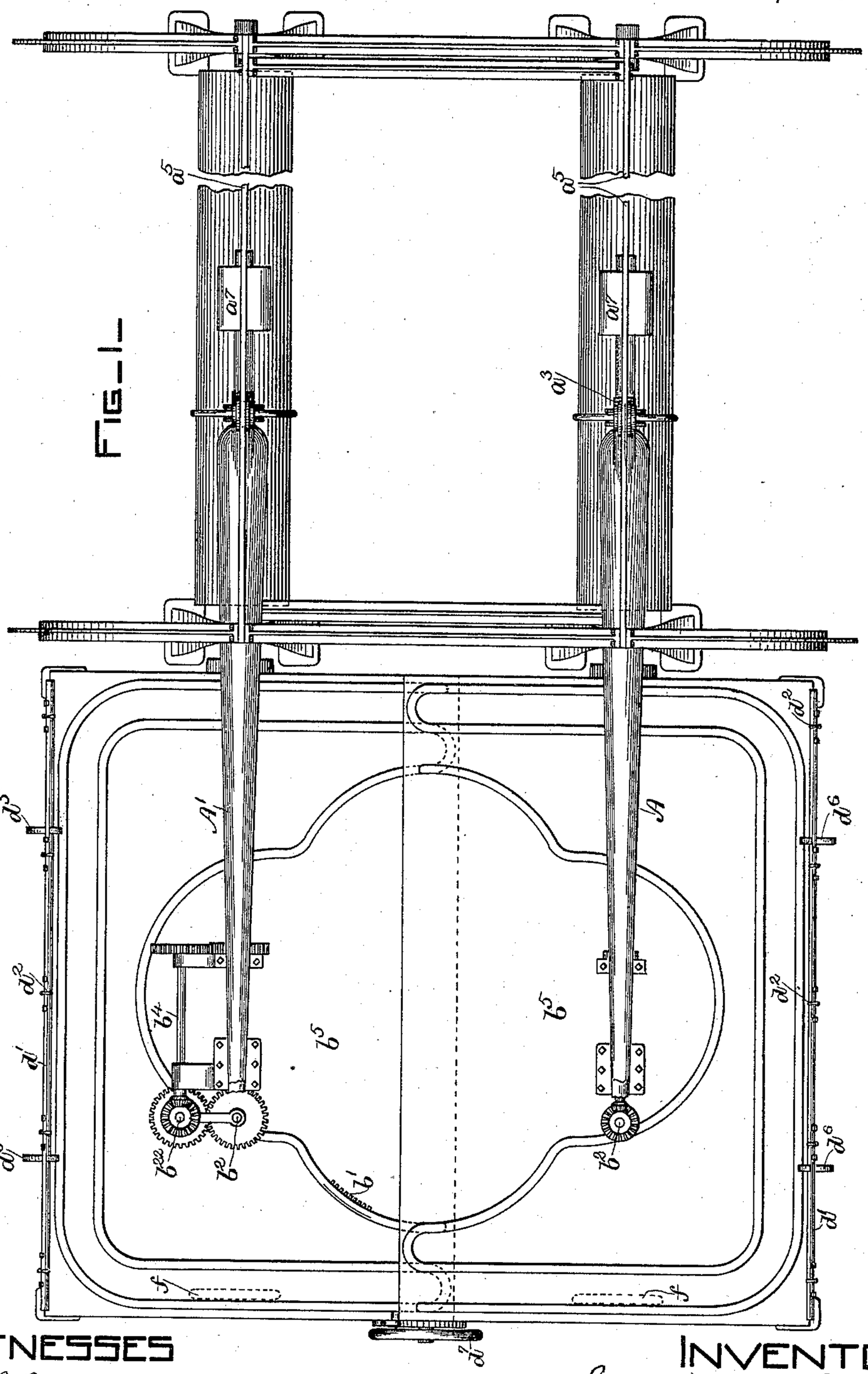
(No Model.) 3 Sheets—Sheet 1.

# E. E. BARTLETT.

## QUILTING MACHINE.

No. 540,348. Patented June 4, 1895.

FIG. 1.

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(No Model.) 3 Sheets—Sheet 2.

# E. E. BARTLETT.

## QUILTING MACHINE.

No. 540,348. Patented June 4, 1895.

FIG. 2.

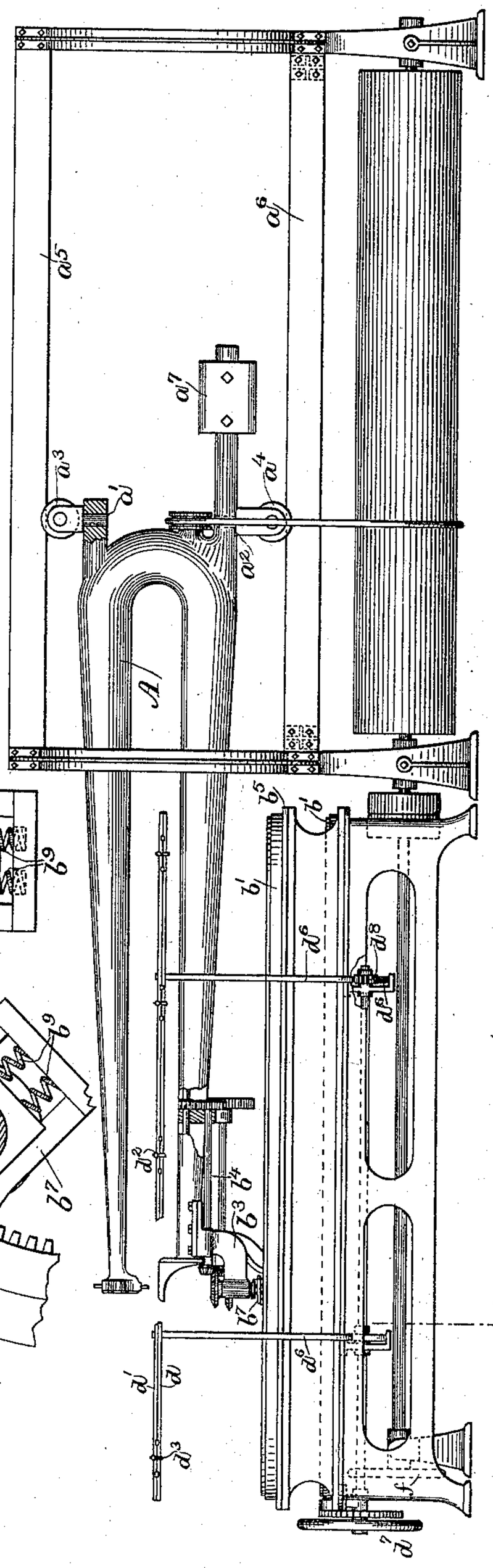



FIG. 1.

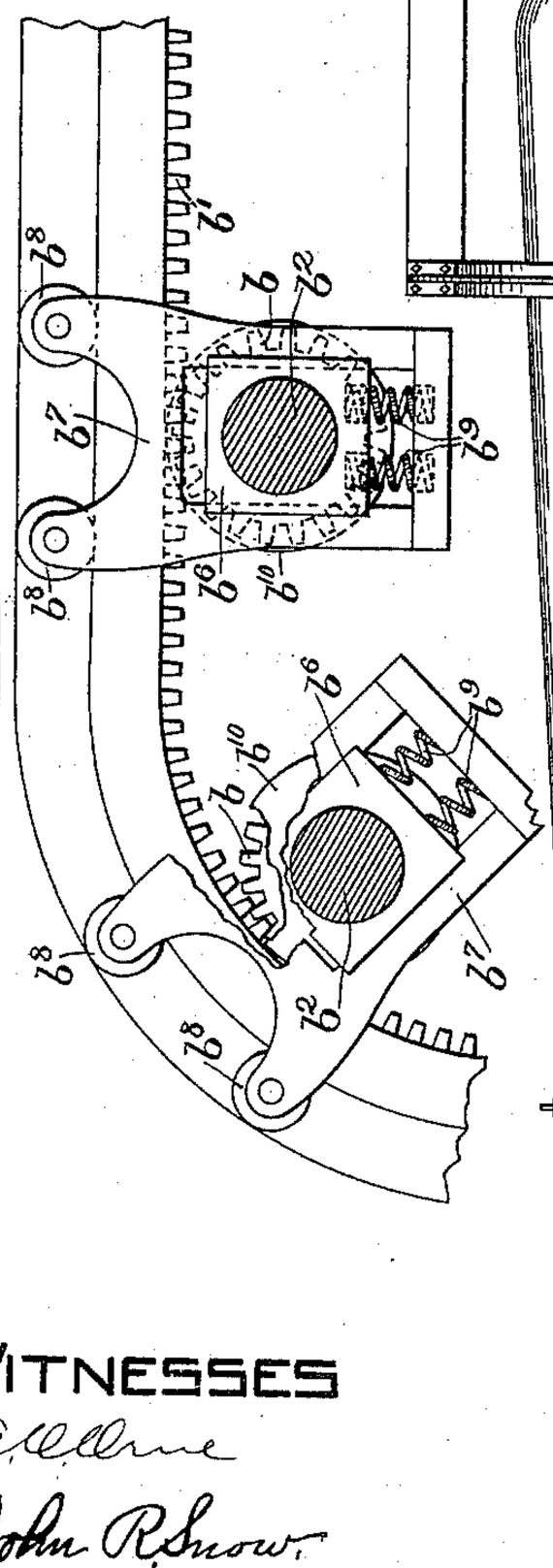
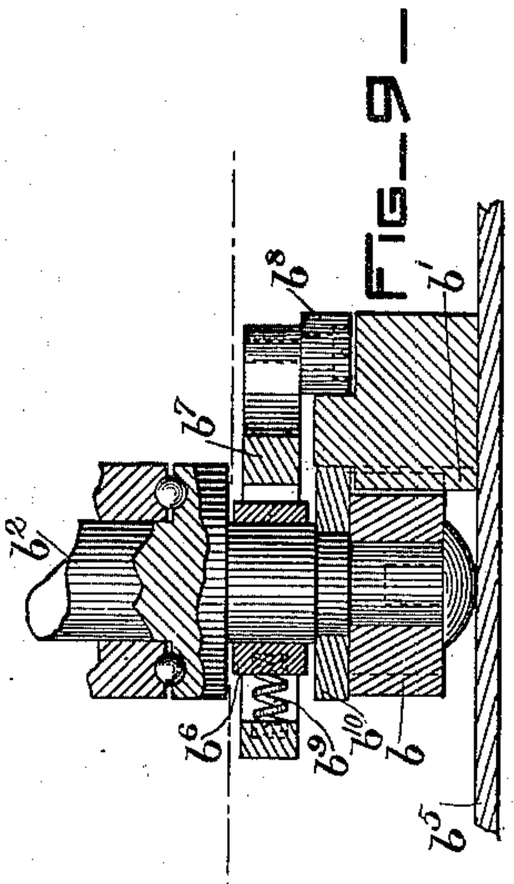



FIG. 3.

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(No Model.) 3 Sheets—Sheet 3.

# E. E. BARTLETT.

## QUILTING MACHINE.

No. 540,348. Patented June 4, 1895.

FIG. 3.

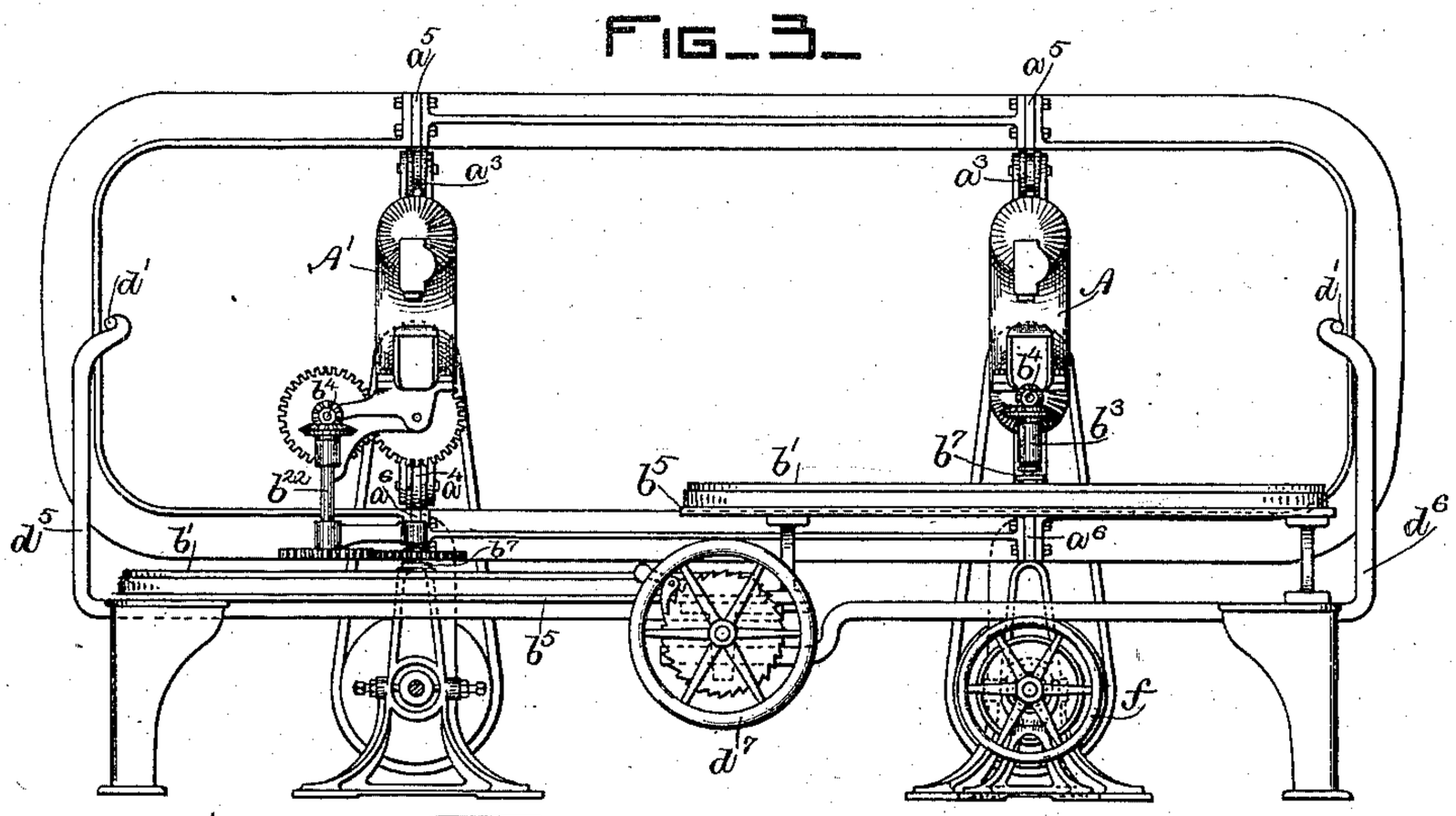



FIG. 4.

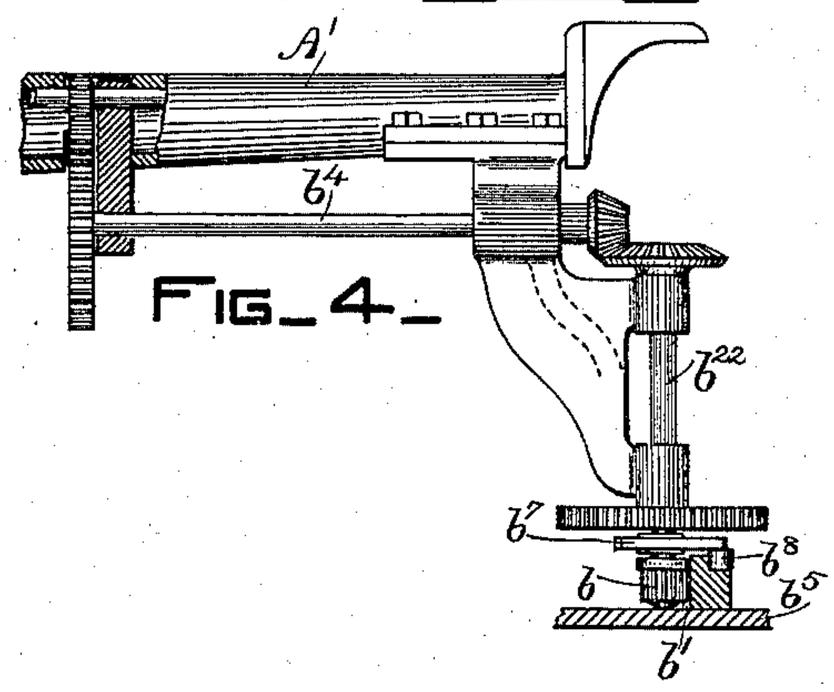



FIG. 5.

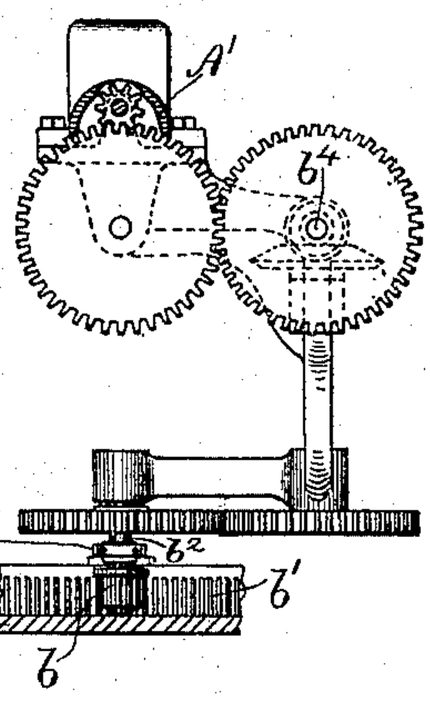



FIG. 6.

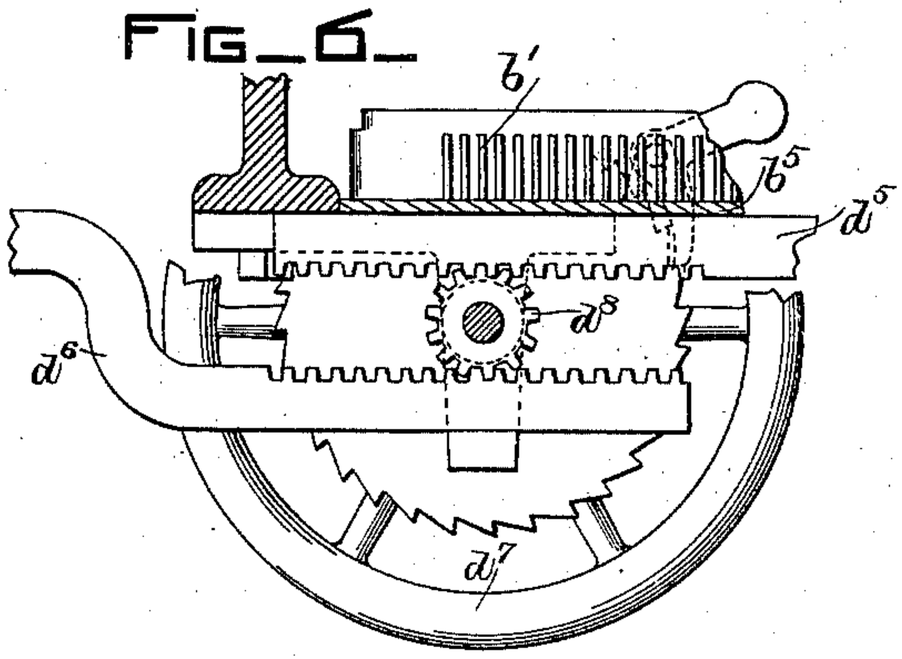
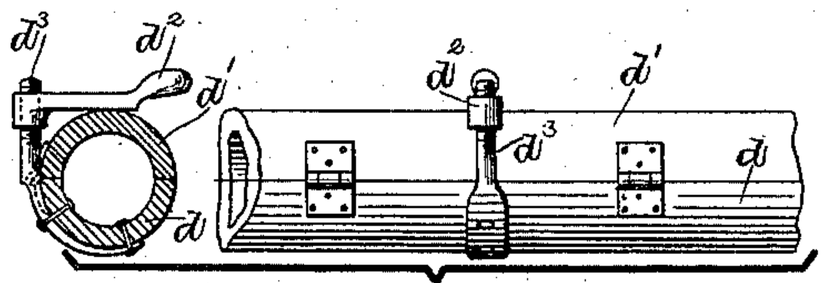



FIG. 7.

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# UNITED STATES PATENT OFFICE.

EDWIN ELLSWORTH BARTLETT, OF HYDE PARK, MASSACHUSETTS, ASSIGNOR TO THE UNION CARPET LINING COMPANY, OF PORTLAND, MAINE.

## QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 540,348, dated June 4, 1895.

Application filed October 18, 1894. Serial No. 526,281. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN ELLSWORTH BARTLETT, of Hyde Park, in the county of Norfolk and State of Massachusetts, have invented a new and useful Quilting-Machine, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of my machine. Fig. 2 is a side elevation. Fig. 3 is an end elevation. Figs. 4 and 5 are elevations of a portion of the under arm of one of the sewing-machines, the frame being shown in section in Fig. 5 and broken away in Fig. 4. Fig. 6 is an elevation, partly in section, illustrating a part of the quilt-holding mechanism shown in Figs. 1, 2, and 3. Fig. 7 illustrates the clamp by which the quilt is held along two sides. Figs. 8 and 9 are details illustrating the feeding and guiding mechanism.

The sewing machine A is connected by the journals $a'$ $a^2$ to the wheels $a^3$ $a^4$ which are free to travel on the tracks $a^5$ $a^6$, so that the machine can move endwise in either direction, and also be swung on the journals $a'$ $a^2$; and as these journals are free to travel with the wheels $a^3$ $a^4$ along the tracks $a^5$ $a^6$ in either direction the needle of the sewing machine may be moved to make a stitch and thereby produce a pattern either straight or curved the stitch running in any direction, within certain limits, depending upon the length of the machine from the journals to the needle, and the length of the tracks $a^5$ $a^6$.

The main feature of my invention is the automatic quilting machine composed of the sewing machine mounted as above described and its work holder, combined together by means of automatic guiding and feeding mechanism, consisting of a rack $b'$ and pinion $b$, with means (such as shown in Figs. 8 and 9 and described below) to hold them in mesh, and connections between the free end of the sewing machine and the pinion, so that when the sewing machine is started the pinion $b$ will revolve and travel along the rack $b'$ making a straight line of stitches, if the rack be straight, or a curved line, if the rack be curved; the sewing machine in either case moving endwise and swinging to allow the pinion to follow the rack. The pinion $b$ is fast to shaft $b^2$, and shaft $b^2$ is carried by bracket $b^3$ (see Fig. 2) which is fast to the under arm of machine A. Shaft $b^2$ is revolved by shaft $b^4$, which is geared to a revolving shaft of the sewing machine, as will be clear from Fig. 2, so that when the sewing machine is in operation, shaft $b^2$ revolves, thus causing the pinion $b$ to travel over rack $b'$, and feed the machine over the quilt or other work held in the holders. In order to ease the motions of the sewing machine a counterbalance $a^7$ is desirable, as thereby the pressure of the button at the end of the shaft $b^2$, see Fig. 9, on the rack table $b^5$ can be regulated.

For holding the pinion $b$ in mesh with rack $b'$ I use the block $b^6$ mounted in ways in the connecting plate $b^7$, which is provided with the rolls $b^8$, to travel on the flat side of the rack $b'$; and the springs $b^9$ to keep the block $b^6$ in place, all clearly shown in Figs. 8 and 9. This device is shown in two positions in Fig. 8, in order to illustrate its operation; for when the pinion travels along a straight part of the rack the block $b^6$ will compress the springs $b^9$ more than when the pinion travels along an inwardly curved part of the rack, as illustrated in Fig. 8; but when the pinion travels on an outwardly curved part of the rack, the block $b^6$ will compress the springs $b^9$ more than when the pinion travels along a straight part of the rack, as will be clear. This device is also a feature of my invention. The roll $b^{10}$ prevents bottoming; that is, prevents the outer ends of the teeth of the pinion $b$, from grinding on the surfaces between the teeth of rack $b'$ (Fig. 9) and vice versa.

In Fig. 1, I have indicated a rack $b'$ of simple shape, but involving substantially all that need be shown to fully illustrate my machine; for the inner end of the rack shown is a curve, requiring a slight swing in one direction of the sewing machine A on its journals $a'$ $a^2$, and a slight endwise forward motion of machine A on its tracks $a^5$ $a^6$; the next curve requires a swing in both directions, and a greater endwise forward motion; the third curve requires the same swing as the first but in the opposite direction, and the same endwise forward motion; then follows the short curve requiring both a swing and an

endwise forward motion; then the straight line of stitches also requiring a swing and an endwise forward motion; then a turn about a corner requiring a swing and an endwise backward motion; then a straight line of stitches requiring a swing and an endwise backward motion, and so on until the end of the rack is reached; but all the lines of stitches require both a swing and an endwise motion of machine A, except such as happen to be in line with the tracks $a^5$ $a^6$ of machine A. The rack $b'$ is fast to rack table $b^5$, and may be made of widely varying styles.

Another feature of my invention is the combination of two of my machines with one work holder; and while this feature may be properly said to be one of the advantages of my main invention, namely, a machine provided with a rolling or sliding part to which it is journaled, yet the combination of two such machines with one work holder is an invention of value and importance, for it has two wholly new functions; the first of which is that this combination enables work to be done which would be impossible without unduly lengthening the machine, and the second of which is that it enables that work to be done in half the time; the full result being that twice as much work can be done with one of my double machines as can be done with a single machine embodying my invention, although that single machine will occupy a materially greater floor space than the double machine. This is because a single machine embodying my invention and adapted for a given area, will require a much greater radius. For example the radius of each machine shown in the drawings should be equal to the diagonal of a rectangle which is six feet by one and a half feet, if the whole area of the quilt be six feet by six feet; and a single machine embodying my invention would require theoretically a radius equal to the diagonal of a rectangle six feet by three feet, but would not be a practical machine unless the radius were materially greater than that theoretically necessary; for the reason that the maximum angle of the machine to the track would be twice as great in such a single machine, as it is in my double machine; and practically the maximum angle should not be materially greater than it is in my double machine. In short the width of the single and double machine would be the same, for the same area of work, but the length of the single machine would be necessarily much greater than the length of the double machine. If one of my machines were used for work six feet by six, the usual size of a quilt, the swing required would be so great that the wheels would cramp in their tracks, unless the machine were made longer than is desirable in practice; but when one machine works on a little over one half of a quilt, the swing required is never sufficient to cramp the wheels, as will be clear from Fig. 1. In order to use two machines with one work holder the rack tables $b^5$ must overlap, as shown in Figs. 1 and 3, and this requires the bracket of machine A′ to be offset, as shown in Figs. 1 and 3, and in detail in Figs. 4 and 5; where shaft $b^4$ is brought to one side of the under arm of machine A′, requiring the intermediate gears shown in Fig. 5, and an additional shaft $b^{22}$, and a much shorter shaft $b^2$ than that of machine A. By this construction the pinion $b$ of machine A′ can travel under the rack table $b^5$ of machine A as indicated in Fig. 1, where the dotted lines show the rack tables overlapping and certain parts of the rack $b'$ of machine A′ extending under a part of rack table $b^5$ of machine A. It will now be clear that this feature of my invention is not the mere use of two sewing machines with the same work holder; but the combination of two sewing machines, each connected to its wheels by journals; two rack tables overlapping; pinions engaging with the racks; and driving mechanism for those pinions one of which is offset to allow its pinion to travel under one of the rack tables.

The work holder consists of two clamps $d$ $d'$, best made of a pipe divided lengthwise and hinged together, with fastening devices consisting of the handled nut $d^2$ on the screw stud $d^3$. Fully shown in Fig. 7. When the clamps $d$ $d'$ are open, the edge of the quilt along one side is inserted and the handled nuts $d^2$ are turned to lock the clamps; and when a work holder has thus been attached to the two opposite sides of a quilt the holders are placed on the supporters $d^5$ $d^6$, and the hand wheel $d^7$ is turned; the quilt being thereby stretched taut by the action of pinion $d^8$ on the racks which form part of the supporters $d^5$ $d^6$, as will be clear from Fig. 6, which shows the racks $d^5$ $d^6$ and pinion $d^8$ and their relation to the hand wheel $d^7$, and from Fig. 1, which shows the holders in their supporters. See also Figs. 2 and 3. This combination of work clamps for clamping two opposite edges of the work, with supporters and mechanism to move the supporters simultaneously to separate the work clamps and stretch the work, is also a feature of my invention; and is, so far as I know the first work holding mechanism for a sewing machine which automatically brought the work into proper relation with a rack table, or other pattern mechanism.

The operation has already been sufficiently described, except that each sewing machine has its own drum and driving belt, and that in practice each will be started with its pinion at that part of its pattern rack which will make it certain that the two machines will not be made to conflict one with the other; that is, machine A will not work on the over-lapping part of its rack table $b^5$ when machine A′ is working on that part of its rack table $b^5$ which will bring the two machines into contact; but as each machine has its own drum and driving belt, either may be stopped or started independently of the other. The hand wheels $f$ shown in dotted lines in Figs. 1 and 2, and one in elevation in Fig. 3 are used to

turn the drums in case either of the machines should stop with its needle in the quilt. The driving belt traverses the drum as the machine moves endwise, the pulley of the driving belt being grooved to keep the belt on the pulley; and as the pulley is close to the axis on which the machine swings, the twisting of the belt caused by swinging the machine is so slight as not to impair its proper operation as a transmitter of power from the drum to the pulley.

What I claim as my invention is—

1. The automatic quilting machine above described, comprising a work holder; a sewing machine; journals upon which the sewing machine can swing in one plane only; a carriage to which the sewing machine is connected by the journals limiting the bodily motion of the journals to one line; and automatic guiding and feeding mechanism, such as is described; all combined and operating substantially as set forth.

2. In combination, two line producing machines; two rack tables; a single work holder; a feeding and guiding mechanism for one of the line producing machines; and a second feeding and guiding mechanism for the other machine, with its support offset, to admit of the rack tables overlapping; all combined and operating substantially as described.

3. In combination a pattern rack; its pinion; a spring block; a connecting plate; and two rolls on the connecting plate; substantially as described.

4. In combination two pairs of work clamps for clamping the opposite edges of a quilt; a pair of supporters, one supporting one pair of work clamps near one end, the other the other pair of work clamps near one end; racks on each supporter opposed to mesh with the same pinion; a pinion meshing with those opposed racks; a second pair of supporters, supporting the two pairs of work clamps near their other ends; opposed racks on those supporters; a pinion meshing with those opposed racks; and a shaft carrying both pinions; whereby all four of the supporters and both pairs of work clamps are operated simultaneously by the revolution of the shaft.

EDWIN ELLSWORTH BARTLETT.

Witnesses:
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JOHN R. SNOW.