

W. H. O'BANNON & J. M. FIELD.

SPRING MOTOR.

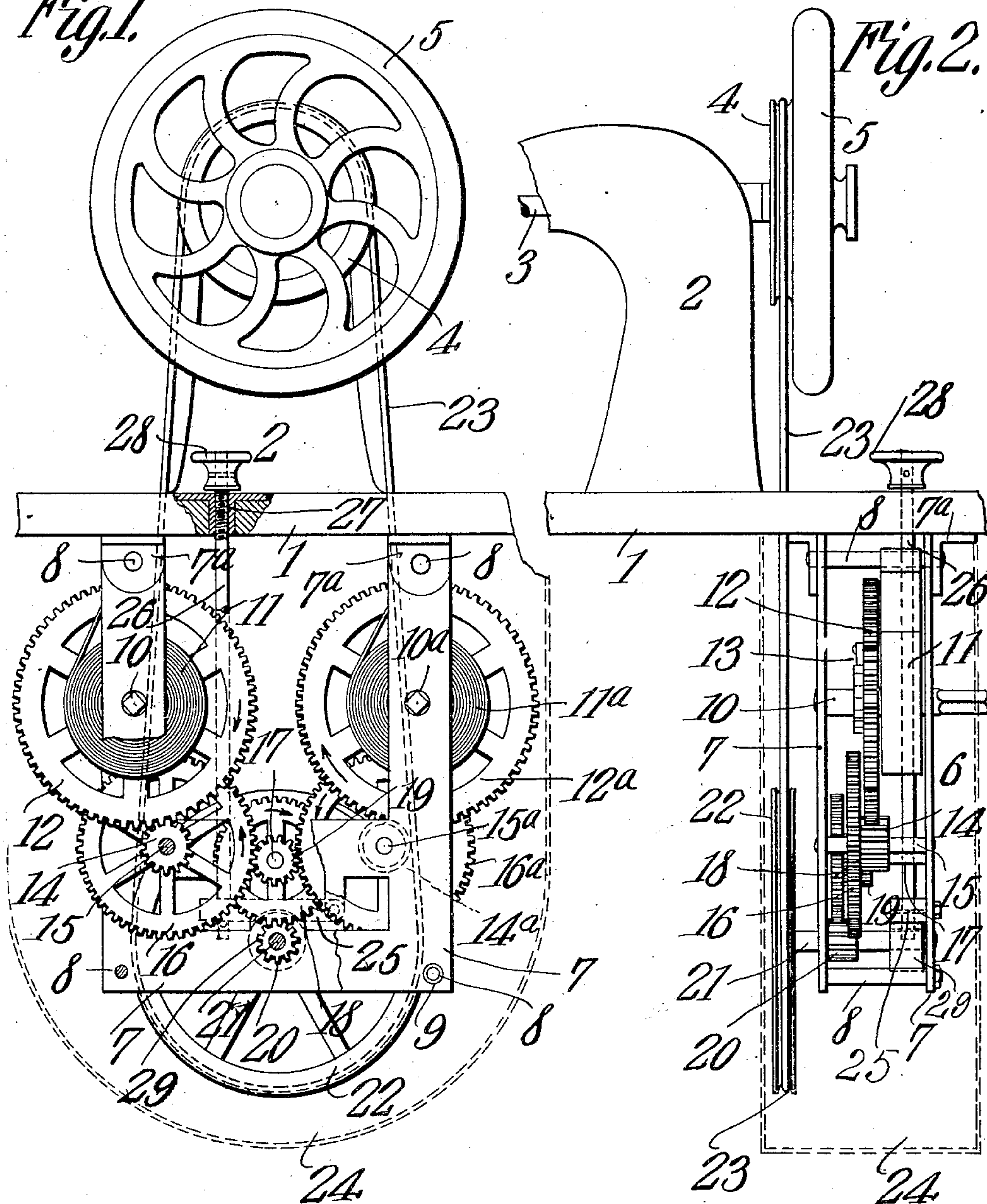
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Fig. 1.

Fig. 2.



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SPRING-MOTOR.

935,540.

Specification of Letters Patent. Patented Sept. 23, 1909.

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To all whom it may concern:

Be it known that we, WILLIAM H. O'BANNON and JAMES M. FIELD, citizens of the United States, residing at San Angelo, in the county of Tom Green, State of Texas, have invented a new and useful Spring-Motor, of which the following is a specification.

This invention relates to a motor for driving light machinery by means of spring power operating through gearing to a belt pulley and from thence by a belt to the machine to be driven.

The object of the invention is to provide a simple, cheap and efficient motor for the purpose designed; a motor that can be quickly and easily applied, as for instance to the under side of a sewing machine table and geared by a belt to the belt wheel of the sewing machine; one that can be wound up by any person capable of using a sewing machine and which will run continuously for several hours at average speed without re-winding; and finally, one which can be started and stopped at will and its speed regulated by the simple act of moving a lever or screw rod.

With these and other objects in view, the invention consists of the novel construction, combination and arrangement of parts hereinafter described and definitely claimed reference being had to the accompanying drawing, in which—

Figure 1 is an elevation of the improved motor applied to a sewing machine viewed from the driving end; and Fig. 2 is an elevation of the motor and a part of a sewing machine seen from the front.

Similar reference numerals are used for the same parts in all the figures.

The numeral 1 indicates a sewing machine table or stand for supporting the sewing machine 2.

3 indicates the usual driving shaft, 4 the belt pulley and 5 the balance wheel all as usual.

Beneath the table 1 is fastened the motor 6 in such relation to the sewing machine that the grooved belt pulleys on the sewing machine and the motor will lie in the same plane. The motor 6 comprises two parallel frame plates 7 spaced apart by posts 8 and connected rigidly together by nuts 9 screwed on the reduced ends of said posts, or by bolts, screws, or other suitable means. Riveted to the frame plates 7 at the top are brackets 7^a

by means of which the motor is attached to the table 1. If preferred, the frame plates themselves may be bent and fastened directly to the stand. Journaled in the frame plates 7 are two horizontal winding shafts 10 and 10^a, each shaft carrying respectively a flat helical driving spring 11 and 11^a attached at their inner ends in the usual manner to the shafts and at their outer ends to the posts 8 or other portions of the frame. A prime gear wheel 12 is mounted to turn freely on the shaft 10 but connected to turn therewith in one direction by means of the usual ratchet and pawl device 13. A similar prime gear wheel 12^a and pawl and ratchet connection are mounted on the winding shaft 10^a.

The prime gear wheels 12 and 12^a engage with and rotate, respectively, pinions 14 and 14^a fixed on second or intermediate shafts 15 and 15^a which shafts also carry, respectively, second gear wheels 16 and 16^a. A third or auxiliary shaft 17 journaled between the shafts 15 and 15^a has fastened thereon a third gear wheel 18 and a pinion 19, the latter in engagement with both second gear wheels 16 and 16^a. The third gear wheel 19 rotates a pinion 20 on the fourth or driving shaft 21 which carries a grooved belt pulley 22 outside the frame 7. From the grooved pulley 22 a belt 23 passes to the grooved pulley 4 on the sewing machine. The winding shafts 10 project beyond the frame plate 7 on the outer side of the motor and are squared to receive a winding key.

By the use of two springs for driving the band wheel through arrangement of gearing just described, the necessary power and speed are obtained for running machines requiring little power. Should greater power with the same speed be needed more than two spring driven shafts can be used.

The first cost of a motor such as described is slight and the running expense is practically nothing. When in use a casing, indicated by the dotted line 24, will inclose the motor to protect it from dust and prevent clothing and material being sewed from catching in the gearing.

The speed of the motor is regulated by means of a brake lever 25 pivoted at one end to the frame plate 7 and swiveled at its other end to a vertical rod 26 threaded at its upper end and extending through a threaded nut 27 seated in a depression in the table 1

near the balance wheel 5. A button 28 is fastened on the upper end of the rod 26, the rotation of which operates the brake lever. A disk or collar 29 is rigidly secured on the shaft 21 of the grooved pulley under the brake lever so that as the latter is moved, pressure on the disk or collar 29 is increased or diminished and the speed of the motor changed accordingly.

10 Having described our invention, what we claim as new and desire to secure by Letters Patent is:

The combination with a supporting table, of pairs of oppositely disposed angle-brackets rigidly mounted upon the lower face thereof; spaced frame plates disposed between the angle brackets and having abutment along their upper edges with the lower face of the table; posts extending through the frame plates and terminally mounted in the angle brackets of each pair, to hold the frame plates in abutment with the table; a driving shaft terminally journaled for rotation in the lower portions of the frame plates, midway between the lateral edges thereof; an auxiliary shaft terminally journaled for rotation in the frame plates and vertically alined with the driving shaft; a pair of intermediate shafts, disposed in a common horizontal plane symmetrically with respect to the plane of the auxiliary and driving shafts, and terminally journaled for rotation in the frame plates above the driving shaft; a pair of winding shafts disposed

above the intermediate shafts in a common horizontal plane symmetrically with respect to the plane of the auxiliary and the driving shafts; helical springs attached at their outer ends to the posts and at their inner ends attached to the winding shafts; prime gear wheels journaled for rotation upon the winding shafts and spaced peripherally from the lower face of the table; pawl and ratchet mechanisms assembled with the prime gear wheels and with the winding shafts; pinions fixed on the intermediate shafts and meshing with the prime gear wheels; gear wheels fixed on the intermediate shafts; a pinion fixed on the auxiliary shaft and meshing with the gear wheels of the intermediate shafts; a gear wheel fixed on the auxiliary shaft; a pinion fixed on the driving shaft and meshing with the gear wheel of the auxiliary shaft; the driving shaft being terminally extended beyond the frame plates; a belt pulley fixed to the extended portion of the driving shaft; and brake mechanism to engage the driving shaft.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

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Witnesses:

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CHAS. SHROPSHIRE.