(No Model.)

S. T. SHORTESS.

DEVICE FOR OVERCOMING DEAD CENTERS.

No. 342,470. Patented May 25, 1886.

Fig. 3.

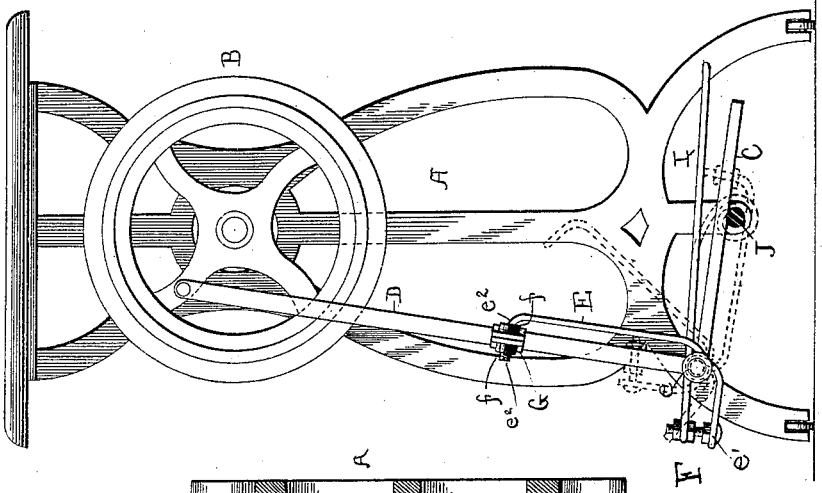


Fig. 2.

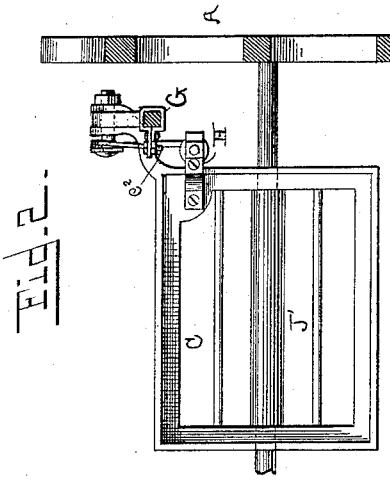
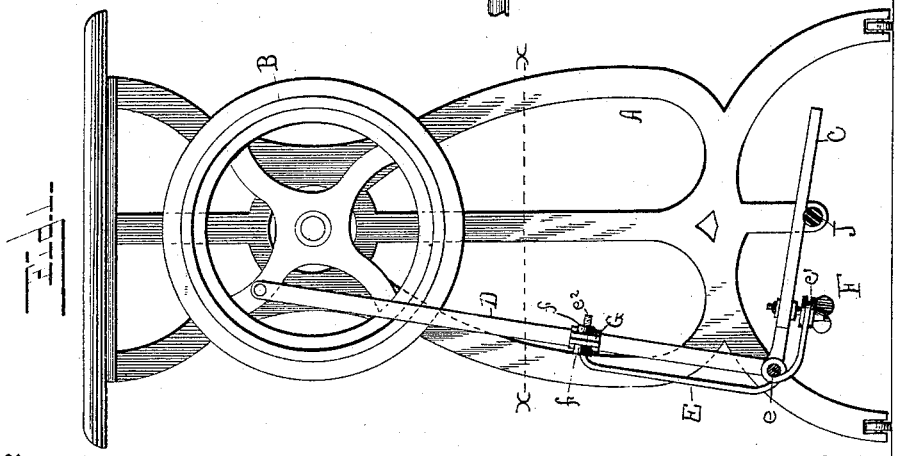


Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

STEPHEN T. SHORTESS, OF VINTON, IOWA.

DEVICE FOR OVERCOMING DEAD-CENTERS.

SPECIFICATION forming part of Letters Patent No. 342,470, dated May 25, 1886.

Application filed February 10, 1886. Serial No. 191,467. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN T. SHORTESS, a citizen of the United States, residing at Vinton, in the county of Benton and State of Iowa, have invented certain new and useful Improvements in Devices for Overcoming Dead-Centers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to devices for overcoming dead-centers; and it consists in the novel features of construction shown and more particularly set forth and claimed.

In the annexed drawings, Figure 1 is a side view of a sewing-machine table provided with the usual drive-wheel, treadle, and pitman, and having my attachment in position. Fig. 2 is a section on the line *x x* of Fig. 1, showing a different mode of attachment between the horizontal limb of the spring and treadle. Fig. 3 is a view similar to Fig. 1, showing a different way of applying the attachment.

The device is designed to be applied to any pitman to carry the same beyond its dead-points and prevent it occupying such relative position that the machine cannot be readily started at any moment.

The frame A, drive-wheel B, treadle C, and pitman D are of common construction, and are simply shown as a means to illustrate the application of my improvement, which consists in the application of a peculiarly-constructed spring, to be presently more particularly referred to, between the pitman and treadle, in such manner that at no time will the parts rest at their dead-points. The spring E is made of a single piece of wire, bent into an approximately L shape, forming a coil, *e*, at the point of convergence of the vertical and horizontal limbs. In practice this coil is sleeved on the bolt connecting the treadle and pitman, to hold the spring in a fixed relative position. The horizontal arm terminates in an eye, *e'*, through which a set-screw, F, passes and enters the treadle for the purpose of adjusting the tension of the spring. The vertical limb has its upper end, e^2, bent either forward or backward at right angles, and extending nearly parallel with the horizontal limb. The end e^2 is threaded, and is adjustably connected with the pitman by nuts *f*, one on each side thereof. The end may pass through the pitman, as shown in Fig. 3, or it may pass through the end of a clamp, G, secured thereto, as indicated in Fig. 1. The set-screw F may pass directly through the treadle, as shown in Fig. 1, or it may extend through the clamp H, as illustrated. Adjusting the spring so as to cause it to turn on its journal gives greater adjustability. The spring is also made interchangeable, so that the set-screw may be applied to the pitman and the bent end to the treadle. In reversing the motion both ends of the spring are freed, and it is turned on its journal and the ends again connected with the parts, as shown by dotted lines in Fig. 3.

In practice the angle between the limbs of the spring and the angles formed between said limbs and the treadle and pitman may be independently adjusted by regulating the points of attachment between the limbs of the spring and the pitman and treadle, respectively. Furthermore, the angle which each limb forms with either the treadle or the pitman may be positively varied as occasion may require. Thus the tension of the two limbs of the spring may be varied and unequal in such manner that the tension can only be equalized by the turning of the spring upon the journal. By this arrangement the angle between the pitman and treadle can be positively changed, whether the pitman is attached to the crank or not.

In cases where it may become necessary to reverse the motion of the wheel the position of the spring must correspondingly be changed.

The horizontal limb, instead of extending toward the treadle, projects away from the same, and its outer end is adjustably connected with the spring I, having its inner end fixedly connected with either the frame or treadle-supporting rod J, as shown in Fig. 3. This spring transmits the circular motion of the outer end of the treadle through the pitman in the crank, and thus carries it past the points of dead-center. When necessary, a spring may be used on each side of the pitman, each being attached to treadle and pitman, as described.

The practical operation of the spring is sim-

ilar to those in use now; but the mode of applying it is essentially different.

The connection between the pitman and treadle forms a point of resistance common to both limbs, and permits an uneven tension being put upon the two parts or limbs, as hereinbefore specified.

The angle between the pitman and treadle differs so widely in the different machines that in putting a spring on the market that is capable of being attached to any machine it is necessary that the spring have a great amount adjustability. In this spring this adjustability is given by the slight motion required to change the angle. On account of the spring being journaled at its own angle, and by being made adjustable where the spring is put up for a given machine, and bent so that its two limbs have about the same angle to each other that the pitman and crank of the machine have to each other when just past either point of dead-center, their one point of adjustment will be sufficient, and the other limb can be rigidly attached by being bent at its end around the pitman or some other convenient point on the treadle.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a pitman and treadle, of an L-shaped spring having the point of divergence of its two limbs pivotally supported in line with the junction of the pitman and treadle, the ends of said limbs being positively connected with the pitman and treadle, respectively, substantially as described.

2. The combination of a pitman, treadle, L-shaped spring pivotally supported at its angle in line with the junction of the pitman and treadle, and an adjusting-connection positively uniting the ends of said limbs with the pitman and treadle, respectively, as and for the purposes set forth.

3. The combination, with a treadle and pitman, of an L-shaped spring pivotally supported at its angle in line with the junction of the pitman and treadle, the vertical limb of said spring being connected with the pitman, and a spring-rod projected from the treadle-support and united with the horizontal limb of the spring, substantially as shown, and for the purpose specified.

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

STEPHEN T. SHORTESS.

Witnesses:
CHAS. B. MARINE,
L. PERRINE.