(No Model.)

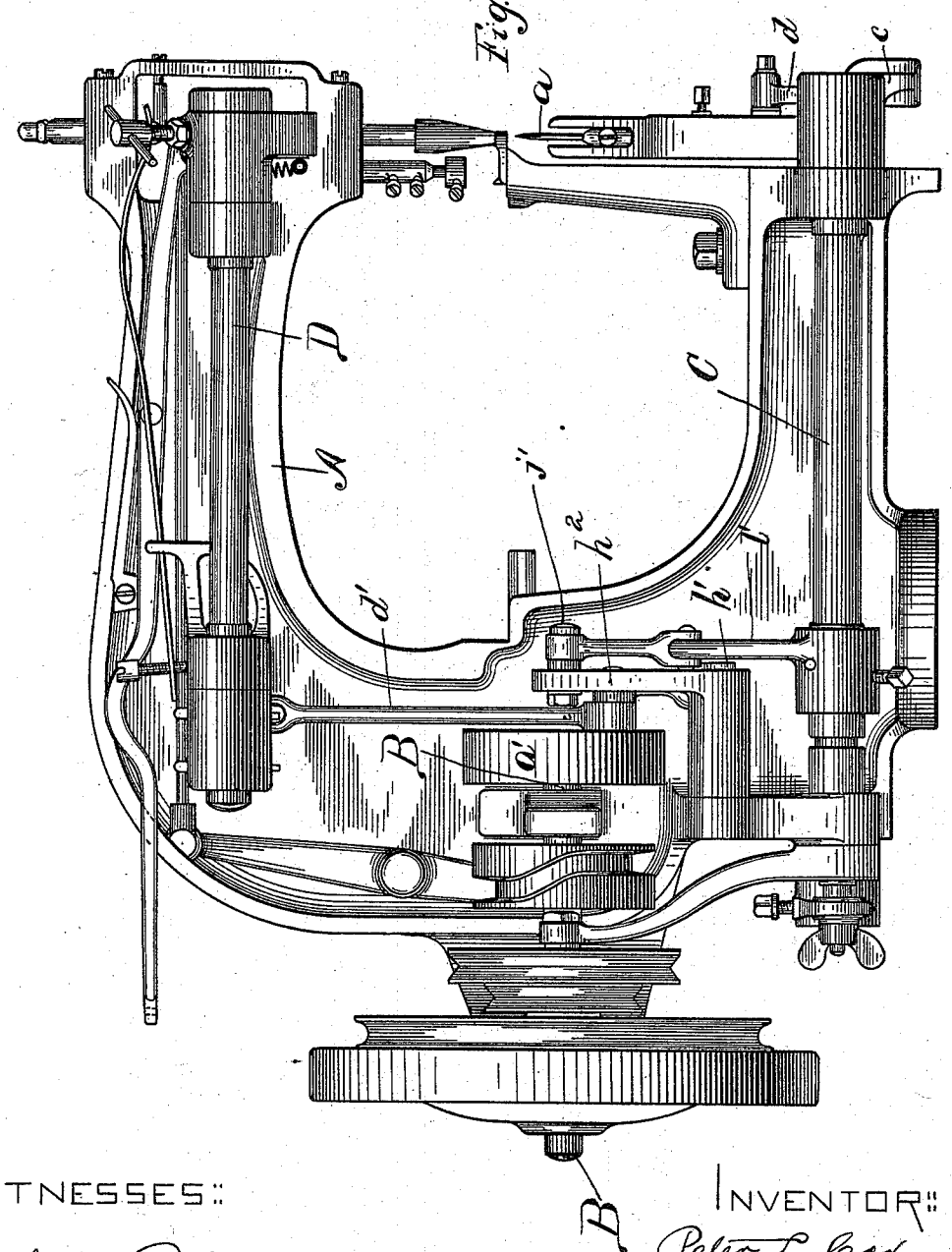
3 Sheets—Sheet 1.

P. L. COX.

SEWING MACHINE.

No. 530,471. Patented Dec. 4, 1894.

Fig. 1.



WITNESSES:

Robert Wallace.

Arthur J. Randall.

INVENTOR:

Peter L. Cox

By Macleod Calver & Randall

his Attorneys.

(No Model.) 3 Sheets—Sheet 2.

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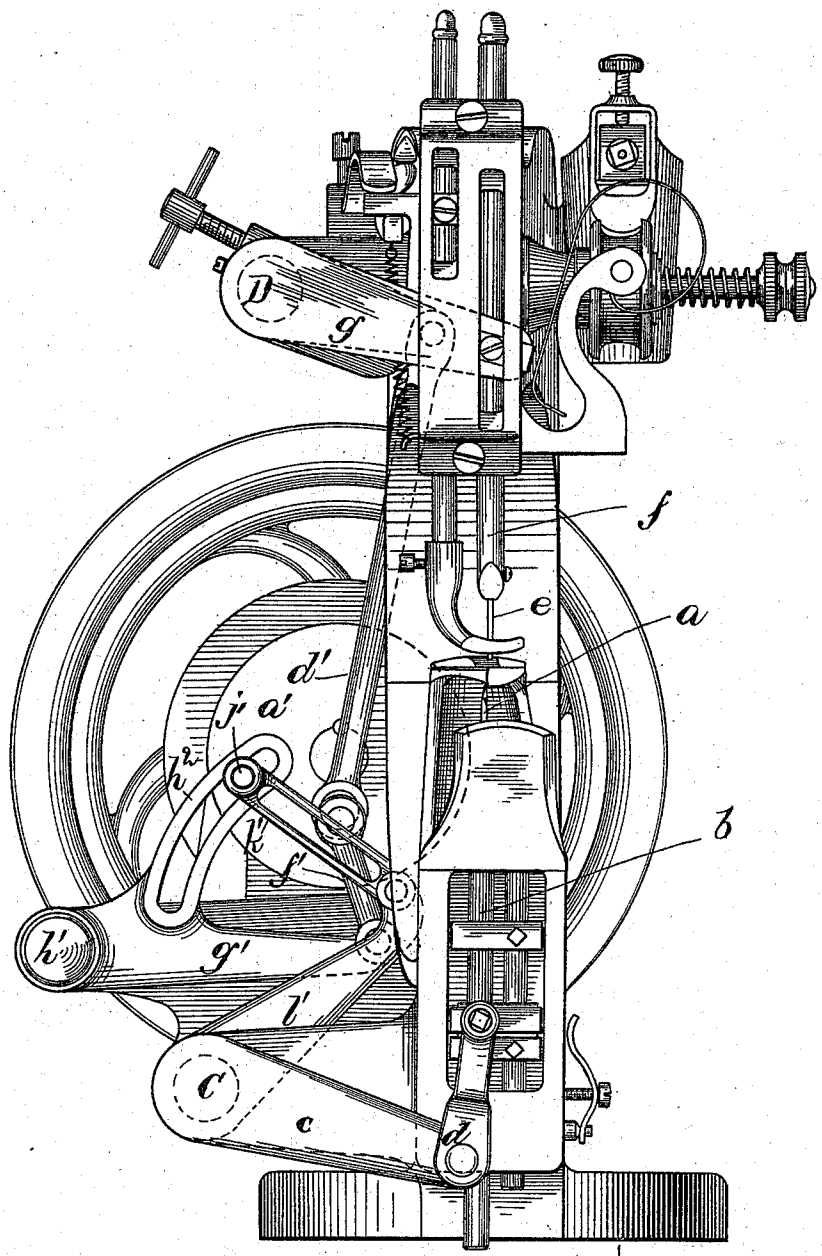

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

P. L. COX.

SEWING MACHINE.

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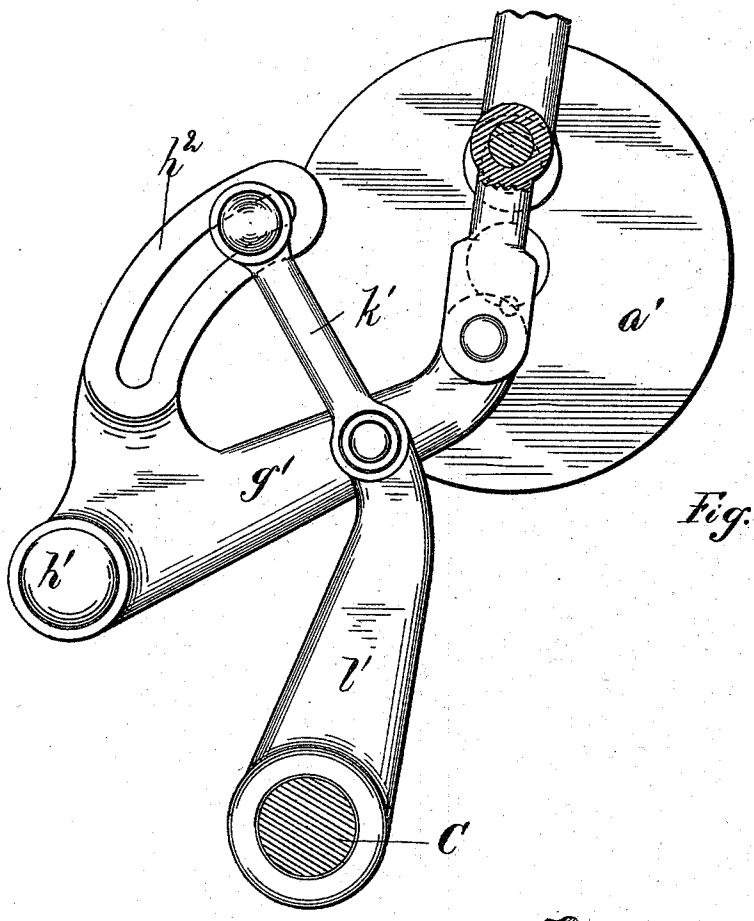

Fig. 3.

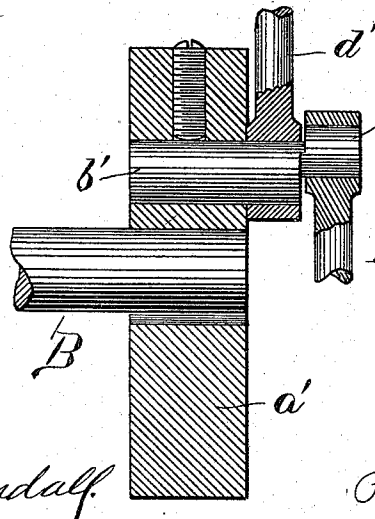

Fig. 4.

Witnesses:
Arthur J. Randall
Robert Wallace.

Inventor:
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his attorneys

UNITED STATES PATENT OFFICE.

PETER L. COX, OF BOSTON, MASSACHUSETTS.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 530,471, dated December 4, 1894.

Application filed December 10, 1892. Serial No. 454,734. (No model.)

To all whom it may concern:

Be it known that I, PETER L. COX, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has for its object an improvement in sewing machines and relates more particularly to that class of machines which are employed for sewing leather.

My invention relates to the mechanism by means of which the awl and needle are operated and it consists in the peculiar construction and arrangement of the parts by means of which the rock shafts are operated from which the awl and needle bars are driven, all as hereinafter set forth and the novel features of which are pointed out in the claims which are appended hereto.

I have shown my invention in the accompanying drawings to which reference is made in the following description, and in which—

Figure 1 is a side elevation of a well-known form of wax-thread sewing machine embodying my improvement. Fig. 2 is an end elevation of the same. Figs. 3 and 4 are details which are hereinafter referred to.

In the following description I will confine myself to my present improvement and will make only such reference to other portions of the machine as may be necessary to make my said device clear.

The frame of the machine is shown at A and is of the well-known form.

B is the main driving shaft.

C is a rock shaft, journaled in projections in the lower part of the frame, which operates to reciprocate the needle vertically. D is a similar rock shaft journaled in projections from the upper part of the frame of the machine and which serves to reciprocate the awl vertically. The needle is shown at *a* and the needle bar at *b*. The needle bar is mounted in guides in the needle post in the well-known way, and is driven from the rock shaft C by means of the arm *c* and pivoted connection *d* in the usual manner. The awl is shown at *e* and the awl-bar at *f*. The awl-bar is driven from the upper rock shaft D by means of the arm *g*. The construction and operation of these parts is well-known and will not require detailed description.

To obviate an objection in the use of cams heretofore frequently employed for rocking the shafts C and D I provide a disk a' which I secure on the main shaft B, as shown in Fig. 1. On the face of the disk a' I secure a crank pin b' which is offset at its outer end as shown at c', Fig. 4. The part c' of the crank b' is thus off-set or formed eccentric to the body of said pin for the purpose of securing a proper relative timing of the lower and upper rock shafts C and D. On the crank b' I pivot one end of a connecting-rod d', the upper end of which is pivoted to an arm which is fast on the rock shaft D. By this means it will be clear that the rock shaft D will be rocked at each revolution of the disk a'. On the offset portion c' of the crank pin I pivot a connecting rod f' the other end of which is pivoted to an arm or lever g' which is journaled on a stud h' see Fig. 1, which is set in the frame of the machine. The lever g' is provided with a curved and slotted projection or arm h^2. A sliding pivot j' is set in the slot of the arm h^2 and by loosening the set-screw of this pivot, the pivot may be moved from one end to the other of the slot. On the pivot j' is secured a link or connection k' see Fig. 2, the other end of which is pivoted to an arm l' which is fast on the lower rock shaft C which operates the needle. As the disk a' revolves the arm g' is reciprocated causing the reciprocation of the arm l' and the rocking of the shaft C. By this construction there is no loss of motion in the parts, unequal wear is avoided, the speed of the machine may be materially increased while the noise of running is lessened, and a considerable saving is effected in the cost of construction and repairs.

The employment of the curved slotted arm h^2 permits the throw of the needle to be adjusted in the manner desired. The needle requires to move upwardly a given distance above the plate at all times, and any variation in the length of its movement must only affect the length of its movement below the work-plate. To effect this the curved slotted arm h^2 is provided.

As previously stated in order that the nee-

dle may rise to a given height, whatever the length of its path of movement may be, the adjusting devices must be so arranged that when the needle is at its highest point any movement of them will not operate to move the needle. Otherwise the height to which the needle rises would be varied by varying the positions of the adjusting parts. To this end if the needle be raised to its highest point, the arm l' will assume the position shown in Fig. 3, and when the arm l' is in that position the curve of the slot in the projection or arm h^2 must be such that the connection k' may be slid from one end to the other of the said slot without moving the arm l' and consequently without moving the needle.

In Fig. 3 the connection k' is shown as at the outer end of the slot in the arm h^2 and therefore the needle will be given its greatest throw. If the connection k' were set at the inner end of the slot in the curved arm h^2 it is clear that while the arm l' would be raised to the same point shown Fig. 3, it would not be thrown downwardly as far and thus the distance which the needle would move downwardly below the work-plate would be very much lessened. It will be clear therefore that by shifting the position of the connection k' in the slot of the curved arm h^2 the path of movement of the needle below the work-plate may be increased or diminished while the path of its movement above the work-plate remains the same. The position and shape of the slot in the arm h^2 may be readily obtained from the length of the connection k', said slot being simply the arc of a circle of which the connection k' is the radius. Hitherto a curved slotted arm similar to the arm h^2 has been employed, but said curve has never been, to my knowledge, of the proper shape, so that any attempt to adjust the throw of the needle by means of the mechanism hitherto employed has resulted in varying the height to which the needle rises above the work-plate and this is objectionable for well-known reasons. To remedy this under the old adjustment it became necessary to relocate the needle bar with reference to the connection d by means of which the bar is actuated and this caused a loss of time and a corresponding increase in cost of operation.

What I claim is—

1. The combination, in a sewing machine, with the upper and lower rock shafts for imparting vertical movements to the awl and needle bars, of a disk and means for actuating the same, said disk being provided with a crank pin b' having an off-set or eccentric part c', and connections between said crank pin and its off-set or eccentric part and said rock shafts, substantially as set forth.

2. The combination in a wax-thread sewing machine with a rock shaft, and connections, whereby the needle is operated vertically, of a disk on the driving shaft provided with a crank pin, a lever pivoted on the frame of the machine and connected with said crank pin by means of a pivoted link, a slotted arm on said lever, and a link having a pivot adapted to slide in said slotted arm and secured at the other end to an arm on the rock-shaft which operates the needle, the slot in said arm being so curved that when the needle is at its highest point the pivoted connection which is secured to said slot may be moved from one point to another thereof without moving the needle or its operating rock-shaft, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PETER L. COX.

Witnesses:
WM. A. MACLEOD,
ROBERT WALLACE.