

A. DOXFORD.
 PROCESS FOR FORMING DRIVING BLOCKS UPON MULTIPLE WIRE CABLES.
 APPLICATION FILED JAN. 10, 1911.

1,059,124.

Patented Apr. 15, 1913.

4 SHEETS—SHEET 1.

Fig. 1.



Fig. 4.

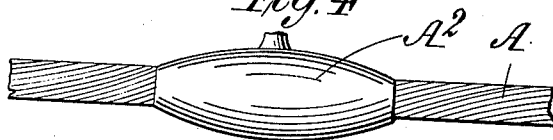


Fig. 3.

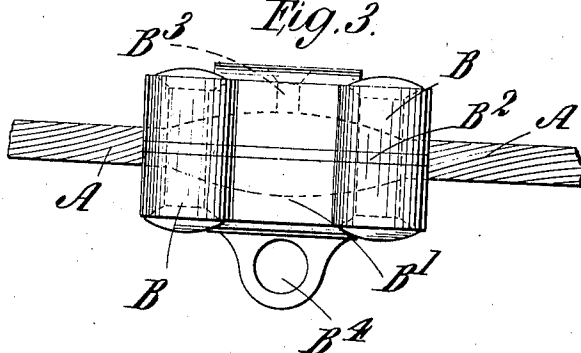
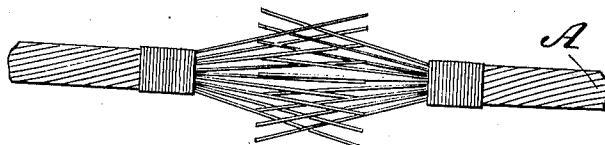


Fig. 6.



WITNESSES

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Fig. 2.

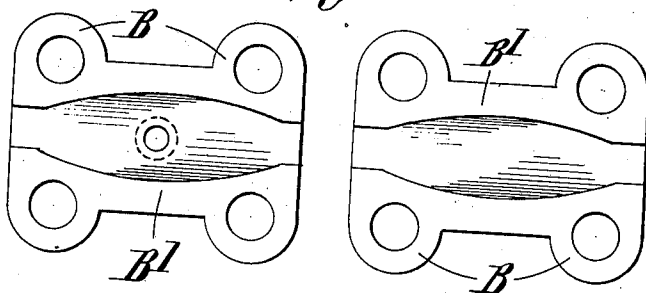


Fig. 5.

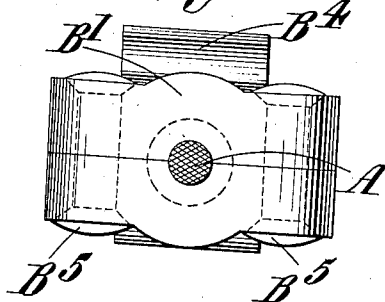


Fig. 8.

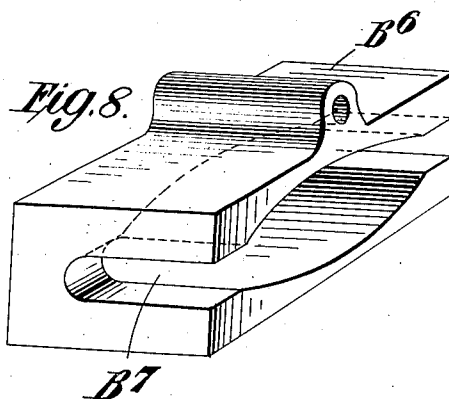
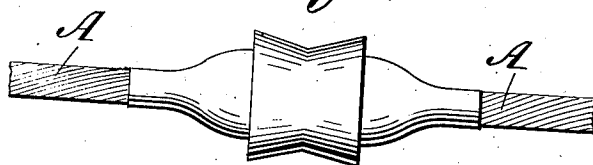


Fig. 7.



WITNESSES

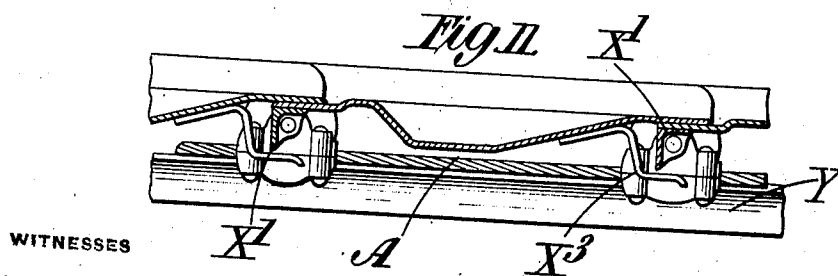
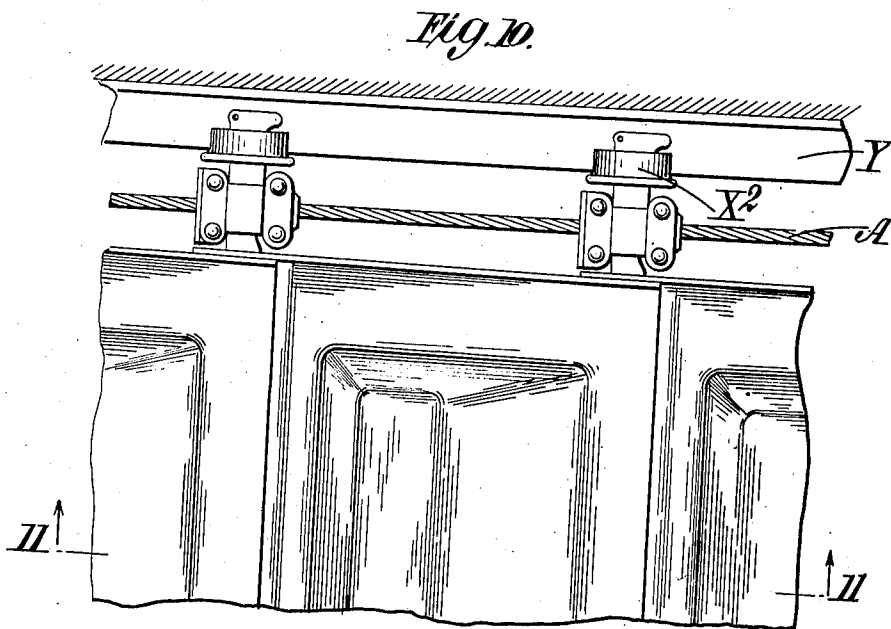
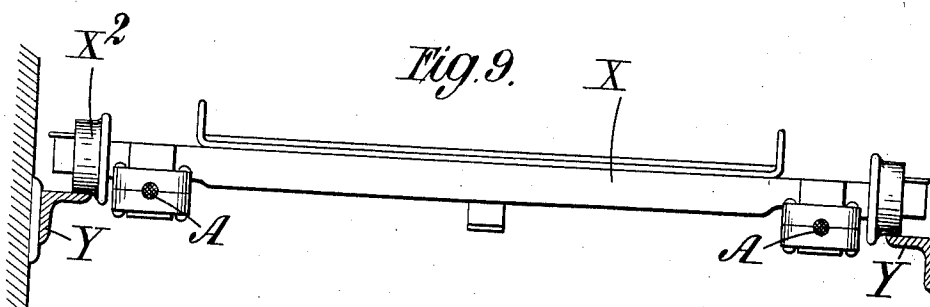
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WITNESSES

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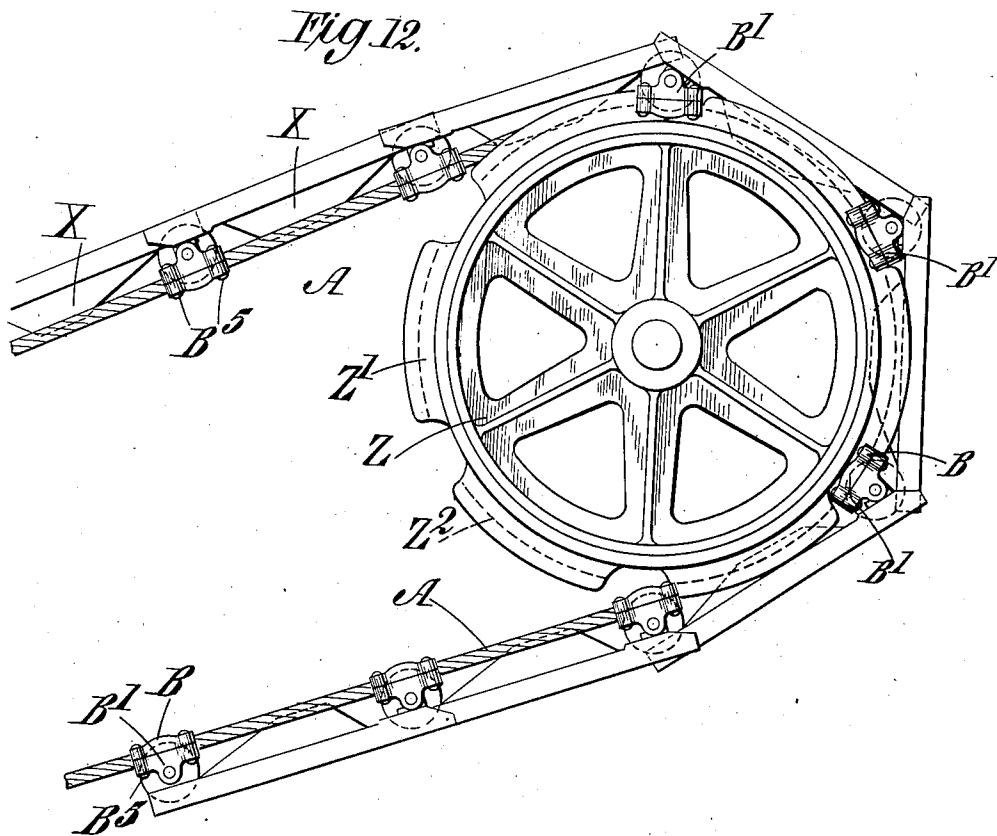
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Patented Apr. 15, 1913.
 4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

ARTHUR DOXFORD, OF SUNDERLAND, ENGLAND.

PROCESS FOR FORMING DRIVING-BLOCKS UPON MULTIPLE-WIRE CABLES.

1,059,124.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed January 10, 1911. Serial No. 601,901.

To all whom it may concern:

Be it known that I, ARTHUR DOXFORD, a subject of the King of England, residing at Sunderland, Durham, England, have invented certain new and useful Processes for Forming Driving-Blocks upon Multiple-Wire Cables, of which the following is a specification.

This invention is for improvements in or relating to conveyers wherein the carrying trays are attached to and propelled by multiple-wire cables and has particular reference to the means whereby driving connection is effected between the cables and such carrying trays.

The term carrying trays will be understood throughout the specification and claims to mean any plates or other devices whereby the material to be conveyed is moved forward.

As is well known the trays are usually secured to the chains or cables by fastening means which pass through the links of the chains or surround and grip the cables, or they are connected to driving-blocks formed upon the cable by casting metal around the latter. In some cases it has been proposed to open out the portions of the cable whereon the blocks are to be formed with a spike and pour the molten metal into and around such opened-out portion.

The present invention primarily relates to a process for the formation of driving-blocks upon a multiple-wire cable, consisting in (a) twisting that part of the cable to which the block is to be applied, in a direction contrary to its lay, and thereby producing a permanent "bird-caging" of the wires that is sufficient to allow free passage of the metal among the wires, (b) placing a mold around such open part, and (c) filling the mold with molten metal. As stated, the untwisting of the cable is such that a permanent "bird-caging" or opening-out of the wires or strands is obtained. It has been before proposed to untwist a wire cable to allow a length of hempen core to be removed prior to casting a block on it but the untwisting was not such as to obtain permanent bird-caging and recourse had to be had to a spike to drive and hold the strands apart during the pouring of the metal.

Other features of the invention relate to the attachment of divided casings to the

blocks in a particularly rigid and efficient manner.

The invention is particularly adapted for use in connection with a multiple-wire cable in which every wire is wound in one and the same direction, one on top of the other, as if the finished cable were intended to form a strand only of a larger cable; obviously the invention may also be used in connection with other forms of cable.

In the accompanying drawings—Figure 1 shows a portion of cable opened out prior to forming a block according to this invention; Fig. 2 shows the two halves of the mold or outer casing laid open; Fig. 3 is a side view of the mold or casing portions in position on the cable; Fig. 4 shows a block formed on the cable; Fig. 5 is an end view of the casing secured over the block; Fig. 6 shows two ends of a cable placed together prior to forming a block of different form from that shown in Fig. 4; Fig. 7 shows the block formed on a cable where the ends are arranged as in Fig. 6; Fig. 8 is a perspective view of a modified construction of mold or casing; Fig. 9 shows in elevation an end view of one of the trays mounted on the cables and side rails; Fig. 10 is a half plan of a completed portion of a conveyer; Fig. 11 is a section through the same on the line 11—11 of Fig. 10; and Fig. 12 is a side elevation showing the looped end of a conveyer in engagement with one of its driving sprockets.

Like letters indicate like parts throughout the drawings.

In Figs. 9, 10 and 11, the cables A are shown as having trays X secured to them so that as the cables are drawn along in any well known manner, the trays move with them carrying the material that it is desired to convey, and the present invention relates to the method of securing these trays or their equivalents to the cables A.

In Fig. 1, a portion of the cable is shown whereof a part A¹ has been bird-caged or opened out by twisting it in a direction contrary to its lay.

Fig. 2 shows a divided mold or casing B B¹, the inner portion of which is roughly shaped to the bird-caged part A¹ of the cable. This allows of an interlocking action between the casing and the enlargement formed on the cable and prevents the former

from sliding lengthwise along the cable when subjected to stress tending to cause such movement. To form a block on the cable whereby the trays may be fastened to the latter, the portion B¹ of the mold is placed beneath the cable and the portion B over it, one or more packing pieces B² being laid between the two parts. The mold portion B has in it a pouring orifice B³ and when the parts are in position, molten metal such as white metal is poured in and allowed to set so that a block A² (Fig. 4) is formed on the cable, the metal whereof not only adheres to the exterior of the cable but has penetrated between all the wires and thus is securely held in place. The mold B B¹ conveniently serves also as a casing that is finally secured permanently to the block, the part B¹ being uppermost when the cable is in use, and having an eye or bearing-lug B⁴ whereby the trays may be attached.

Fig. 5 shows the mold portions secured together by rivets B⁵ and before riveting, the packing piece B² is removed so that the two halves of the casing are forcibly brought together and thereby made to securely grip the block that is inclosed by them. Any number of these blocks may be formed on the cables, according to the number of trays the conveyer is intended to carry and each tray conveniently has secured at one end, a bar or axle X¹ of L-shaped cross-section but whose ends are journaled to pass through the eyes B⁴ of the blocks. The journaled ends project through the eyes B⁴ of the blocks and on the projecting portions are mounted flanged wheels or rollers X² which run upon rails Y that are provided for them as is common practice with conveyers. That end of each tray remote from the end carrying the axle X¹ laps over the neighboring tray and is provided with a depending tongue X³ that lies under the neighboring tray so that in this manner they are all articulated together.

In some cases, one of the blocks A² may be used to connect two loose ends of a cable in addition to serving the purpose of a driving block.

Fig. 6 shows two end portions of a cable whose end wires are opened out and intercalated or interspaced in a convenient manner prior to casting the block and Fig. 7 shows the form of block produced by this means. Obviously the wires may be laid in a different manner from that shown in Fig. 6, the ends being bent to conform with the shape shown in Fig. 1, for example, in which case the block, when cast, will be approximately the same in shape as the block A².

It will be readily understood that any shape block may be formed by using a mold whose interior has the shape it is desired that the block shall take, and whether the mold and casing are separate elements or

whether the casing also serves the purpose of the mold, the casing is always so shaped that its interior corresponds to the shape of the block and it can thus easily be fastened rigidly to the same while its exterior is so shaped as to enable the trays to be connected to it, as by the eye B⁴.

In some cases it may be preferred to form the casing in one piece instead of dividing it, but for this purpose one side must be open to admit the cable. Such a casing B⁶ is shown in Fig. 8 and it will be seen that the opening B⁷ extends from the center of the block out to one side so that the cable can be easily slipped into position. When the cable has been placed in position, sufficient molten metal is poured in to fill all the unoccupied space so that the open side is thereby closed as well as interstices of the open cable portion being filled.

The blocks inclosed in their casings B B¹ are conveniently employed to drive the cable in addition to driving the trays. For this purpose they are made to fit between the teeth Z¹ of end sprockets Z (Fig. 12). The teeth Z¹ are grooved at Z² to receive the cables A as will be readily understood and as the blocks lie between the teeth the sprocket can impart a positive drive to the cables by means of the blocks.

What I claim as my invention and desire to secure by Letters Patent is:—

1. The herein described process of forming a driving-block upon a multiple-wire cable at a point other than the end thereof, consisting in (a) twisting that part of the cable to which the block is to be applied, in a direction contrary to its lay and thereby producing a permanent "bird-caging" of the wires that is sufficient to allow free passage of the metal among the wires, (b) placing a mold around such opened part, and (c) filling the mold with molten metal.

2. The herein described method of forming driving-blocks upon a multiple-wire cable which consists in opening out a portion of the cable, surrounding the open portion with a casing composed of two sections, inserting packing material between the meeting surfaces of the two sections, filling the casing with molten metal and allowing the molten metal to set hard.

3. The herein described method of forming driving blocks upon a multiple-wire cable which consists in opening out a portion of the cable, surrounding the opened portion with a casing composed of two sections, inserting packing material between the meeting surfaces of the two mold sections, filling the mold with molten metal, allowing the molten metal to set hard, removing the packing material and securing the two sections of the casing together.

4. A method of securing the part to be driven to a driving-block formed upon a

multiple-wire cable by casting metal around it, consisting in applying to such block a divided casing that is smaller than the block, and forcibly drawing the parts of the casing together on the block.

5 5. In the formation of a driving-block upon a multiple-wire cable by casting metal around it the process, consisting in (a) opening out the wires of a portion of the
10 cable by twisting it in a direction contrary to its lay, (b) placing around such opened-out portion a divided casing having removable distance pieces between the parts, (c)
15 pouring molten metal into the casing and among the wires, and (d) removing the distance pieces and drawing together the parts of the casing on to the block.

6. The herein described method of forming driving-blocks upon a multiple-wire cable at a point other than the end thereof and
20 whereof all the wires are twisted together in one direction so that when untwisted they each become individually separated, which consists in separating all the wires at a portion of the cable by twisting it in the reverse
25 direction to the lay of the wires, and casting metal on and among the separated wires.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR DOXFORD.

Witnesses:

H. NIXON,

FRED. H. DUKE.