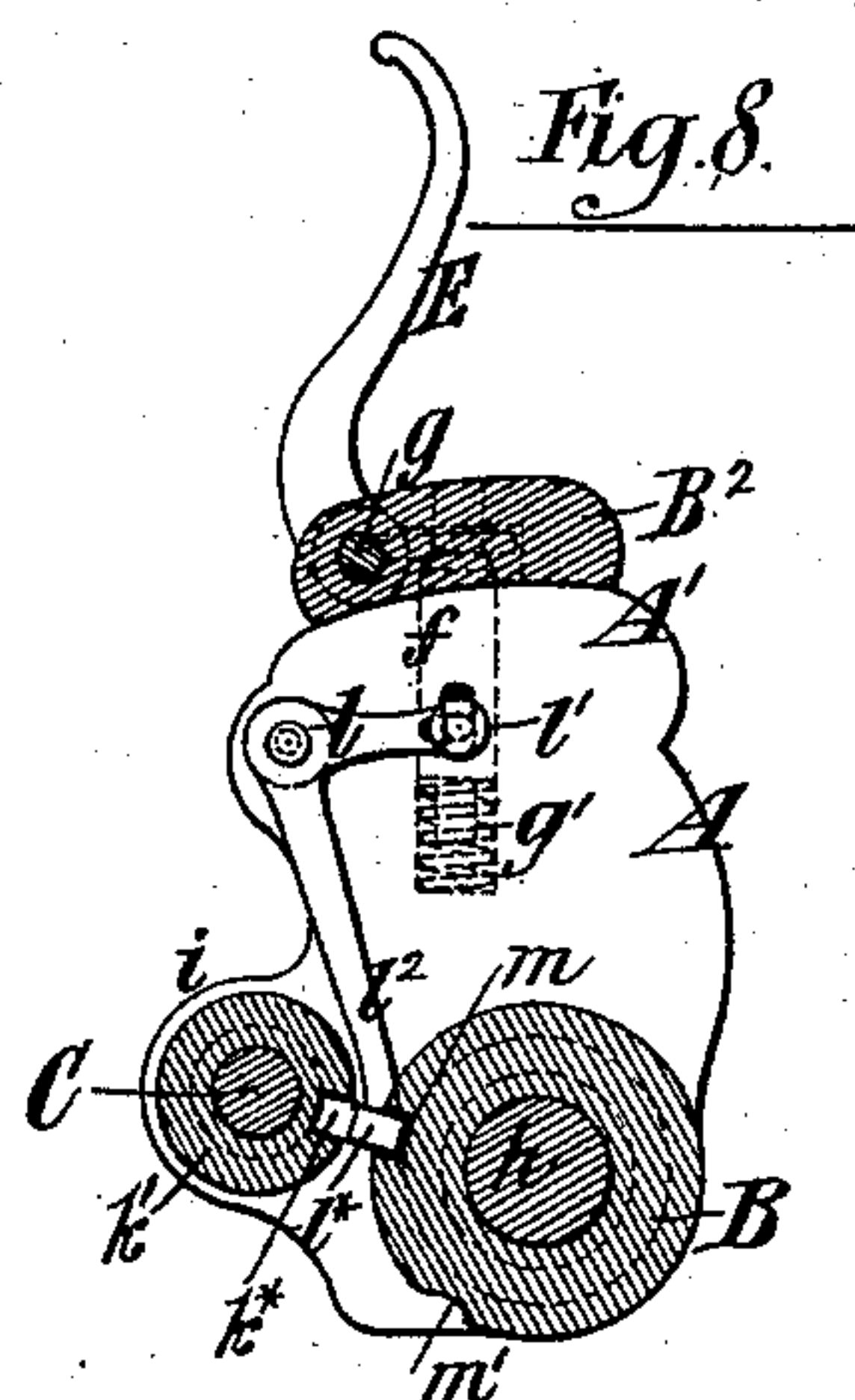
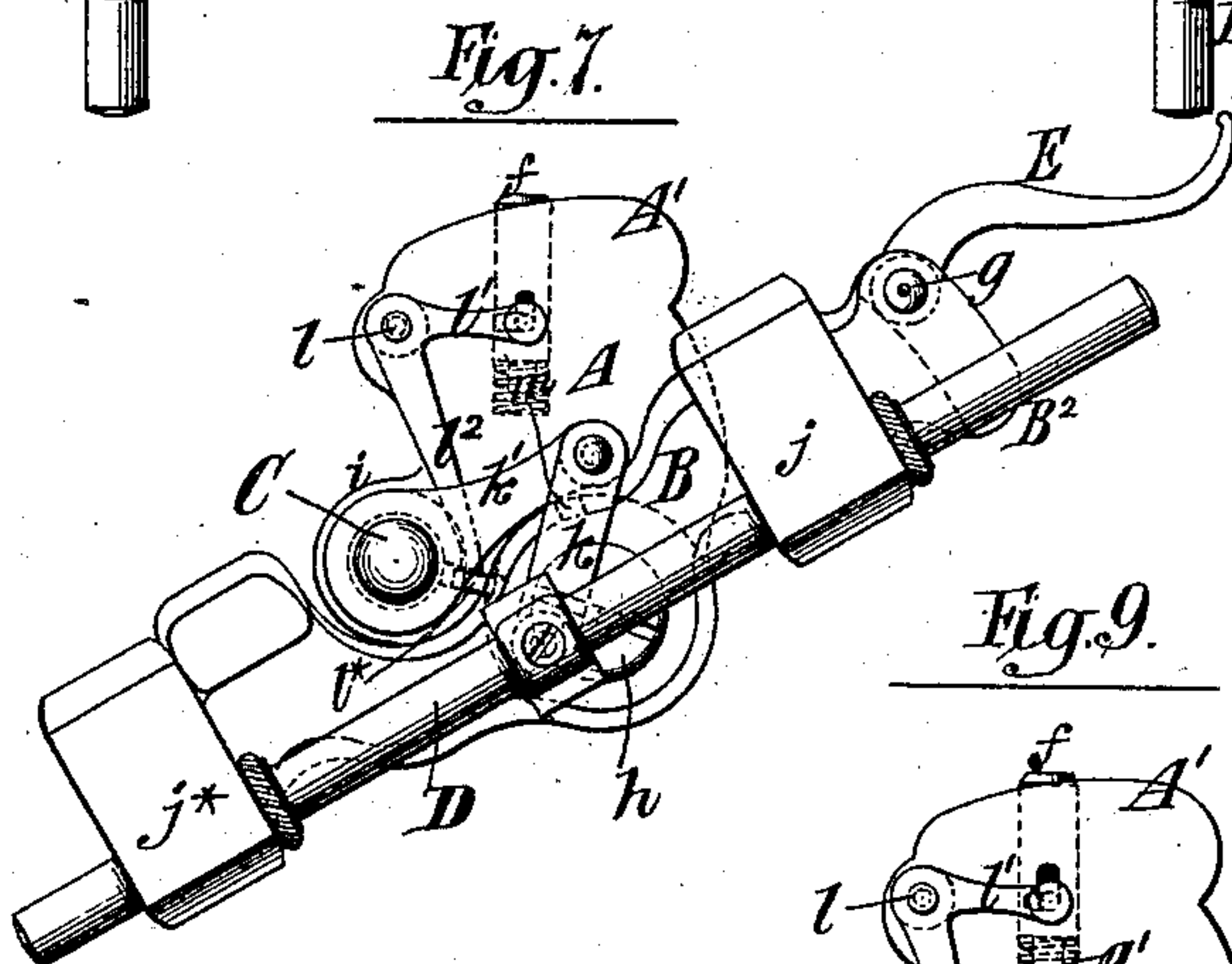
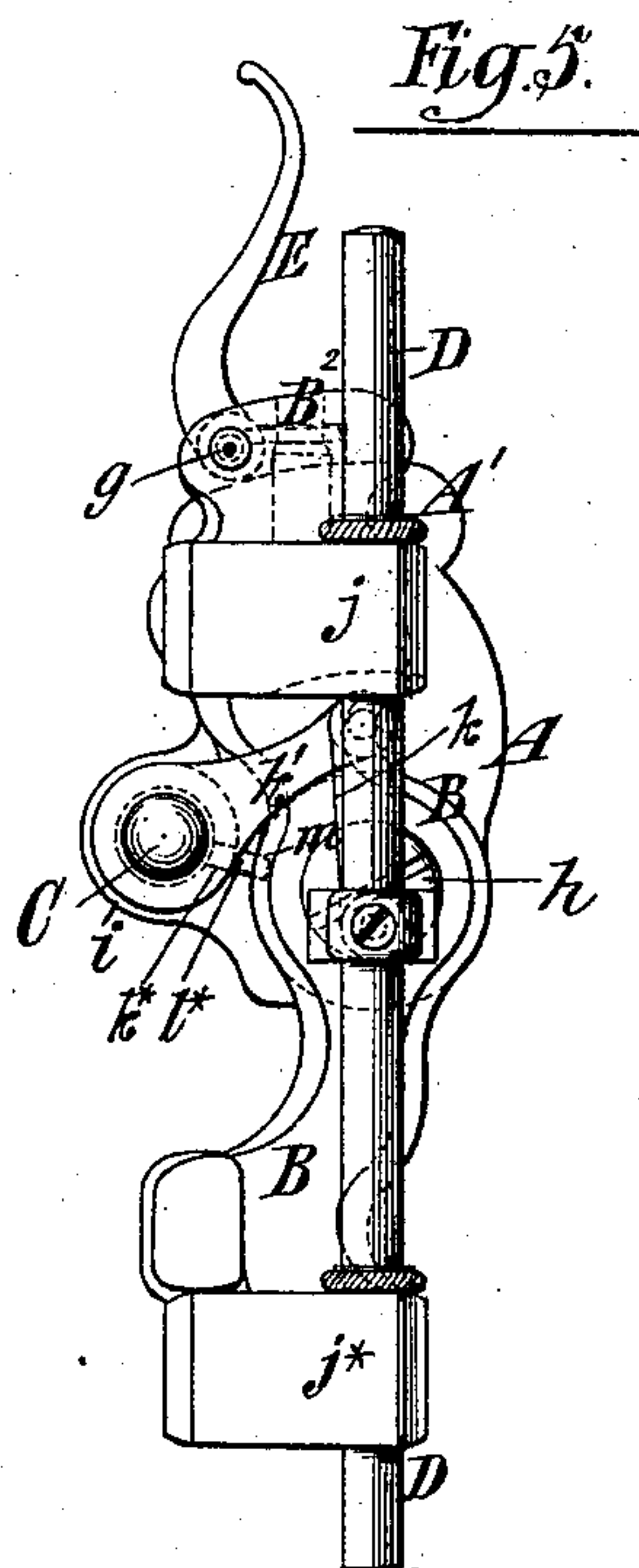
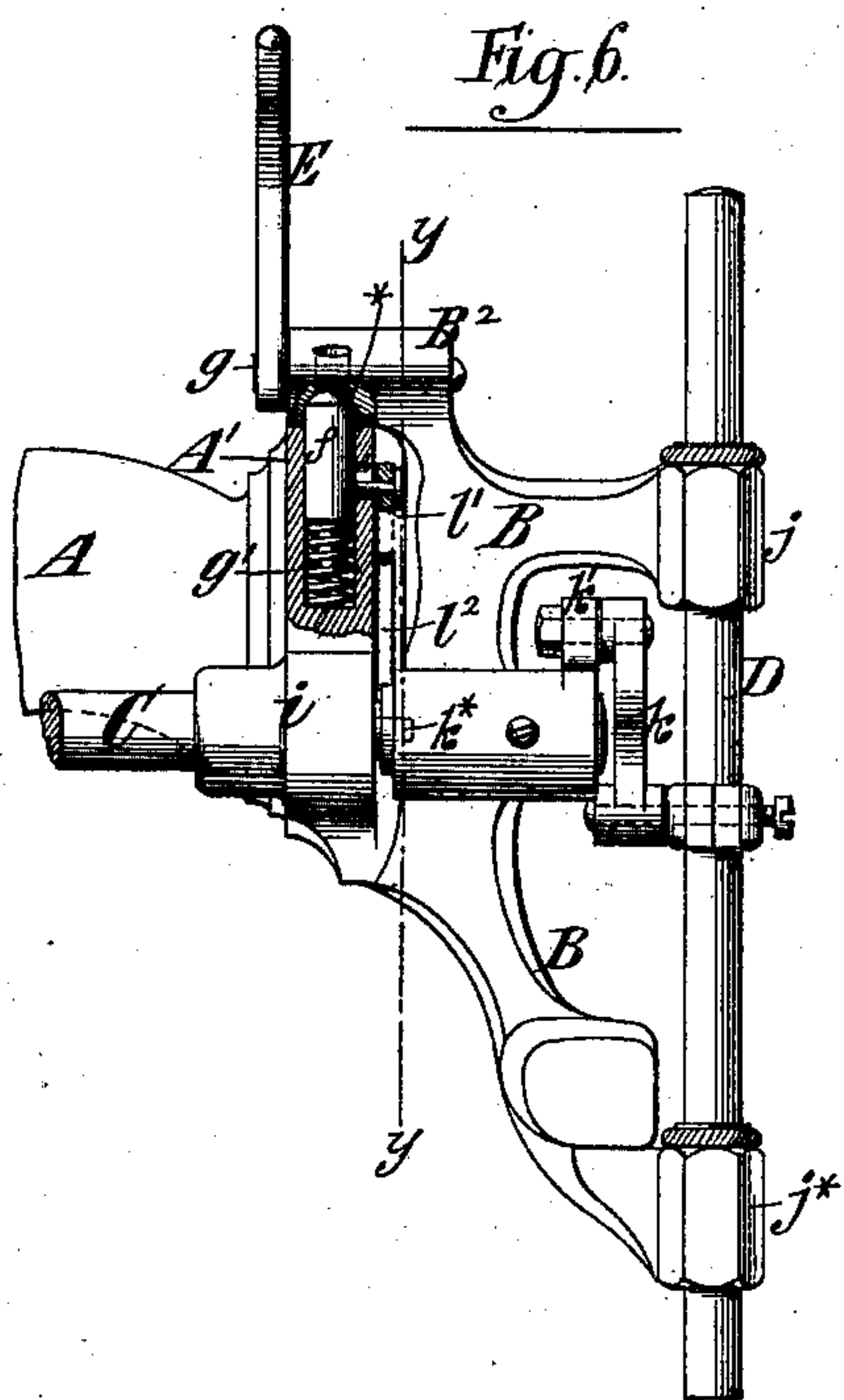
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2 Sheets—Sheet 2.

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Witnesses:

Louis H. Whitehead.
O. Sundgren

Inventor:

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UNITED STATES PATENT OFFICE.

WILLIAM H. PALMER, JR., OF MIDDLETOWN, ASSIGNOR TO PALMER BROTHERS, OF NEW LONDON, CONNECTICUT.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 364,769, dated June 14, 1887.

Application filed April 12, 1884. Serial No. 127,683. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PALMER, Jr., of Middletown, in the county of Middlesex and State of Connecticut, have invented a new and useful Improvement in Sewing-Machines, of which the following is a specification.

My invention relates to sewing-machines in which the head of the machine is so connected with the arm of the machine that it, together with the needle-bar, may be turned in a plane transverse to the length of the arm, to afford greater facility for introducing the work between and removing the work from between the work-plate and the needle or needle-bar than can be afforded by simply raising the needle-bar to its highest position.

The principal objects of my invention are to prevent the head of the machine from being turned until the needle-bar has been raised sufficiently far to insure the needle being entirely freed from the cloth before the head is turned, to lock the head in its inoperative or turned position as well as in its operative or normal position, to lock the needle-operative shaft before the head of the machine can be turned, and to hold said shaft securely locked during the whole time the head is in an inoperative position, and until it is brought back to its normal or operative position and there locked.

The invention is applicable to machines in which the pivot or journal on which the head is supported is concentric with the needle-operating shaft and to other machines in which the pivot or journal on which the head is supported is eccentric to said needle-operating shaft.

The invention consists in novel combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional view of a portion of the arm of a sewing-machine and a head capable of being turned on a center concentric with the needle-operating shaft, the head being locked to the arm and the shaft being turned into the proper position for locking it. Fig. 2 is a similar section showing the needle-operating shaft as

locked and the head locked in its turned or inoperative position. Fig. 3 is a section upon the dotted line *x x*, Fig. 1, showing the parts in the same position as in Fig. 1. Fig. 4 is a view similar to Fig. 3, showing the parts in the same position as in Fig. 2. Fig. 5 is a front view of the head of a machine in which the pivot or journal of the head is eccentric to the needle-operating shaft, showing the head locked in an operative position and the shaft turned to a position in which it may be locked. Fig. 6 is a side view of the end portion of the machine-arm and the head, showing the parts in the same position as in Fig. 5. Fig. 7 is a view similar to Fig. 5, showing the head in a turned or inoperative position. Fig. 8 is a sectional view on the dotted line *y y*, Fig. 6, showing the parts in the position there shown; and Fig. 9 is a view similar to Fig. 8, but showing the parts in the same position as Fig. 7.

Similar letters of reference designate corresponding parts in all the figures.

I will first describe the form of my invention shown in Figs. 1 to 4, inclusive, in which form the journal on which the head turns is concentric with the needle-operating shaft.

A designates the outer end portion of the arm of a sewing-machine, and B designates the head of the machine, which may be of any suitable construction, and which is provided with a cylindric hub or journal, B', whereby it is so secured to the arm that it may be turned one-fourth of a rotation, more or less, from its operative position, (shown in Fig. 1,) and in a plane transverse to the length of the arm. In this instance the end of the arm A is bored out to form a cylindric socket or bearing, *a*, in which the journal B' is fitted, and wherein it is secured against outward movement by a pin or screw, *b*, the point of which engages with an annular groove, *b'*, in the journal B', or by any other suitable means.

C designates the needle-operating shaft, which is concentric with the journal B', and which has or may have a bearing, *c*, in said journal.

Upon the end of the shaft C is a disk, C', in

which is a crank-pin, d , and upon the needle-bar D, which is vertically movable in the head B, is a slideway, d' , in which said crank-pin works to reciprocate the needle-bar D. In the head B will also be arranged a presser-bar; but this I have not shown, as it forms no part of my invention.

Behind the disk or crank C' is a circular flange or surface, e , in which is a notch, e' , of considerable depth, for a purpose hereinafter described, and upon the head B is an upwardly-projecting portion, B^2 , which extends rearward over or above an upwardly-projecting portion, A' , on the arm, the lower surface of the rearwardly-projecting portion B^2 and the upper surface of the portion A' being arc-shaped and concentric with the shaft C. Inasmuch as the flange or collar C' e is formed integral with or secured fast to the shaft C, it may be considered a part of the shaft.

When the head B is in position for operation, the head and arm are connected by a locking bolt or device, and I have shown a locking-bolt, f , arranged in the upwardly-projecting portion A' of the arm, engaging with the head, and which may be pressed down by a finger-piece or unlocking-lever, E, pivoted at g in the part B^2 of the head B. On the bolt f is a forwardly-projecting toe, f' , which extends through an arc-shaped slot, f^2 , in the head B and over the flange or surface e on the shaft C. The bolt f is here shown as impelled upward by a spring, g' , which is arranged in a recess or depression, g^2 , in the arm A, and one arm of which enters a hole or slot in the bolt. This spring is retained by a screw, g^3 , around which it is coiled; but a spring of any other suitable kind may be employed.

At one end of the arc-shaped slot f^2 in the head B is a notch or recess, f^3 , and at the opposite end thereof is, or may be, a smaller or shallower notch or recess, f^4 . Normally, and while the machine is in operation, the toe f' of the bolt f is held deeply in engagement with the notch f^3 , and hence locks the head B securely to the arm; and in order to maintain the head accurately in position and prevent any play thereof while the machine is in operation, I prefer to make the bolt f with a slightly-conical upper end, fitting a correspondingly conical socket, $*$, in the part B^2 of the head which overhangs the bolt. When the head is locked by the toe f' entering the notch f^3 , the head is properly centered and steadily held by reason of the spring impelling the bolt upward and holding it in the conical socket $*$. The crank-pin d is so arranged relatively to the notch e' in the flange e that when the crank has brought the needle-bar D into its extreme upward position, as shown in Fig. 1, the notch e' will be immediately below the toe f' of the bolt f , as is shown in Figs. 1 and 2, and when the head is to be turned the needle-bar D is so brought to its highest position, and the finger-piece or unlocking-lever E is then grasped by the finger and pulled in the direction of the

arrow, Fig. 3. The first pull on said lever pushes down the bolt f sufficiently far to carry its upper end out of the socket $*$ and to carry its toe f' out of the notch f^3 and into the notch e' , and a further turn upon the said lever serves to swing or turn the head on the journal B' until it is brought to or near an approximately horizontal position and until the notch f^4 is opposite the toe f' , whereupon the toe springs outward into said notch, and so holds the head with sufficient force in an inoperative position. The notch f^4 is not deep enough to permit the disengagement of the toe f' from the notch e' , and therefore the needle-operating shaft always remains locked so long as the head is turned out of an operative position. The notch f^4 does not present abrupt shoulders to the toe f' , and therefore when it is desired to return the head to an operative position a slight force will move the toe f' inward, and the head can then be turned back until the notch f^3 is opposite the toe, whereupon the spring g' will shove up the bolt f , moving the toe out of the notch e' and into the notch f^3 , and thereby unlocking the needle-operating shaft and locking the head against turning. If the notch e' were made wider, the needle-bar would not necessarily be raised to its extreme upward position before the head could be unlocked; but in all cases it must be moved far enough to take the needle out of the cloth. When the pivot of the head is concentric with the needle operating shaft, the head might be arranged to turn in either direction. In the machine shown in Figs. 5 to 9, inclusive, the head is pivoted eccentrically to the needle-operating shaft.

A designates the outer end portion of the arm, and B designates the head, which is pivoted or journaled on the bolt h , so that it may be swung in a vertical plane transverse to the length of the arm A.

C designates the needle-operating shaft, which is external to the arm, or to that part of the arm to which the head is pivoted, and which is mounted in a bearing, i , as best shown in Fig. 6. The head B in this example of the invention has bearings $j j^*$, wherein a needle-bar, D, is arranged to reciprocate, the needle-bar being operated by a link, k , and an arm, k' , on the shaft C, an oscillating or reciprocating rotary motion being imparted to said shaft by any suitable mechanism, which forms no part of my invention and is not here shown. The head B is also designed to carry a suitable presser-bar; but this is not shown, as it forms no part of my present invention. The arm A has at its end an upwardly-projecting portion, A' , the upper arc-shaped surface of which is concentric with the pivot or journal h , on which the head turns, and the head is likewise provided with an upwardly and rearwardly projecting portion, B^2 , which extends across the portion A' , and the under surface of which is also arc-shaped. The head is locked by a bolt or locking device, which con-

nects the part B² and arm portion A'. I have here shown a locking-bolt, *f*, capable of sliding in the part A', and having below it or otherwise applied to it a spring, *g'*, of spiral or other form, whereby it will be impelled upward when permitted. The outer or upper end of the bolt *f* is conical and fitted to a conical socket, *, in the portion B² of the head. The bolt therefore serves to hold the head steady and accurately against movement.

E designates the unlocking-lever or finger-piece, which serves the double purpose of depressing the bolt *f* and as a handle for turning the head on its pivot or journal *h*. This finger-piece or lever is pivoted at *g*, and has an arm which acts to depress the bolt when the lever is pulled.

In connection with the bolt *f*, I employ a device for locking the needle-operating shaft C, and this device is best shown in Figs. 7, 8, and 9. As here shown, it consists of a small bell-crank lever fulcrumed at *l* to the end of the arm A, and having one arm, *l'*, connected with the bolt *f*, so that a depression of the bolt will swing the lever, and its other arm, *l''*, provided with a locking tooth or projection, *l''**, which is adjacent to the hub of the arm *k'*.

In the hub of the arm *k'* is a notch, *k''**, and in the hub of the head B, through which the pivot *h* passes, are two notches—a deep notch, *m*, and a shallow notch, *m'*. When the head B is in an operative position, as shown in Figs. 5, 6, and 7, the notch *m* in the hub of the head B is opposite the tooth *l''**, and by the resilience of the spring *g'* the bell-crank locking-lever is actuated to impel and hold the tooth *l''** in the notch *m*, as shown in Fig. 8. Before the head can be turned, the shaft must be turned to move the needle-bar D to or nearly to its highest position, at which time the notch *k''** is opposite the tooth *l''**. The lever E is now taken hold of and pulled. The first pull serves to depress the bolt *f*, and, by carrying the tooth *l''** of the locking-lever into the notch *k''** and out of the notch *m*, locks the shaft C against turning and unlocks the head B. By a further pull upon the lever the head will be turned on the pivot *h*, and as soon as the notch *m'* comes opposite the tooth *l''** the latter will spring slightly over and into said notch *m'*, at the same time continuing in the notch *k''**. To return the head, it is pushed back, and as soon as the notch *m* reaches the tooth *l''** the latter, by the resilience of the spring *g'*, is thrown into the notch *m* and out of the notch *k''**, thereby first locking the head and then unlocking the shaft C. The head B might be constructed to turn farther from a vertical position than is here shown.

In both examples of my invention provision is afforded for locking the needle-operating shaft when the head is to be turned and for locking said shaft before the head is unlocked, and retaining it locked until the head is locked securely. In both examples the same lever or

finger-piece serves to unlock the head and lock the shaft, and also to turn the head, and in both the shaft must be turned to bring the needle entirely out of the cloth before the shaft can be locked or the head unlocked.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a sewing-machine arm and needle-operating shaft, of a head carrying a needle-bar and pivoted to turn in a plane transverse to the length of said arm, and a locking device adapted to engage with a notch in said shaft to lock it against turning, the notch in the shaft being so placed as to receive said locking device only when the shaft has been turned to bring the needle out of the work, substantially as herein described.

2. The combination, with the arm of a sewing-machine and a head pivoted to turn in a plane transverse to the length of the arm, one of said parts being provided with a locking-bolt and the other with a notch to receive said bolt, whereby the head is held against turning, of a needle-operating shaft provided with a notched collar or flange, whereby the movement of the bolt to unlock said head is prevented until the shaft has been turned to bring the needle out of the work, substantially as herein described.

3. The combination, with the arm of a sewing-machine, of a head pivoted to turn in a plane transverse to the length of said arm, a locking-bolt serving to hold said head against turning, and an unlocking-lever and finger-piece carried by the head, and serving by its first operation to unlock the head, and by further operation to turn the head, substantially as herein described.

4. The combination, with a sewing-machine arm and a head pivoted to turn in a plane transverse to the length thereof, one of said parts being provided with a locking device and the other being notched to receive the locking device, of a needle-operating shaft provided with a notched flange or collar, whereby the movement of the bolt to unlock said head is prevented until the said shaft has been turned to bring the needle out of the work, and a lever and finger-piece carried by the head, and serving by its first operation to move the bolt to lock the shaft and unlock the head, and by its further operation to turn the head, substantially as herein described.

5. The combination, with a sewing-machine arm and its needle-operating shaft, of a head pivoted concentrically with said shaft and capable of turning in a plane transverse to the length of said arm, a locking-bolt serving to hold said head against turning, and an unlocking-lever and finger-piece carried by the head, and serving by first operation to unlock the head, and by further operation to turn said head, substantially as herein described.

6. The combination, with the arm A and shaft C, with the flange *e'*, of the head B, pivoted concentrically with said shaft, and having

the arc-shaped slot f^2 and notch f^3 , the spring-actuated bolt $f f'$, and the unlocking-lever E, substantially as herein described.

7. The combination, with the arm $\Delta \Delta'$,
5 provided with the cylindric bearing a , of the head B, provided with the journal B' , the slot and notch $f^2 f^3$, and the portion B^2 , the shaft C, having a bearing in said journal and pro-

vided with the notched flange $e e'$, the spring-actuated bolt and toe $f f'$, and the lever and finger-piece E, all substantially as herein described.

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Witnesses:

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