(No Model.) 3 Sheets—Sheet 1.

C. A. VAN ALLEN.

FLEXIBLE PITMAN.

No. 392,241. Patented Nov. 6, 1888.

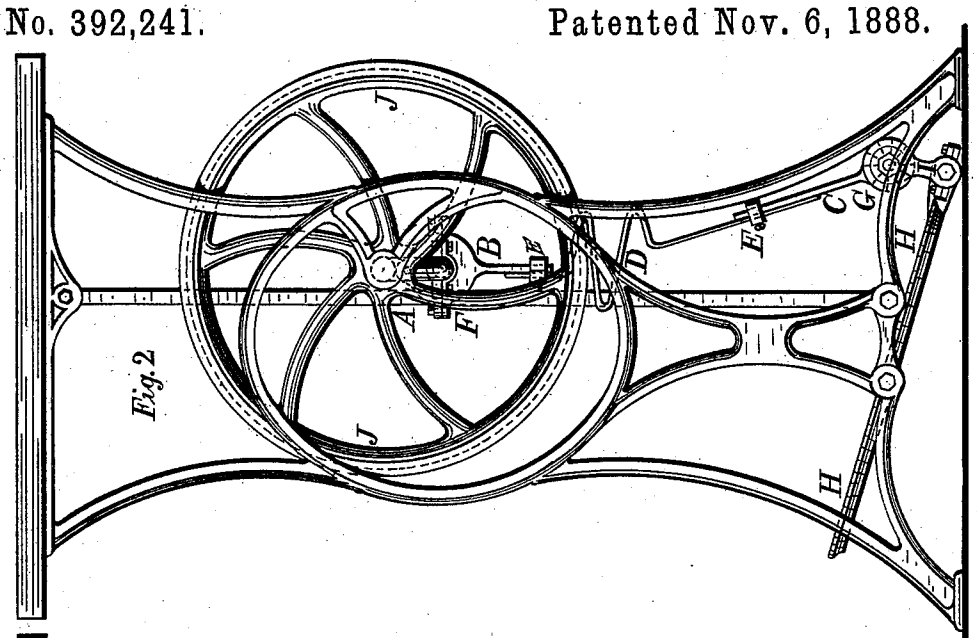


Fig. 2.

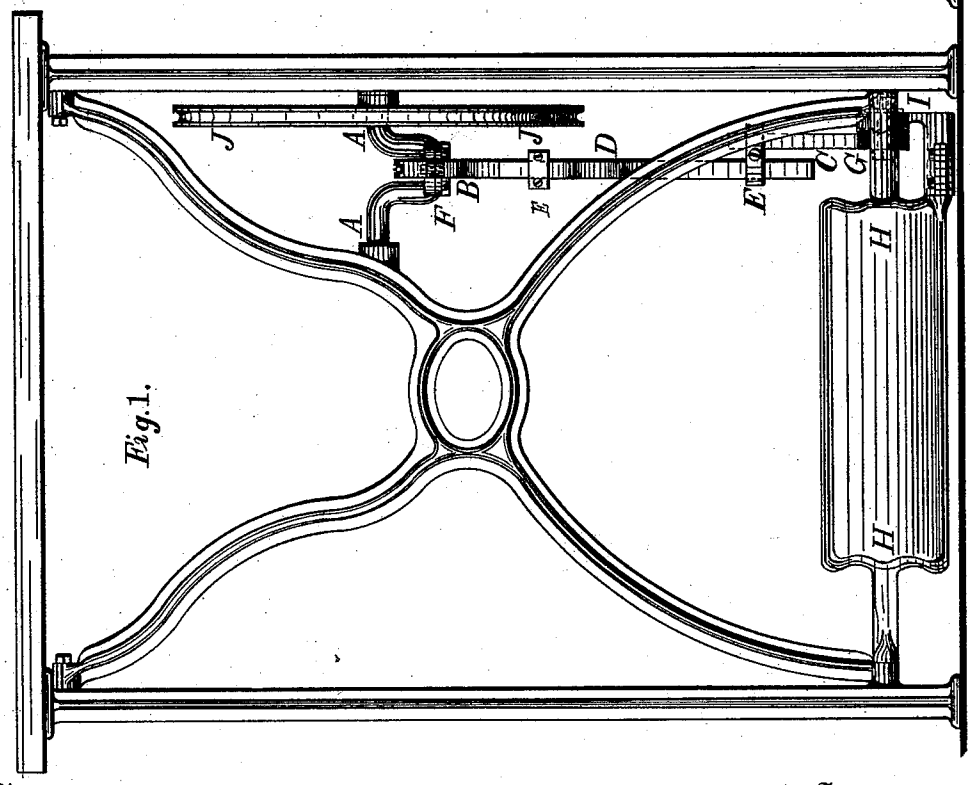


Fig. 1.

Witnesses.
I. C. Barnard.
Fred, P. Babcock.

Inventor.
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(No Model.) 3 Sheets—Sheet 2.

C. A. VAN ALLEN.

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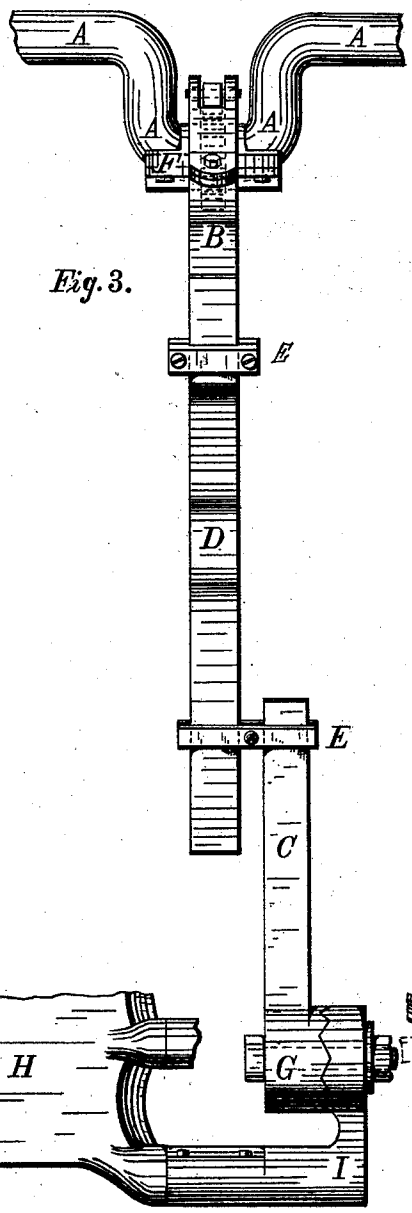


Fig. 3.

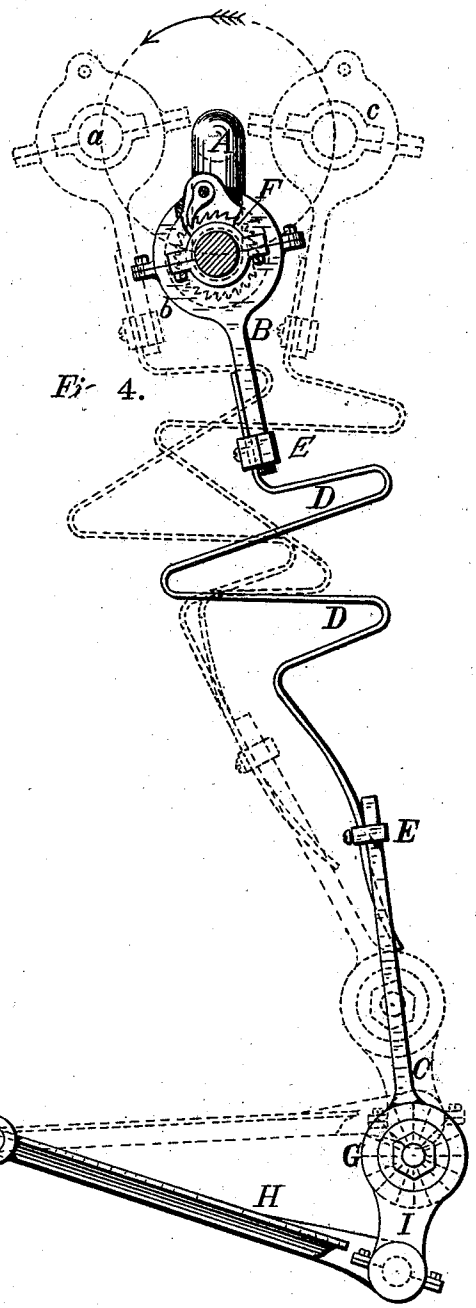


Fig. 4.

Witnesses,
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(No Model.) 3 Sheets—Sheet 3.

C. A. VAN ALLEN.

FLEXIBLE PITMAN.

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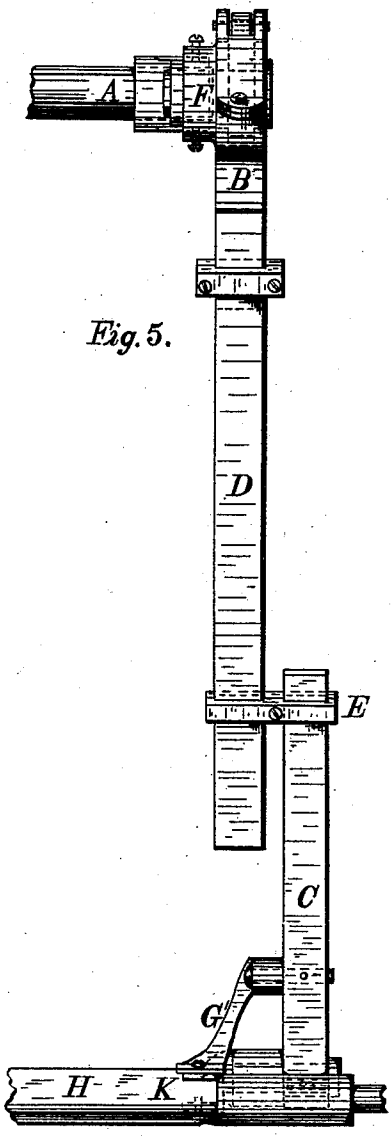


Fig. 5.

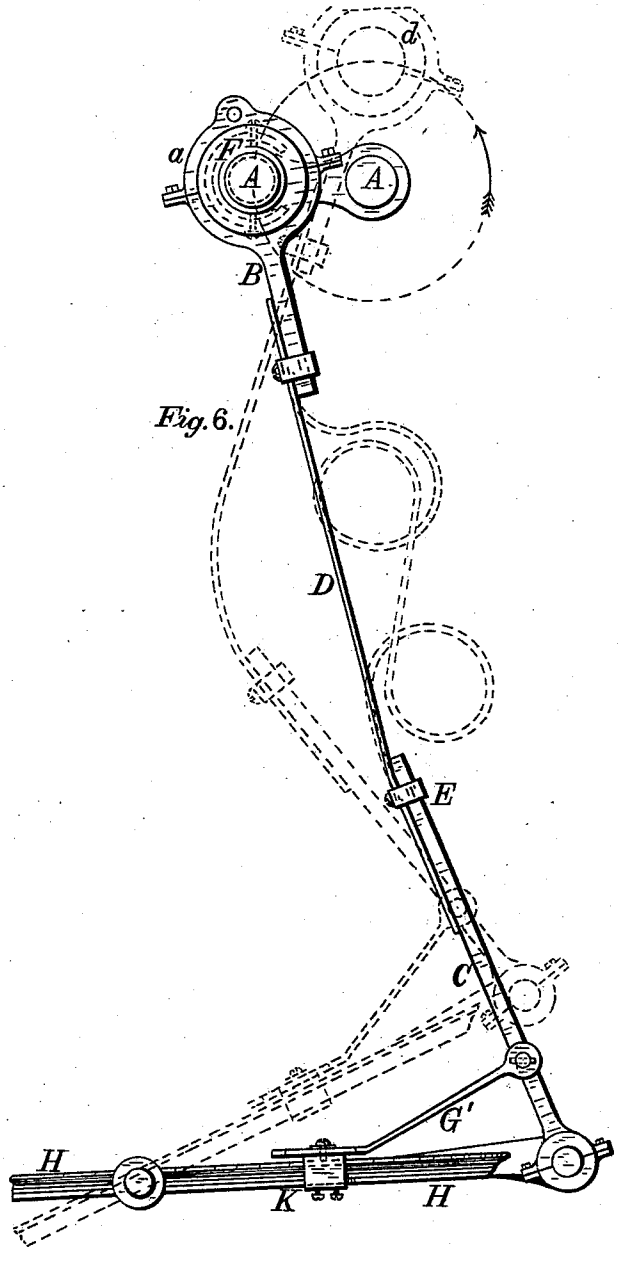


Fig. 6.

Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES A. VAN ALLEN, OF ROCHESTER, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE VAN ALLEN AUTOMATIC PITMAN MANUFACTURING COMPANY, OF SAME PLACE.

FLEXIBLE PITMAN.

SPECIFICATION forming part of Letters Patent No. 392,241, dated November 6, 1888.

Application filed November 15, 1887. Serial No. 255,227. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. VAN ALLEN, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a new and useful Flexible Pitman, of which the following is a specification.

My invention relates to improvements in pitmen for sewing-machines and other machines in which a reciprocating motion is transformed into a rotary motion; and the objects of my improvements are to avoid stopping the machine on the dead-centers; to dispense with the pressure of the heel in operating a treadle by foot and to make a pressure of the toe do the work; to provide an elastic medium for the feet to operate against, thus avoiding heavy jars; to avoid the possibility of running the machine backward and breaking needles and thread, and to provide means of starting and stopping entirely with the feet, leaving the hands free to manipulate any work being done on the machine.

In the accompanying drawings, Figure 1 is a front view of a sewing-machine frame with treadle and double crank, and showing my improved pitman attached thereto. Fig. 2 is a side view of the same. Fig. 3 is an enlarged front view of one form of my improved pitman, showing a part of a treadle and of a double crank. Fig. 4 is a side view of same with a portion of the upper rod broken away, and also showing the pitman in dotted outlines in two other positions. Fig. 5 is an enlarged front view of another form of my improved pitman, showing a part of a treadle and of a single crank. Fig. 6 is a side view of same, showing two styles of springs and indicating the crank on the upper dead-center in dotted lines.

Similar letters refer to similar parts throughout the views.

To the crank-pin of the crank A is securely clamped the ratchet F, which projects beyond the crank-pin and surrounds the arms of the crank. In Figs. 1, 2, 3, and 4, which illustrate a double crank, this ratchet is shown in two parts suitably clamped togther by bolts or screws. In Figs. 5 and 6, which illustrate a single crank, this ratchet (whose teeth are not shown, so as to avoid a complication of lines in the drawings) is made of one piece, which slips over the end of the crank-pin, and one end partly surrounds or clasps the crank-arm, while suitable bolts or set-screws secure the ratchet to the crank. The upper rod, B, of the pitman or connecting-rod is hollow at its upper end and surrounds the ratchet F. This rod carries a pawl which slides over the teeth of the ratchet when revolving in the direction of the arrow, but catches against them and prevents rotation when moved in the opposite direction. This upper rod is made with a loose cap, which is securely attached by suitable bolts or screws, and it is bored out to fit easily and revolve upon corresponding bearings turned at the side of the teeth of the ratchet.

The lower rod, C, is rigidly attached to the end of the treadle or reciprocating part H by means of an adjustable connection which holds it securely in position. A number of well-known devices may be employed for this purpose; but I have only illustrated two of these, which I prefer. Figs. 1, 2, 3, and 4 illustrate one of these devices, in which a casting, I, is firmly clamped to the pin of the treadle. At its upper end this casting has half of a coupling formed on it, the other half being formed on the end of the rod C. When the rod C is placed in the desired position, the two halves of the adjustable connection or coupling G are securely clamped together by a bolt passing through them. Another device for the same purpose is shown in Figs. 5 and 6. The rod C is extended and attached directly to the pin of the treadle, while a small boss or hub is formed on the rod, from which a round pin projects. This pin fits in the end of an angle-piece, G′, which rests upon a clamp secured to the treadle at its other end, and has a slot in it there, through which passes a screw or bolt into the clamp just mentioned. When the rod C has been placed in the desired position, this angle-piece is securely fastened to the clamp on the treadle and rigidly holds the rod.

The rods B and C are made of such lengths that a space is left between them when in position on the machine, and a flexible spring of any desired shape is fastened to the ends of the rods by clamps holding both the rods and the ends of the spring. These springs are marked D in the drawings and the clamps are marked E. In Figs. 1, 2, 3, and 4 I have shown an ordinary flat S-spring, while Figs. 5 and 6 show a plain straight spring and Fig. 6 has a coiled helical spring indicated by dotted lines.

In operating my pitman the ratchet is first attached to the crank-pin of the machine. Then the upper rod is clamped around it so that it may revolve freely, while the spring is securely attached to the other end of this rod. The lower rod is now rigidly attached to the treadle or reciprocating part of the machine. The crank is now thrown on the half-center at which it is desired that the machine shall stop and the lower rod is adjusted in angle until the end of the spring rests easily against it when the upper rod is swung over. The spring is now clamped securely to the lower rod. In Figs. 4 and 6 position *a* of the crank illustrates this position when the spring is at rest. The treadle is now depressed until it occupies the position shown in full lines in Fig. 4, when the spring will be bent into the shape shown in full lines and thus thrown from its normal shape. It will naturally tend to straighten up, and in so doing it will throw the crank around by means of the upper rod in the direction of the arrow. This bending of the spring can be increased or diminished by adjusting the angle formed by the lower rod with the treadle and by adjusting the tension on the spring by compression or elongation by the adjustable clamps attaching the spring to the rods. If correctly adjusted, the spring will throw the crank around from the lower dead-center to the position *a;* but it may be adjusted to throw to any other point. At the same time the pawl, sliding on the teeth of the ratchet, prevents any backward movement. In Fig. 6 the full lines show the plain flat spring in its original position *a*, while the dotted lines from the position *d* on the upper dead-center show the bending of the spring in that position. The coiled helical spring is only indicated in the original position in dotted lines. As any of these forms of springs or any other desired form is originally adjusted to be at rest only in the position first given it, it follows that it will always tend to assume this position, and if this original position is placed half-way between the dead-centers or at the downwardly-moving half center the machine will always come to rest in that position, and will therefore always be ready to start. The foot only need therefore be employed in forcing the treadle down to the lowest point, as the spring will carry it and the crank up again and around to the starting-point. The elasticity of action is obtained by interposing the spring in the pitman, whose rigidity is thereby broken.

A simple reversal of the parts of my device will reverse the direction of operation of the machine, and as no change in the mechanism is necessary for this purpose I have not illustrated the same.

I claim—

1. The combination, with a crank and treadle, as described, of a laterally-flexible spring conecting-rod or pitman connected to the treadle at one end by an adjustable connection for varying the angle of said rod with relation to the treadle, and a movable connection between its opposite end and the crank, substantially as described.

2. The combination, with a crank and treadle, as described, of a laterally-flexible spring connecting-rod or pitman rigidly secured to the treadle at one end and a clutch-connection between its opposite end and the crank, whereby the latter is prevented from rotating in but one direction.

3. The combination, with a crank and treadle, as described, of a laterally-flexible and longitudinally-adjustable spring connecting-rod or pitman rigidly secured to the treadle at one end and movably connected to the crank at the opposite end, substantially as described.

4. The combination, with the crank and treadle, as described, of the pitman or connecting-rod, consisting of the two end rods, and the flexible spring connecting the same, one of said rods being movably connected to the crank and the other rigidly connected to the treadle, whereby the angle formed by said rods varies continuously during the revolution of the crank, substantially as described.

5. A pitman or connecting-rod consisting of two separate rods, a laterally-flexible spring interposed between and connecting said rods, a treadle, and an adjustable connection between the lower rod and treadle, whereby the angle formed by said rod with relation to the treadle may be varied, substantially as described.

6. A pitman or connecting-rod consisting of two separate rods, a laterally-flexible spring interposed between and connecting said rods, and adjustable clamps connecting the spring with the rods, whereby the length of the pitman may be varied, substantially as described.

7. A pitman or connecting-rod consisting of two separate rods, a laterally-flexible spring interposed between and connecting said rods, a treadle connected to one of said rods by an adjustable connection for varying the angle formed by said rod with relation to the treadle, and adjustable clamps between the interposed spring and rods for varying the length of the pitman, substantially as described.

8. A pitman or connecting-rod consisting of two separate rods, a laterally-flexible spring interposed between and connecting said rods, a treadle, and an adjustable connection for fixing the angle made by the lower rod with re-

lation to the treadle, clamps connecting the spring with the rods, whereby the length of the pitman may be varied, and a clutch-connection between the pitman and the crank to which the upper end of the pitman is connected, whereby backward motion is prevented, substantially as described.

9. A pitman or connecting-rod consisting of two separate rods connected by a laterally-flexible spring with a pawl held by the upper rod and operating upon a ratchet attached to the crank-pin of the machine, whereby backward movement is prevented, substantially as described.

10. A pitman or connecting-rod consisting of the upper rod, B, the lower rod, C, rigidly attached to the treadle H by the adjustable coupling G, and the adjustable spring D, flexibly connecting these rods, substantially as described.

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Witnesses:
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I. C. BARNARD.