(No Model.)

C. C. CAMPBELL.

DRIVING BELT.

No. 277,678. Patented May 15, 1883.

FIG. 1.

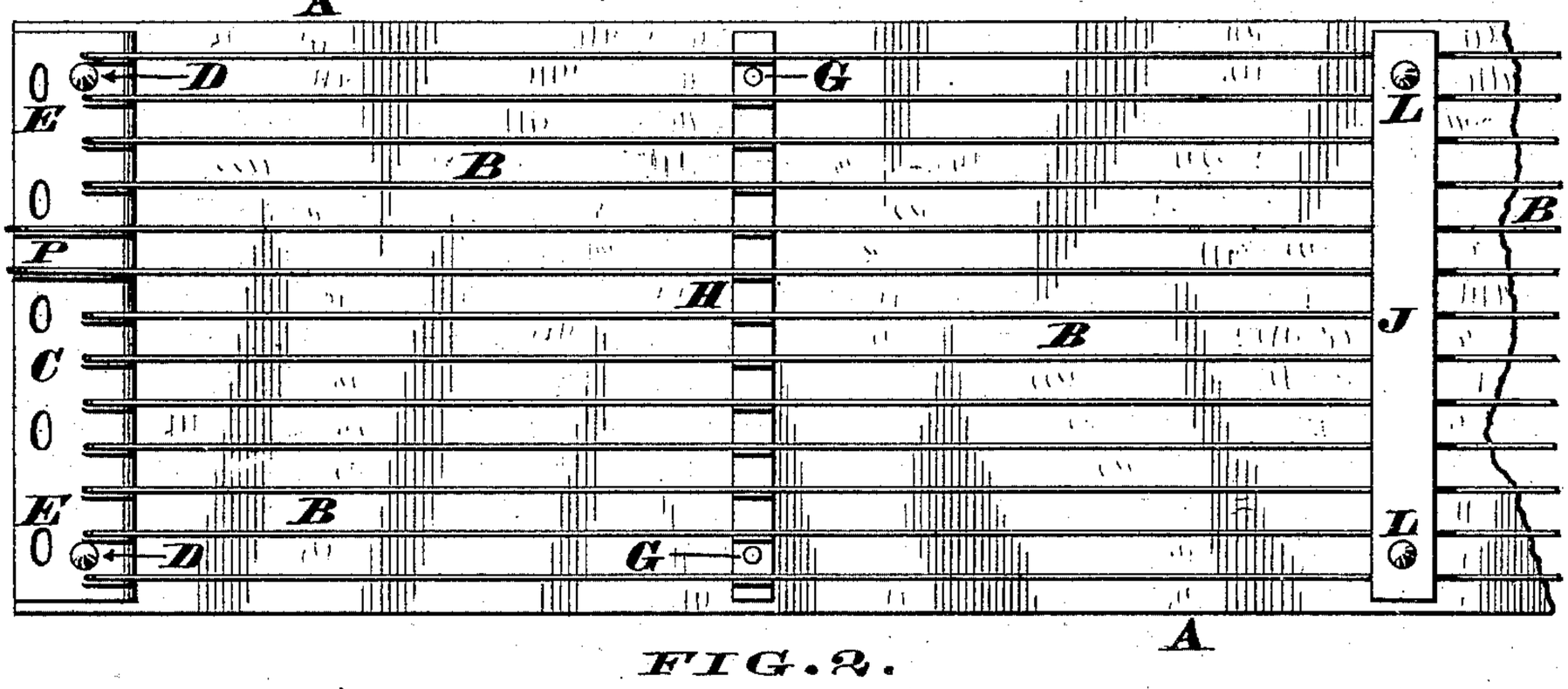


FIG. 2.

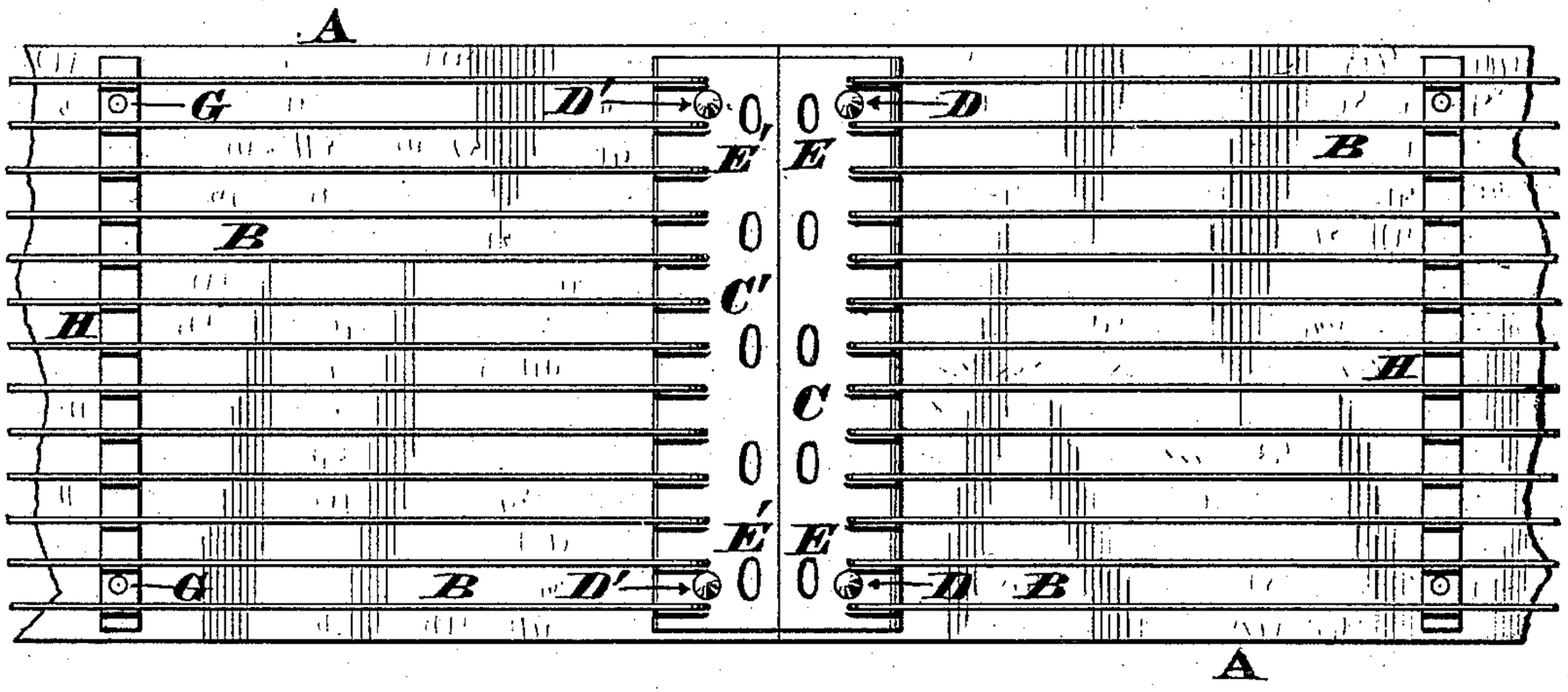


FIG. 3.

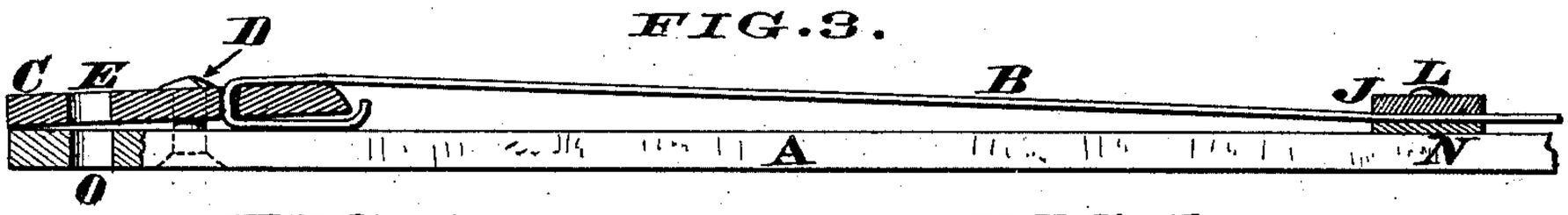


FIG. 4.

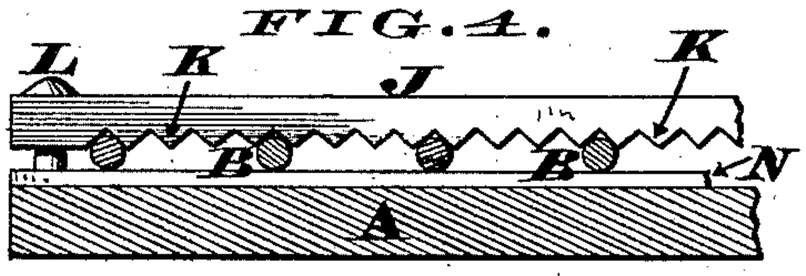


FIG. 5.

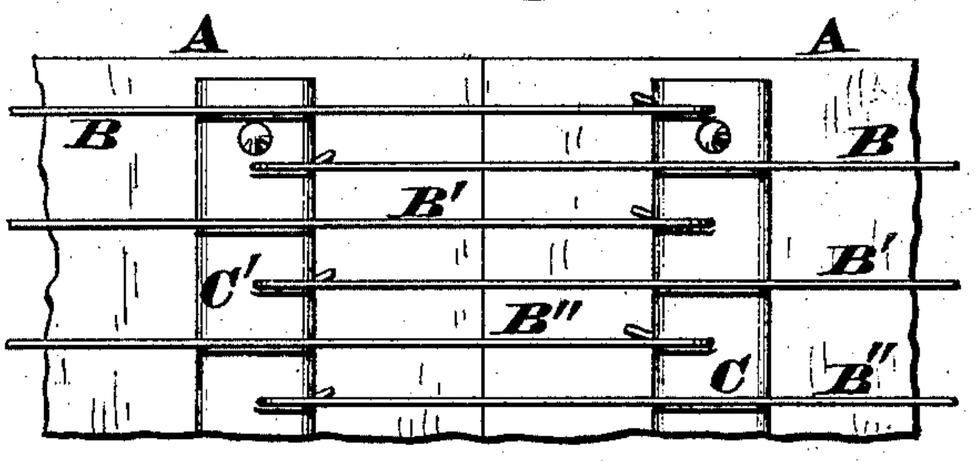
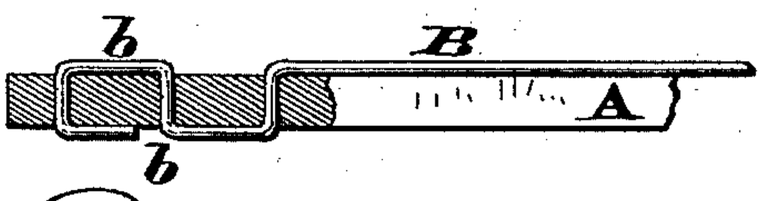


FIG. 6.



Attest
James O'Neill,
John. B. Porter.

Inventor.
Charles C. Campbell
by James N. Layman
his Attorney.

UNITED STATES PATENT OFFICE.

CHARLES C. CAMPBELL, OF CINCINNATI, OHIO.

DRIVING-BELT.

SPECIFICATION forming part of Letters Patent No. 277,678, dated May 15, 1883.

Application filed January 15, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. CAMPBELL, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Driving-Belts, of which the following is a specification.

This invention relates to those driving-belts which are strengthened by having a series of parallel wires applied longitudinally to their outer surfaces; and my improvement comprises a novel combination of transverse washers and grooved keepers that hold the wires in place and prevent them cutting into the belt, the opposite ends of said wires being secured in any suitable manner, but preferably with slotted clip-plates, as hereinafter more fully described, and pointed out in the claims.

In the annexed drawings, Figure 1 is a plan of a portion of a driving-belt embodying my improvements. Fig. 2 is another plan, but showing the two ends of said belt in contact with each other preparatory to being coupled together. Fig. 3 is an enlarged vertical section through one end of the belt. Fig. 4 is a transverse section of the same. Fig. 5 is a plan showing how the strengthening-wires may be used as coupling or lacing devices. Fig. 6 is a vertical section of a modification of my invention.

A represents a belt made of leather or rubber, or any other material or composition of materials sufficiently flexible to be used for communicating motion to pulleys, wheels, and other similar mechanical appliances. Applied to the outer surface of this belt, and disposed longitudinally of the same, are wires B, of which any suitable assemblage may be used; but in practice I have employed about seventy-five strands of No. 14 steel wire to a sixteen-inch belt. This proportion, however, is not arbitrary, but may be varied to suit any special requirement. The ends of these wires can be fastened to the belt as circumstances may dictate; but the following arrangement is preferred:

C represents a plate or clip attached at or near one end of belt A, and on the outer side of the same, by means of rivets D or otherwise, said clips being perforated to admit the wires B. Furthermore, this clip is slotted at E to receive the lacings or other coupling devices wherewith the ends of belt A are fastened together. Secured to the outer surface of the belt with rivets G are thin sheet-metal plates or washers H, of which any suitable number may be used, depending upon the length of the belt and the diameter of the pulley or drum around which it is to be passed. These bearing-plates serve as guards or fenders to prevent the wires cutting into the substance of the belt, and in order to prevent said wires becoming entangled with each other I employ a number of keepers, J, whose under or effective surfaces are grooved, as shown at K in Fig. 4. These grooves or corrugations may be either angular or rounded, or any other shape capable of retaining the wires in their proper positions along the belt. The aforesaid keepers are secured to the exterior of belt A with rivets L.

N are washers interposed between the belt and the keepers J.

C′ represents the clip, applied to the opposite end of belt A with rivets D′, as seen in Fig. 2, said clip having slots E′, similar to the slots E.

O are perforations in the belt, said apertures being in line with the slots in the clips, so as to allow the lace-leathers to pass through these members A and C C′.

In constructing this preferred form of my belt the wires B are first cut the proper length, and their ends are then inserted in the perforations of clips C C′, and securely bent under the latter, as seen in Fig. 3. The washers H are now fastened to the belt, and the wires B being drawn very taut with machinery or otherwise, the clips C C′ are then applied to the opposite ends of the belt and fastened thereto with the rivets D D′. The keepers J and their washers N are then located at proper intervals and the belt is finished; but before it is mounted on the pulleys the two clips C C′ are brought in contact with each other, as seen in Fig. 2, and are united by lacings passed through the slots E E′ and O; or said clips may be united with hooks or any other convenient coupling devices; but instead of applying the wires as above described, their ends may first be attached to the clip C, and the latter then be riveted to the belt, after which act the washers H and keepers J may

be secured in position, thus affording a belt of any desired length. The belt can then be cut into sections to suit purchasers, and the other clip, C′, be fastened to the end of the wires thus severed, and finally attached to the section cut off from the coil.

Evidently a belt thus constructed will transmit as much power as an ordinary one of the same dimensions and material, as it is the flexible member A that affords the necessary friction for communicating motion from one pulley or other driving device to another. Furthermore, it is evident the wires B prevent any possible stretching or elongation of the belt proper, A, and consequently it will always retain the desired tension, no matter how long it may be used or how severely it may be tested.

When arranged as shown in Fig. 5 the perforated edges of clips C C′ are disposed in an opposite manner to the arrangement seen in Fig. 2; or, in other words, they face each other, in order that the wires may be so applied to said clips as to dispense with lacings or other special couplings. Here the wire B has one of its ends attached to the clip C, and after being passed helically around the belt A its other end is secured to the clip C′. The other wires, B′ and B″, are arranged in a precisely similar manner, and so on with as many as may be used. In this construction the slots E E′ O are omitted, the wires forming the only couplings between the abutting ends of the belt and affording double ties for the clips C C′.

In Fig. 6 the clip is omitted, and the end of the wire B is so engaged with belt A at *b* as to afford the desired security of said wire.

Another modification is seen at P in Fig. 1, where two wires are represented as simply bent around the clip C, thereby dispensing with special perforations in said clip to receive said wires. In this case the wires are held in place by having their concealed or bent ends clamped between the belt A and plate C; or the wires may be passed under instead of over the clips C C′ before being fastened thereto, and, if preferred, each wire may be composed of two or more strands twisted together.

Various other attaching devices may be substituted for those herein described; and therefore my invention is not to be limited to any special appliances for securing the ends of the wires to the belt proper, provided the grooved keepers and transversely-attached washers are employed. Finally, where it is stated in this specification that "the wires B are to be applied to the outer surface of the belt," the expression is to be construed as referring solely to the exterior of the flexible member A. In some cases, however, it may be advisable to protect the wires with an outer envelope or casing of leather or other flexible material.

I claim as my invention—

1. In combination with a driving-belt having a series of wires secured longitudinally of its outer surface, the grooved keeper J K, fastened to said belt for the purpose described.

2. The combination of driving-belt A, attached longitudinal wires B, and transverse washers H, which washers are secured to said belt for the object stated.

3. A driving-belt composed of a flexible member, A, external longitudinal wires, B, slotted clips C E C′ E′, transverse washers H, and grooved keepers J K, said washers and keepers being secured to the belt proper, as herein described, and for the purpose stated.

In testimony of which invention I hereunto set my hand.

CHARLES C. CAMPBELL.

Witnesses:

JAMES H. LAYMAN,

JOHN Q. PORTER.