

Feb. 24, 1959

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2,874,583

DRIVING DEVICES FOR SEWING AND OTHER MACHINES

Filed Nov. 28, 1955

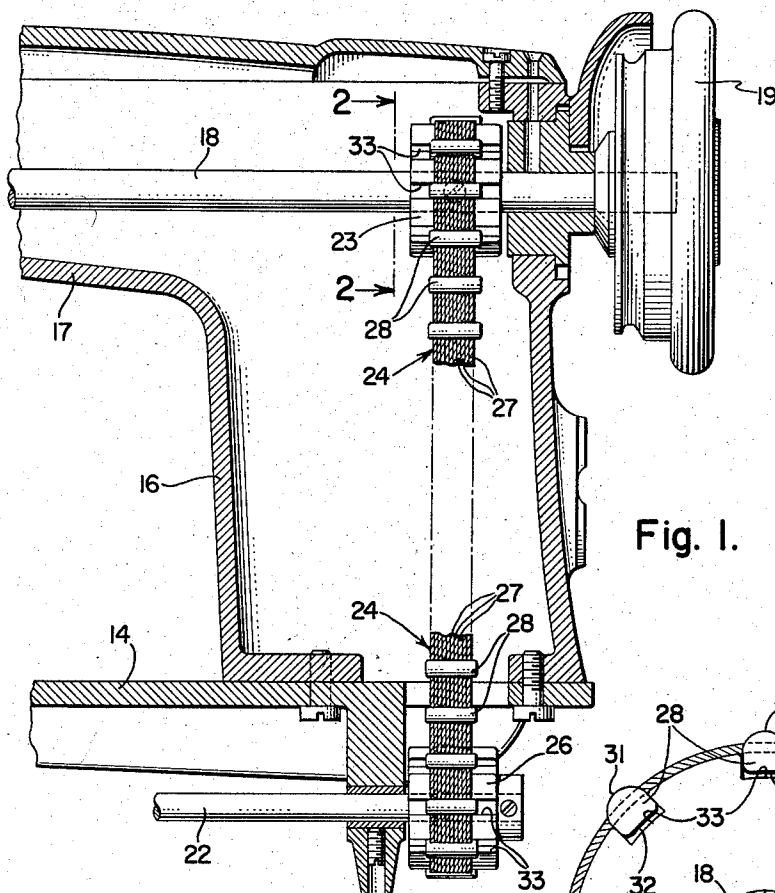


Fig. 1.

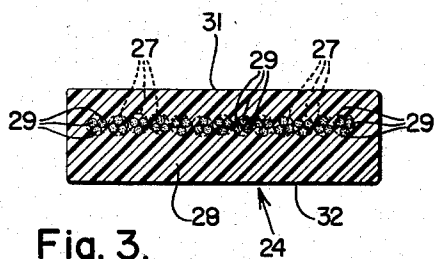


Fig. 3.

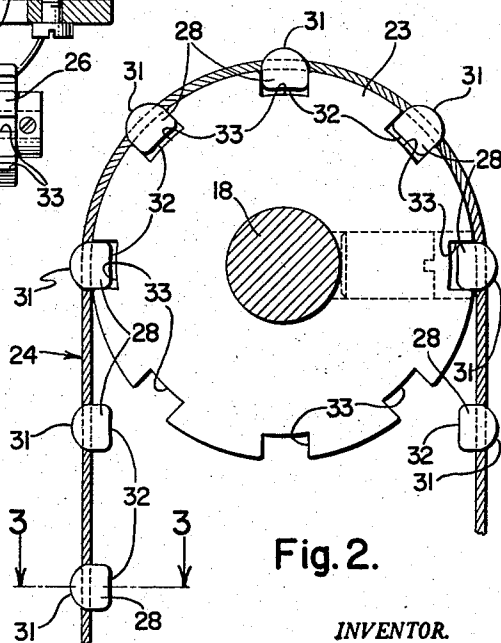


Fig. 2.

WITNESS

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DRIVING DEVICES FOR SEWING AND OTHER MACHINES

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Application November 28, 1955, Serial No. 549,443

Claims priority, application Great Britain
November 7, 1955

4 Claims. (Cl. 74—231)

This invention relates to improved driving means for starting, accelerating, driving, decelerating and stopping, in perfect synchronism, two separate mechanisms of sewing or like machines.

The expired United States Patent No. 667,830, issued February 12, 1901, indicates that it is old and well known to drive two parts of a sewing machine in synchronism by means of a belt having clips designed to engage grooves appropriately formed in pulleys. In the past it has been customary to manufacture clip belts from one continuous linen cord having a sufficient number of turns wound in side-by-side relationship to form a flat belt of the desired width, the side-by-side relationship of the turns being maintained by means of metallic clamps or clips of the type shown in Patent No. 667,830 supra. In the past it has been customary to form the belt carried clips from steel or other form of heavy metallic wire. However, it has been found that the weight of the metallic clips carried by the belt creates such high inertia that the sewing or other machines driven by the types of drives heretofore used cannot be started, accelerated, decelerated and stopped at the highest desirable rate. Thus, the primary object of the present invention is to provide, in a sewing machine or the like, a driving means which will permit sewing or other machines to be started, accelerated, decelerated and stopped at higher rates than has, heretofore, been practical.

Another object of the invention is to provide an improved clip belt.

Still another object of the invention is to provide driving devices for a sewing or like machines having improved clip belts.

A further object of the invention is to provide an improved driving means for sewing and the like machines, which will be less expensive to produce than similar driving means heretofore used.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations, and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

In the drawings:

Fig. 1 is an elevational sectional view of a portion of a sewing machine with a clip belt embodying the present invention,

Fig. 2 is an enlarged fragmentary sectional view taken on the line 2—2 of Fig. 1, and

Fig. 3 is an enlarged sectional view taken on the line 3—3 of Fig. 2.

Referring in more detail to the drawings, the portion of the sewing machine shown in Fig. 1 comprises a conventional bed-plate 14 from which rises the hollow standard 16 of a bracket-arm 17. A main or arm-shaft 18 is rotatably journaled in the bracket-arm 17, this shaft

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18 being driven by means of a combination driving and hand wheel 19. A bed-shaft 22 is rotatably supported below the bed-plate 14 in such a manner as to be parallel to the arm-shaft 18.

A pulley 23 is suitably secured to and driven by the arm-shaft 18. The pulley 23 drives a belt 24, and the belt 24 drives a pulley 26 secured to one end of the bed-shaft 22, the pulley 26 driving the bed-shaft 22 in synchronism with the arm-shaft 18. As shown in the drawings, the pulleys 23 and 26 are of substantially equal diameter and therefore the bed-shaft 22 will be driven at the same speed as the arm-shaft 18. However, it will be understood that differently sized pulleys may be employed thereby driving the bed-shaft at a greater or lesser speed than the arm-shaft.

In accordance with the present invention, the driving belt 24, used to drive the bed-shaft pulley 26 from the arm-shaft pulley 23, comprises an endless band preferably formed from one continuous linen cord whose successive turns 27, 27, 27 are laid closely together in side-by-side relationship, a sufficient number of the turns 27 being used to provide a belt having the width desired. However, if desired, the belt 24 may be formed from separate turns placed in side-by-side relationship. The side-by-side turns 27, which constitute the complete belt, are held together by means of a plurality of spaced non-metallic plastic clips 28 molded directly to the turns 27 in such a manner that the plastic body of the clips 28 enters all of the interstices between the separate turns 27 and in the turns per se, these interstices being indicated generally in Fig. 3 by the numerals 29. It will be appreciated that this provides a strong bond between the clips 28 and the turns 27. If desired, the non-metallic clips 28 may be formed from either thermosetting or thermoplastic materials, but preferably the non-metallic clips 28 will be formed from a plastic having properties similar to the properties ordinarily associated with the plastic commonly known as nylon and chemically known as a polyamide. Another plastic material, which may be used to form the clips 28, is known by the name of Alkathene and chemically as polyethylene.

As best seen in Fig. 2, the clips 28, in outline, are substantially the same shape as the capital letter D, thereby having a rounded top 31 and a squared base 32. The squared base 32 of the clips 28 enter grooves 33 formed in the pulleys 23 and 26, the grooves 33 being equally spaced around the circumference of the pulleys and each groove extending widthwise thereof. If desired, the pulleys 23 and 26 of the present invention may be formed from a comparatively soft and lightweight material, as for example, aluminum or magnesium.

By the use of a clip belt having clips formed from a plastic material, such as nylon or Alkathene, there has been provided a novel and improved drive for sewing machines and the like, which is superior to drives heretofore available. Previous driving devices which have employed steel or iron clips have been undesirable because the weight of the relatively heavy metallic clips has caused the previous driving devices to have such high inertia that the rate of starting, accelerating, decelerating and stopping of the previous driving devices has been relatively slow.

Having thus set forth the nature of the invention, what I claim herein is:

1. A driving belt for a sewing or other machine formed from a plurality of turns of cord of textile fiber laid in side-by-side relation, and providing interstices between side-by-side turns, and a plurality of spaced one-piece pulley engaging clips molded directly to embrace said plurality of turns, each of said clips comprising integral top, bottom and side portions forming a complete one-piece band around the side-by-side turns, the upper and

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lower portions of said clips being connected by integrally formed portions of said one-piece clips which integrally formed portions extend through the interstices between said side-by-side turns.

2. A driving belt for a sewing or other machine formed from a plurality of turns of cord of textile fiber laid in side-by-side relation, and providing interstices therein, and a plurality of spaced one-piece pulley engaging clips molded directly to embrace said plurality of turns of cord, each of said clips comprising integral top, bottom and side portions forming a complete one-piece band around the turns, the top and bottom portions of said clips being connected by integrally formed portions of said one-piece clips, which integrally formed portions extend into the said interstices.

3. A driving belt for a sewing or other machine formed from a plurality of turns of cord of textile fiber laid in side-by-side relation, and providing interstices in the individual turns and also providing interstices between side-by-side turns, and a plurality of spaced one-piece pulley engaging clips of a polyamide material molded directly to embrace said plurality of turns of cord, each of said clips comprising integral top, bottom and side portions forming a complete one-piece band around the turns, the upper top and bottom portions of said clips being connected by integrally formed portions of said one-piece clips which integrally formed portions extend through the interstices between said side-by-side turns, and portions of said clips integral with the top, bottom and side portions thereof entering the interstices in the individual turns.

4. A driving mechanism for driving in perfect synchronism a pair of shafts, said driving mechanism com-

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prising a first pulley secured to one of said shafts and having a plurality of widthwise extending grooves equally spaced around the circumference of said pulley, a second pulley secured to the other of said shafts and said second pulley having a plurality of widthwise extending grooves equally spaced around the circumference of said second pulley, and a driving belt for drivingly connecting said two pulleys, said driving belt being formed from a plurality of turns of textile fiber laid in side-by-side relation, and providing interstices between side-by-side turns, and a plurality of equally spaced one-piece clips molded directly to embrace said plurality of turns, and said clips being adapted to engage said widthwise extending grooves formed on said first and second pulleys, and each of said clips comprising integral top, bottom and side portions forming a complete one-piece band around the side-by-side turns, and top and bottom portions of each of said clips being connected by integrally formed portions of said one-piece clips which extend through the interstices between said side-by-side turns, and each of said clips being so constructed and arranged that the portions of each clip which extend through the interstices between the side-by-side turns are integral with the external portion of the clip which engages the widthwise extending grooves of said pulleys.

References Cited in the file of this patent

UNITED STATES PATENTS

667,830	Steward	Feb. 12, 1901
1,655,920	Roderwald	Jan. 10, 1928
2,358,534	Perry	Sept. 19, 1944
2,541,790	Sugden	Feb. 13, 1951