

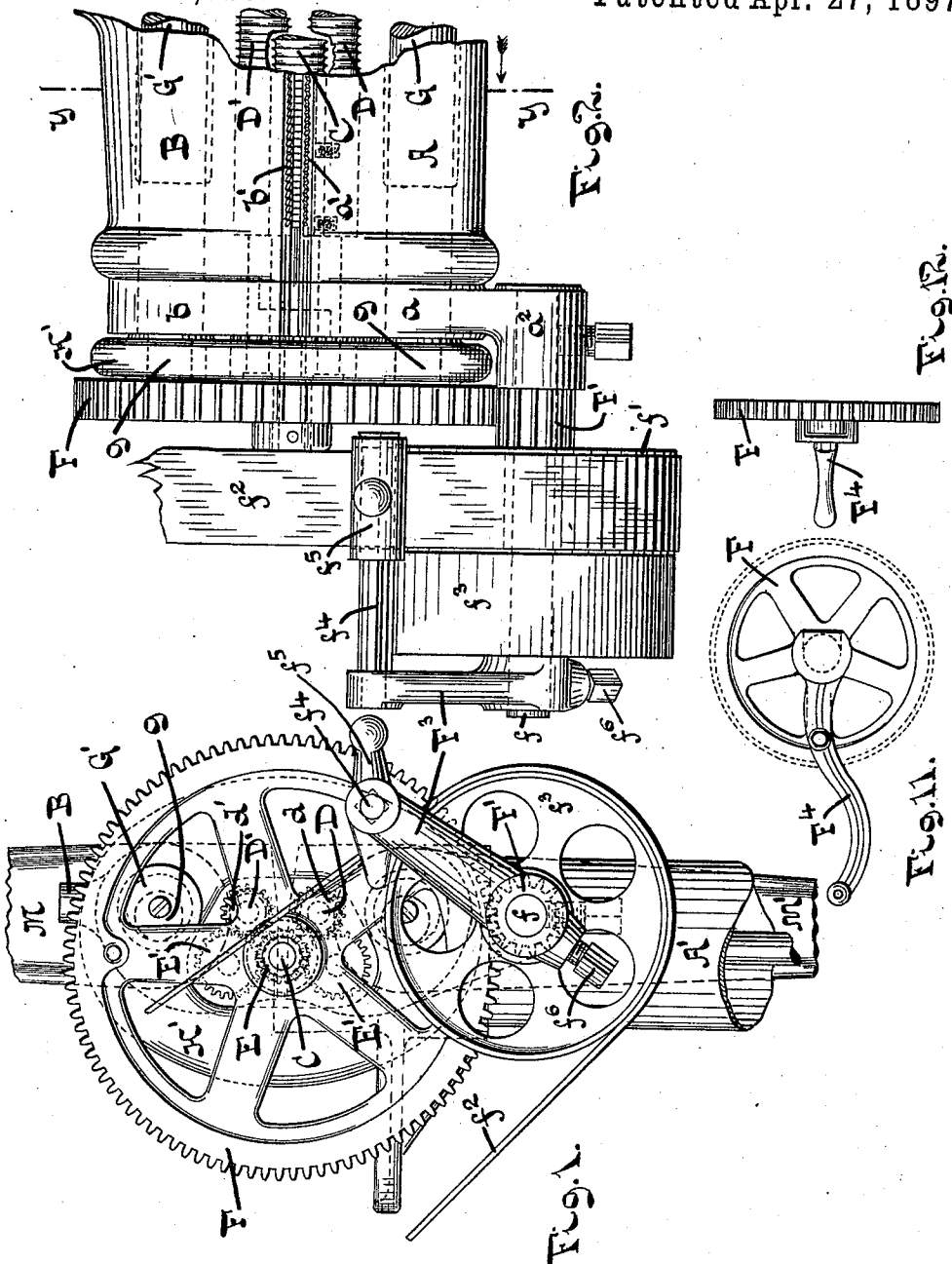
(No Model.)

4 Sheets—Sheet 1.

J. H. TEMPLIN & K. H. TERNSTEDT.
COIL CLASP AND APPARATUS FOR FORMING SAME.

No. 581,316.

Patented Apr. 27, 1897.



Witnesses.

W. M. Stewart
Allen Bucke

Inventors:

Joseph H. Templin,
Klas H. Ternstedt.

by J. H. Stewart
Attorney.

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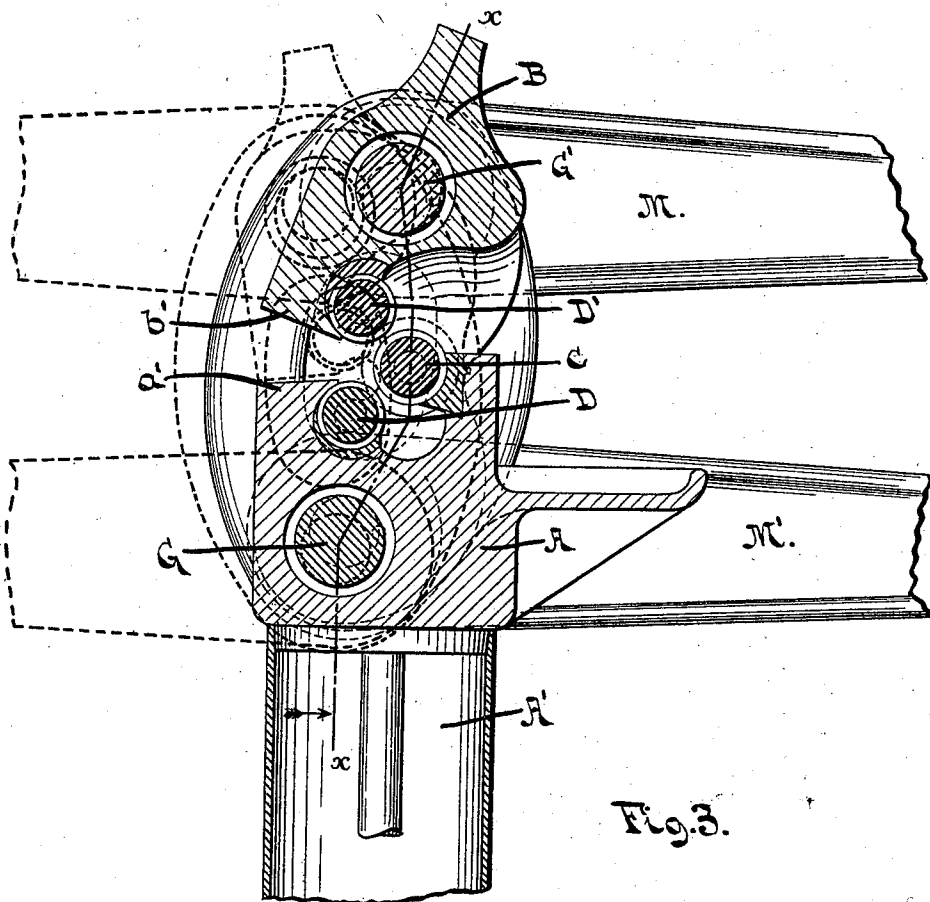


Fig. 3.

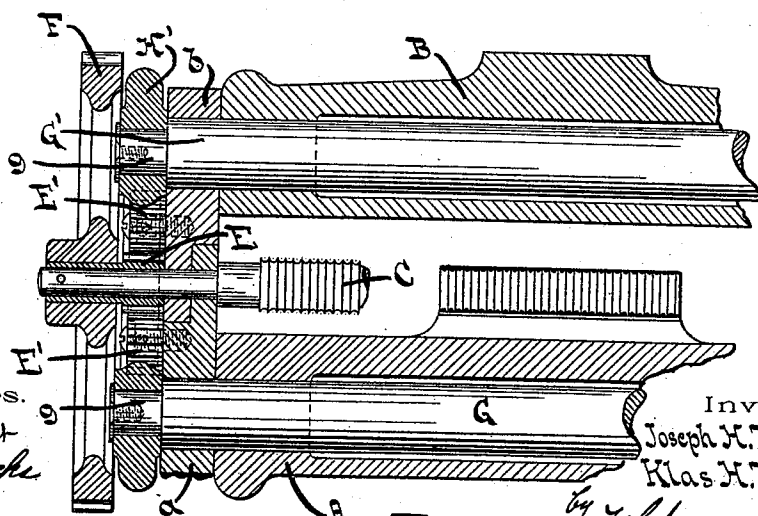


Fig. 4.

Witnesses.
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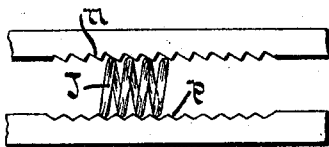
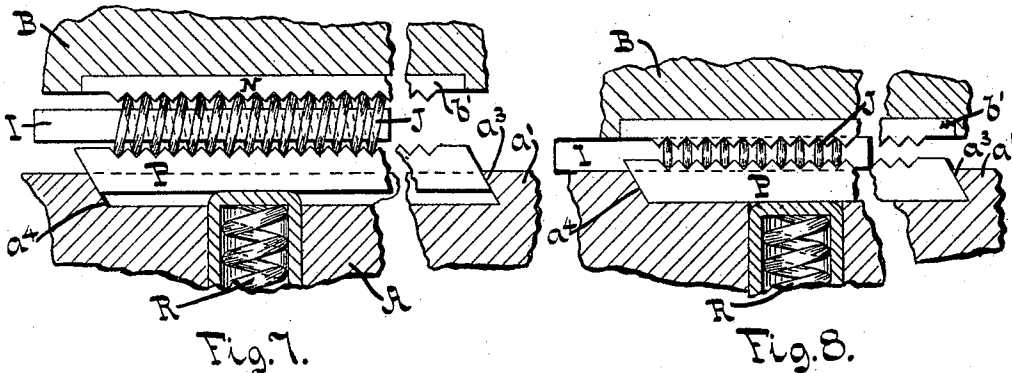
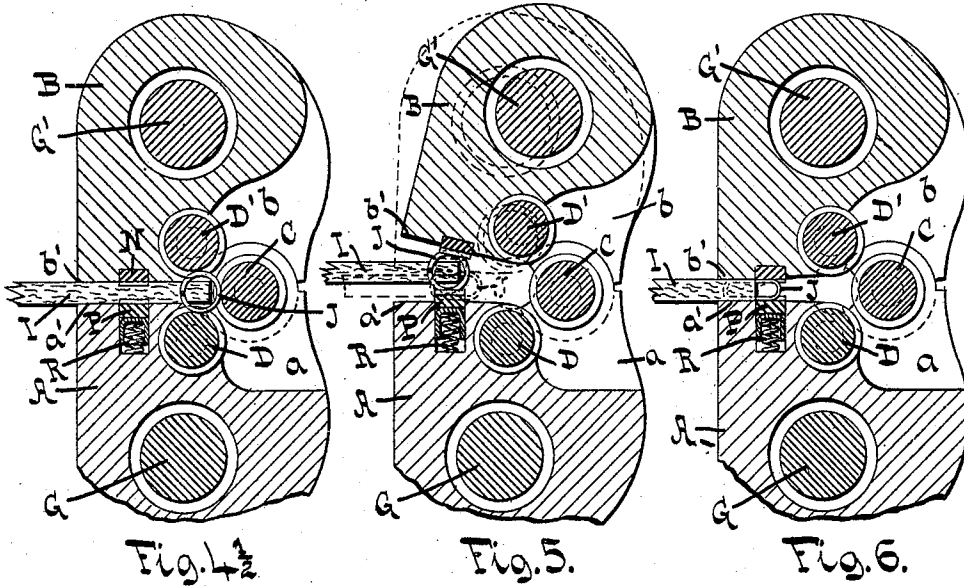
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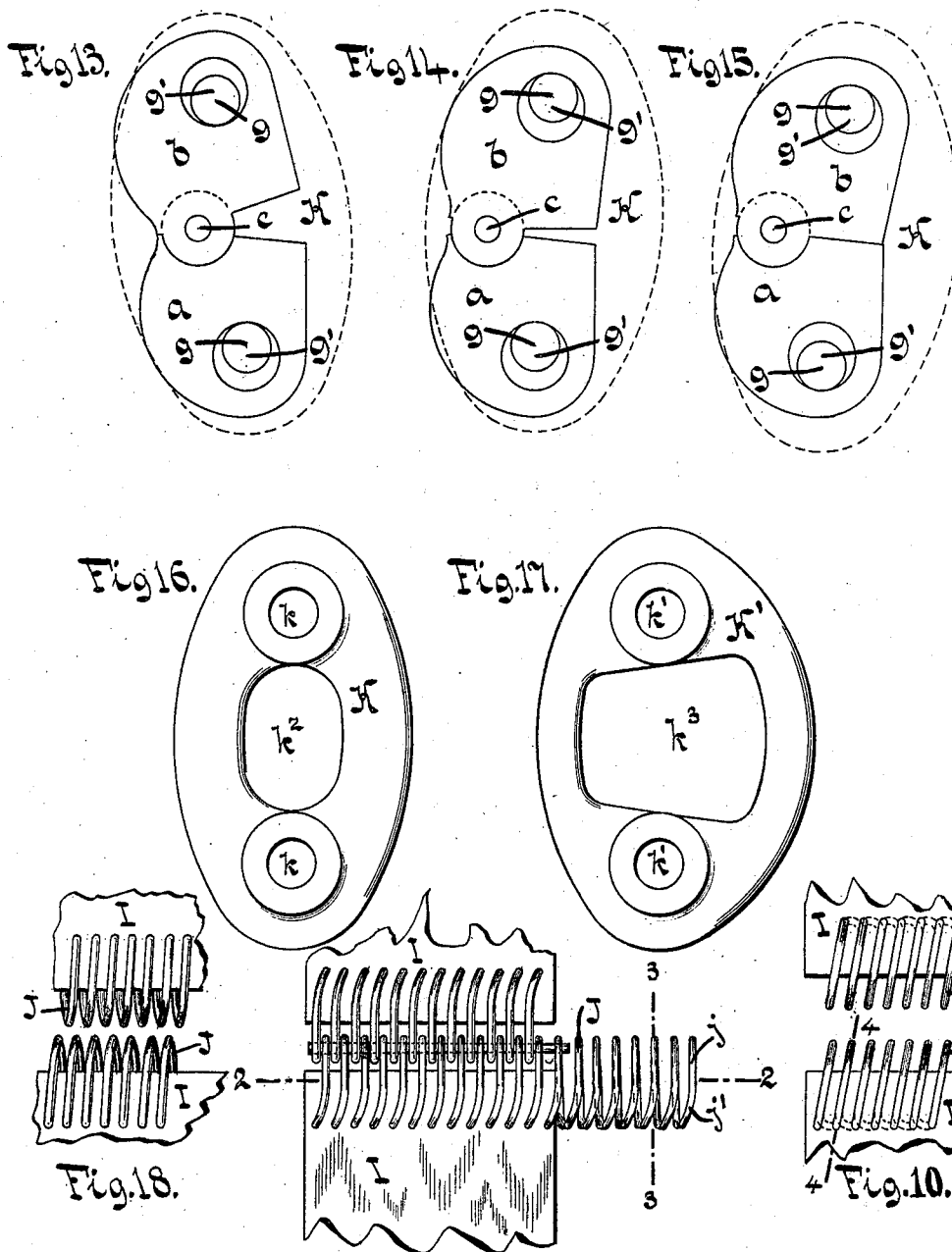
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D. M. Stewart
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Fig. 19.

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[Signature]

Attorney.

UNITED STATES PATENT OFFICE.

JOSEPH H. TEMPLIN AND KLAS H. TERNSTEDT, OF BIRDSBOROUGH, PENNSYLVANIA, ASSIGNORS TO THE DIAMOND DRILL AND MACHINE COMPANY, OF SAME PLACE.

COIL-CLASP AND APPARATUS FOR FORMING SAME.

SPECIFICATION forming part of Letters Patent No. 581,316, dated April 27, 1897.

Application filed June 22, 1896. Serial No. 596,457. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH H. TEMPLIN and KLAS H. TERNSTEDT, citizens of the United States, residing at Birdsborough, county of Berks, State of Pennsylvania, have invented certain Improvements in Coil-Clasps and Apparatus for Forming the Same, of which the following is a specification.

Our invention relates particularly to improvements in "coil-clasps" of the class shown and described in Patent No. 433,791, granted to Calvin Jackson August 5, 1890, and also to improvements in apparatus for applying coil-clasps, such as is shown in Patent No. 482,965, granted to Calvin Jackson September 20, 1892.

The coil-clasp referred to is especially useful in connecting the ends of belts employed in driving machinery, a coil being inserted in each abutting edge of the belt and the projecting portion of each coil overlapping and meshing with the other, so as to permit the passage of a uniting rod or strip. In order that the connecting-coils may thus mesh, however, it has been necessary to employ right and left hand coils, so that the angle of the rounds due to the pitch of the coils may not prevent them from meshing together as required.

One object of our invention is to provide a coil which will dispense with the right and left hand construction and the disadvantages incident thereto; and a further object is to provide an improved machine adapted to produce the novel form of coil referred to.

The invention is fully described in connection with the accompanying drawings, and the novel features are set out in the claims.

Figure 1 is a partial side elevation of a machine embodying our improvements. Fig. 2 is a partial front elevation of the same. Fig. 3 is a cross-sectional view on the line $y y$ of Fig. 2. Fig. 4 is a partial longitudinal section on the line $x x$ of Fig. 3. Fig. 4 $\frac{1}{2}$ is a cross-sectional view showing the belt clamped between the jaws and the wire coil being inserted into the edge of the same. Fig. 5 is a similar view showing the inserted coil engaged between the jaws preparatory to flattening the same, and also indicating in dotted lines

the flattened coil. Fig. 6 shows the belt drawn forward to press the flattened rounds of the coil into the belt material. Fig. 7 is a partial sectional elevation corresponding with Fig. 5, and Fig. 8 is a similar view corresponding with Fig. 6. Fig. 9 shows modified forms of serrated plates for the clamping-jaws. Fig. 10 shows a modified arrangement of our improved coil as applied to a belt. Figs. 11 and 12 show a hand-lever attachment for operating the rolls. Figs. 13, 14, and 15 are diagrams showing the different positions assumed by the clamping-jaws and connecting-yokes, the latter being indicated in dotted lines. Fig. 16 is a separate view of the yoke at one end of the machine, and Fig. 17 of the yoke at the other end. Fig. 18 shows an ordinary form of coil as applied to the adjoining edge of a belt. Fig. 19 shows our improved form of coil as applied to the belt by means of our machine.

A represents the fixed frame of the machine, which is preferably supported upon a suitable column A' , a portion of which is shown, and B is a movable frame hinged to the fixed frame by means of ears a and b at either end, through which pass the ends of the pivotal roll c . Additional rolls D and D' are mounted, respectively, in the fixed frame A and in the movable frame B and are geared with the pivotal roll C, from which they derive their rotary motion through idler-wheels $E' E'$, each of which meshes with the pinion E on the end of the roll C and also in one case with the pinion d on roll D and in the other with the pinion d' on roll D'. By rotating the pivotal roll C the other rolls D and D' are similarly rotated, no matter what position the hinged frame B is swung to with relation to the fixed frame A, and a coil of wire inserted between the rolls and having the latter closed down upon it, as shown in Fig. 5, will be itself rotated by the exterior pressure of the rolls, so as to cause the end of the coil to pass successively through a series of punctures made in a piece of belting or similar material which is held in its path.

The construction and operation thus far described are essentially the same as is fully shown, described, and claimed in the prior

patent, No. 482,965, referred to, Fig. 10 of which shows substantially the same three-roll arrangement. The position of the coil J with relation to the rolls when being rotated by the latter is indicated in dotted lines in Fig. 5, as stated, and the belt or other article I into which it is being inserted is clamped between the fixed jaw a' and the movable jaw b' of the fixed and hinged frames, respectively, during the puncturing and inserting operations.

Before describing fully the particular features of our present invention some further description of the general construction of the machine will be given. As shown, the pivotal roll C is driven by means of a belt f^2 on a pulley f' , which latter carries a pinion F' , meshing with a spur-wheel F, fixed to the roll. This pinion-pulley f' is mounted on a stud or shaft f , fixed horizontally to a lug a^2 , secured to the frame A, as is also a similar loose pulley f^3 . A shifting mechanism for the belt f^2 comprises a bracket F^3 , adjustably fixed by means of a set-screw f^6 to the projecting end of the stud f , and a guide-arm f^4 , fixed to said bracket and carrying a sliding shifter f^5 , the position of which may be adjusted with the greatest ease, thus affording a specially convenient and neat arrangement for the purpose.

The clamping of the belt I between the jaws $a' b'$ of the machine during the insertion of the coil J, as also the closing of the rolls upon the coil to cause the rotation of the latter, requires the use of a lever mechanism operating upon the hinged frame B. A third purpose, however, calls for a more powerful closing of these jaws, namely, the flattening of the inserted coil, as indicated in Figs. 6 and 7, which will be described later. This mechanism comprises two horizontal shafts G and G', passing loosely through the fixed frame A and the hinged frame B, respectively. These shafts have their opposite ends turned eccentric to the main portion of the shaft, and said eccentric ends pass into openings or bearings $k k' k' k'$ in yokes K K' at opposite ends of the machine. These yokes are open at the center, as indicated at k^2 and k^3 , so as to clear the ends of the rolls, the opening k^3 in the yoke K' being large enough to clear also the roll-pinions $d d'$ and the idlers E' E' at that end of the machine. The eccentric ends of these shafts are provided with separate levers M M', by the movement of either of which the distance apart of the centers $g' g'$ of the main portion of the shafts is increased or diminished, as indicated in Figs. 13, 14, and 15, without varying the distance from the pivotal point c , while the distance between the eccentric ends $g g$ of the shafts of course remains constant as fixed by the distance between the centers $k k' k' k'$ in the yokes, thus causing the opening or closing of the jaws. In Fig. 13 the latter are opened to their full extent. In Fig. 14 the upper lever and shaft only have been turned,

thus partially closing the jaws, and in Fig. 15 both have been operated to close the jaws to their greatest extent. This specific construction forms no part of the present invention, but is here described so as to enable the operation of the machine to be clearly understood.

Fig. 18 illustrates the difficulty which it is our main purpose to overcome—that is, the imperfect meshing of the projecting portions of ordinarily-formed coils. This is due to the gradual and uniform incline of the rounds of the coil, the deviation of which from a true plane is proportionate to the “pitch” or distance between the rounds. To overcome this trouble, we simply increase this deviation from a plane at right angles to the axis at one portion of each round, so as to allow the remaining portion to be maintained in said plane, as indicated in Fig. 19, where the line 22 represents the axis of the coil J; 33, a plane at right angles thereto; j , the portion of each round lying in said plane, and j' the portion of each round in which the bend away from said plane is concentrated. The portion of each round which projects beyond the edge of the belt, though preferably standing at right angles to the axis of the coil, as shown in Fig. 19, may have the plane inclined to said axis, as indicated at 4 4 in Fig. 10, and yet secure to some extent the advantage of our invention, an adjacent belt end being in such case moved into engagement with it in the direction of the inclined plane 4 4, as shown. The pull upon the belt, however, would in such case tend to bend the coil until the plane 4 4 coincided with the right-angled plane 3 3 of Fig. 19.

For the present purpose we give this form to the coil after it has been inserted as heretofore in the softer material by so arranging the clamping-jaws as to effect the desired change during the operation of flattening down the coil, as indicated in Figs. 4½ to 9. This we accomplish by providing the upper and lower jaws b' and a' with plates N and P having serrations spaced to correspond with the pitch of the coils. The upper one of these is rigidly fixed in the jaw b' some distance in from the face of the latter, while the lower one is preferably fitted into a recess in the jaw a' , which recess has inclined ends $a^3 a^4$, adapted to give a longitudinal movement to the plate as it is pressed down into the recess against backing-springs R, which normally raise it so that the rounds of an ordinary coil J are naturally seated in the serrations, as shown in Figs. 5 and 7. When the jaws are pressed together to flatten the coil, the serrated plate P is moved longitudinally a distance equal to half the pitch of the coil, carrying the engaged portion of each round of the coil with it, while the upper portion is held in the laterally-immovable plate N, the effect of which is to change the form of the coil, as already described and as shown in Fig. 19. To complete the operation, the belt is then re-

leased and moved slightly outward to bring the partially-flattened coil under the flat portion of the jaw a' outside of the serrated plates, as indicated in Fig. 6, which shows the jaws again closed upon it to press the rounds of the coil more completely into the yielding material of the belt, so as to make it practically flush with the surface of the latter. In Fig. 9 we have indicated a more simple arrangement of serrated jaw-plates in which both are adapted to be rigidly fixed in their respective jaws, and the desired effect upon the form of the coil is produced by causing the rounds of the latter during the closing of the jaws to slide upon the inclined sides n p of the serrations into the roots of the latter, which are set directly opposite each other in the same vertical plane. This construction, however, does not provide the yielding clamping-surface of the preferred construction which enables varying thicknesses of belts to be firmly held during the inserting of the coils.

What we claim is—

1. A coil, having a portion of each of its rounds set back into a true plane having a fixed angle to the axis of the coil, the pitch or bend being concentrated within the remaining portion of each round, as set forth.
2. In a seam or union for belts, bags, &c., coils engaging the adjoining edges thereof and having a portion of each round set back into a true plane having a fixed angle to the axis of the coil, the pitch or bend being concentrated within the remaining portion of each round, in combination with a means for holding the same in interlocked engagement.

3. A wire-coil machine having clamping-jaws provided with serrations adapted to engage the rounds of the coil and simultaneously flatten the same and set them into parallel planes substantially as set forth.

4. A wire-coil machine having top and bottom jaws provided with serrations adapted to engage the rounds of the coil, and means for moving one of said jaws transversely to change the set of the rounds substantially as set forth.

5. A wire-coil machine having top and bottom clamping-jaws adapted to engage the rounds of the coil, one of said jaws having a spring backing and means for moving it transversely substantially as set forth.

6. The combination with the spur-gear F and the shaft, and the pinion-pulley f' and loose pulley f^3 mounted on a stud f , of a belt-shifting mechanism for said pulleys, comprising a bracket F^3 adjustably fixed to the projecting end of said stud and carrying a guide-arm f^4 , and a belt-shifting device f^5 sliding on said arm.

7. A wire-coil machine having top and bottom clamping-jaws one of which is provided with a movable plate having a spring backing arranged to normally raise the plate toward the opposing jaw, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH H. TEMPLIN.
KLAS H. TERNSTEDT.

Witnesses:

ADAM L. OTTERBEIN,
W. G. STEWART.