

APPLICATION FILED JAN. 10, 1911.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.



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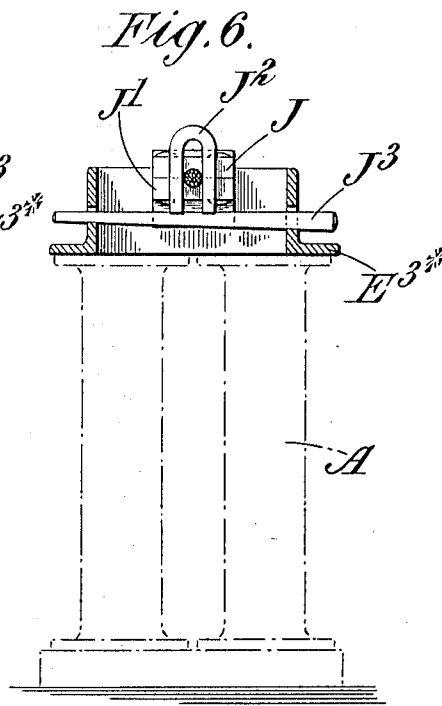
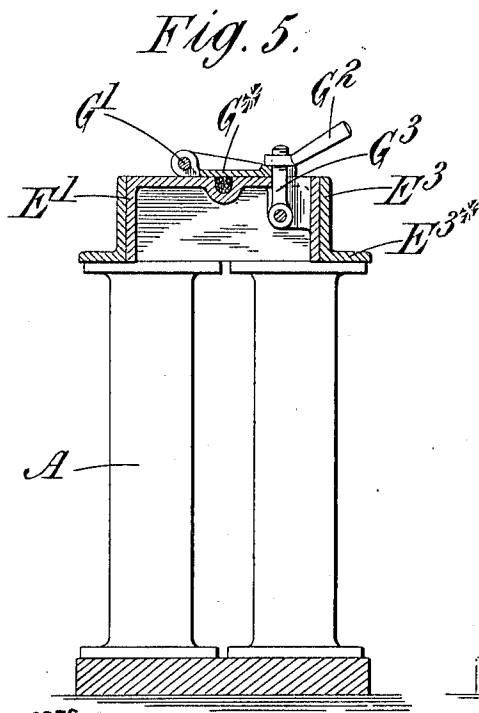
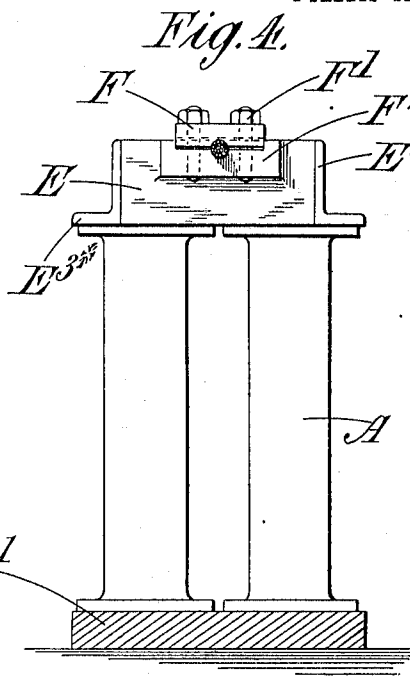
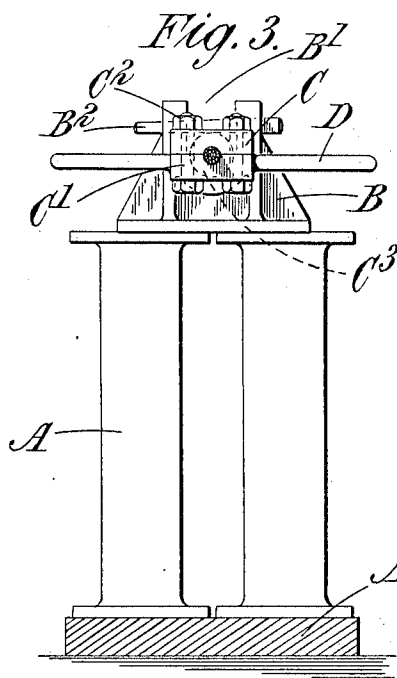
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A. DOXFORD.
 APPARATUS FOR OPENING OUT MULTIPLE WIRE CABLE OR THE LIKE APPLICABLE TO THE
 FORMATION OF BLOCKS ON SUCH CABLE.
 APPLICATION FILED JAN. 10, 1911.

1,039,368.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR OPENING OUT MULTIPLE-WIRE CABLE OR THE LIKE APPLICABLE TO THE FORMATION OF BLOCKS ON SUCH CABLE.

1,039,368.

Specification of Letters Patent. Patented Sept. 24, 1912.

Application filed January 10, 1911. Serial No. 601,902.

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 Improvements in Apparatus for Opening Out Multiple-Wire Cables or the Like Applicable to the Formation of Blocks on Such Cables, of which the following is a specification.

This invention is for improvements in or relating to apparatus for opening out multiple wire cable or the like applicable to the formation of blocks on such cable.

The apparatus is primarily intended to assist in the formation on elevator cables of the blocks that constitute the subject-matter of my application Serial No. 601,901, filed January 10, 1911, but the same apparatus may be used for other purposes in which a block or other part is to be connected to a stranded cable or the like by casting.

According to one feature of this invention, there is employed with a fixed vise, or other gripping device, a rotatable gripping device that is opposed to the first for the purpose of holding the cable and opening out the wires or strands by twisting it in the direction opposed to the lay of the wires or strands, as described in the specification above referred to.

In conjunction with the two gripping devices, means may be employed for maintaining the length of cable that lies between one portion that has been opened out, and the next portion that is to be thus treated, in an extended state, so that the length of cable between one opened out portion and that next to be formed, may be adjusted to a predetermined length.

Another feature of the invention consists in employing with the gripping devices spacing means situated between the fixed vise and a mold that for the purpose of casting blocks is placed around that part of the cable previously opened out.

By maintaining the length of cable that is being handled and parts of which are being treated in an extended state and providing spacing means between the fixed vise and the mold for casting the block, the blocks may be all placed at accurate distances apart, which is of great importance if they are to engage the driving wheels of the elevator, or cooperate with other mechanism.

Means may be provided for maintaining

in an extended state that portion of the cable which lies on that side of the mold remote from the fixed vise, and further spacing means may also be employed between the mold and the block which has been previously cast.

The invention may readily be employed in connection with multiple wire cables of the kind in which every wire is wound in one and the same direction, one on top of another, as if the finished rope were intended to form a strand only of a larger cable. Obviously, however, the invention may also be applied to other kinds of cable.

In the accompanying drawings—Figure 1 is a longitudinal section through a machine constructed according to this invention; Fig. 2 is a plan of the same; Fig. 3 is a section on the line 3—3 of Fig. 2; Fig. 4 is a section on the line 4—4 of Fig. 2; Fig. 5 is a section on the line 5—5 of Fig. 2; and Fig. 6 is a section on the line 6—6 of Fig. 2.

Like letters indicate like parts throughout the drawings.

The apparatus is carried by six pedestals supported upon a base A¹. Upon the left-hand pair of pedestals is a casting B having in it a U-shaped recess B¹ open at the top. Two jaws C C¹, each having a central groove are placed face to face and held together by bolts and nuts C². The jaws have a journaled end C³ which lies in the U-shaped recess B¹ of the casting B and a wedge B² passing through orifices in the casting extends across the recess above the journaled end so that the jaws can rotate in the recess but cannot be lifted therefrom. One of the jaws has laterally extending arms D whereby they may be rotated.

Carried on the two right-hand pairs of pedestals is a table composed of three sections E, E¹, E² held together by longitudinal side members E³. These members are flanged as at E^{3*} and may be bolted to the pedestals. The three sections are interrupted by gaps or spaces in which certain operations, hereinafter described can be performed and a third interruption or space occurs between the section E and the casting B.

On the upper face and at the left-hand end of the table-section E is a gripping jaw F clamped to the table by bolts and nuts F¹. The table has a central longitudinal groove and the jaw F has a corresponding groove and is let into the surface of the table so

that it may grip the cable when laid in the groove on the table. The left-hand end of the table-section E therefore constitutes a jaw-piece F² that coöperates with the jaw F after the manner of a pair of vise-jaws and these jaws are opposed to the jaws C C¹.

To the right of the jaws F F² and on the upper face of the table-section E is a clamping plate G. This is hinged at G¹ and is not grooved but lies over a longitudinal groove in the table section E. The free end of this clamping plate is secured by a handled nut G² carried on a hinged screw-threaded bolt G³. The plate G is recessed at G⁴ to allow the bolt G³ to swing into and out of the fastening position without removing the nut G².

Between the table sections E and E¹ a space H is left to receive a two-part mold or casing J J¹ which is secured in endwise position by a wedge J² and in vertical position by wedges J³ driven through the members E³. The table section E¹ carries a second clamping plate G^x which, with its associated parts is practically the same as the clamping plate G and its parts and therefore need not be described in detail.

A second space H¹ is provided between the table sections E¹ and E² for the accommodation of another two-part mold or casing held in place by wedges as already described with the mold J J¹.

The operation of this machine is as follows:—The clamping plates G G^x are swung back and the upper vise jaws C and F are removed so that the cable can be laid along the center of the machine entering the grooves in the bottom vise jaws C¹ and F²; all the table sections E E¹ and E² are also provided with a central longitudinal groove to receive the cable. The jaws C and F are now placed in position and the securing nuts screwed home so that the cable is firmly gripped at these two points and the wedge B² is placed in position to prevent the jaws C C¹ from riding out of the casting B. The jaws C C¹ are now rotated by means of the arms D in a direction opposite to the lay of the cable and as the jaws F F² are stationary and hold their portion of the cable firmly, the cable will be bird-caged or opened out as shown at X¹. This having been done, the jaw F is removed and the jaw C removed or loosened so that the cable can be fed forward until the part X¹ is brought to the space H. A two-part mold or casing J J¹ such as described in my patent specification above referred to is then placed around the part X¹ and secured in endwise position by the wedge J² and in vertical position by the wedges J³. The two parts of the mold may be temporarily held together in any convenient manner. The clamping plate G is now swung down

over the cable and secured by its nut and bolt G² G³ and the jaws F and C are again made to grip the new portion of cable. It will be seen that the clamping plate insures that the portion of cable lying between the jaw F and the mold J shall be retained in an extended state so that when the jaws C C¹ are again rotated, to bird-cage the second portion of the cable, this second portion shall lie at a predetermined distance from the mold surrounding the first portion. While bird-caging the second portion, the molten metal is run into the mold so that a solid block is formed in and around the first bird-caged portion as described in my patent specification already referred to. The cable is now again advanced by releasing the clamping plate and jaws C and F and the newly formed block with the mold or casing around it is brought to the space H¹, the second bird-caged portion being brought to the space H ready to have a block formed upon it. If the mold is intended to form the final casing for the block it is permanently riveted to the block while in the space H¹ but otherwise the mold is removed and a casing substituted and riveted in place at this point.

Preferably the mold or casing is wedged in position in the space H¹ as in the space H and the second clamping plate G^x is secured down over the cable to hold the portion of cable between the two blocks in an extended state. The riveting of the mold or casing may be effected while a third portion of the cable is being bird-caged and the second portion is having its block cast upon it. The next advance of the cable will carry the finished block with its casing out from the space H¹ beyond the apparatus as shown at X² and the process may be repeated until the required number of blocks has been formed upon the cable.

In some instances it may be more convenient to rivet the casings to the blocks while they are in the position X² instead of in the space H¹. The riveting of the mold or casing would then of course be effected while a fourth portion of the cable was being bird-caged and a third portion having its block cast upon it.

Preferably the jaws C C¹ and F F² only grip the cable close to the points where the opening out or bird-caging is to be effected.

It will be understood that the apparatus described with reference to the drawings is only given by way of example as many modifications may be made in detail without departing from the spirit of the invention.

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

1. In apparatus for forming driving blocks on multiple wire cables the combination of, a fixed cable-gripping device, a sup-

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port, a second cable-gripping device opposed to and spaced away from the first and revolvably mounted in the support, means for revolving the second gripping device in such direction as to open the wires between the two gripping devices and means for regulating the length of cable between the stationary grip and a previously opened portion of the cable, so that the process may be repeated regularly and continuously.

2. In apparatus for forming driving blocks on multiple wire cables the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolvably mounted in the support, means for revolving the second gripping device to open the wires between the two gripping devices, a table supporting the fixed grip and provided with gaps other than the space between the fixed and movable grips across which the cable can be extended and means for regulating the length of cable between the stationary grip and a previously opened portion of the cable.

3. An apparatus for forming driving blocks on multiple wire cables, comprising a table, a fixed grip connected to said table, a support adjacent to said table, a second gripping device rotatably mounted on said support and spaced from the fixed grip, means for rotating said second grip, said table having a plurality of openings spaced apart from each other and from the fixed grip for receiving molds surrounding the cable; substantially as described.

4. In apparatus for forming driving blocks on multiple wire cables the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolvably mounted in the support, means for revolving the second gripping device to open the wires between the two gripping devices, means for regulating the length of cable held between the stationary grip and a previously opened portion of the cable so that the process may be repeated regularly and continuously and means for maintaining such length of cable in an extended state.

5. In apparatus for forming driving blocks on multiple wire cables the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolvably mounted in the support, means for revolving the second gripping device to open the wires between the two gripping devices, a table supporting the fixed grip and divided into sections affording a gap between each section and the one adjacent to it and a device for maintaining in an extended state the length of cable held between the stationary grip and a previously opened portion of the cable.

6. In apparatus for forming driving blocks on multiple wire cables the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolvably mounted in the support, means for revolving the second gripping device to open the wires between the two gripping devices, a table supporting the fixed grip and divided into sections affording a gap between each section and the one adjacent to it, means for maintaining in an extended state the length of cable held between the stationary grip and a previously opened portion of the cable, and a second device for maintaining in an extended state a similar and adjacent portion of the cable.

7. In apparatus for forming driving blocks on multiple wire cables wherein the driving blocks are formed by enlarged portions of the cable said blocks being partly formed in a mold and subsequently surrounded by an independent casing the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolvably mounted in the support, means for revolving the second gripping device to open the wires between the two gripping devices, and means for holding the mold at a predetermined length from that portion of the cable being opened.

8. An apparatus for forming driving blocks on multiple wire cables, comprising a table, a fixed grip connected to said table, a support adjacent to said table, a second gripping device rotatably mounted on said support and spaced from the fixed grip, means for rotating said second grip, said table having a plurality of openings spaced apart from each other and from the fixed grip for receiving molds surrounding the cable, and means for securing said molds within said openings; substantially as described.

9. In apparatus for forming driving blocks on multiple wire cables wherein the driving blocks are formed by enlarged portions of the cable said blocks being partly formed in a mold and subsequently surrounded by an independent casing the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolvably mounted in the support, means for revolving the second gripping device to open the wires between the two gripping devices, means for holding the mold and casing on their respective cable enlargements, and means for holding the mold and a casing previously applied to the cable in definite positions relatively to one another and to that portion of the cable being opened.

10. In apparatus for forming driving

blocks on multiple wire cables wherein the driving blocks are formed by enlarged portions of the cable each surrounded by an independent casing (said casing and enlarged portion being filled with molten metal) the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolubly mounted in the support, means for revolving the second gripping device to open the wires between the two gripping devices, means for holding a casing in position to be filled with molten metal and other means for holding in position a casing already applied to the cable both holding means being fixed in a definite position relatively to the portion of the cable being opened.

11. In apparatus for forming driving blocks on multiple wire cables wherein the driving blocks are formed by enlarged portions of the cable each surrounded by an independent casing (said casing and enlarged portion being filled with molten metal) the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolubly mounted in the support, means for revolving said second gripping device to open the wires between the two gripping devices, a table supporting the fixed gripping device and divided into sections affording a gap between each section and the one adjacent to it and means for holding the driving block casings already applied to the cable in definite positions in the gaps in the table relatively to that portion of the cable being opened.

12. In apparatus for forming driving blocks on multiple wire cables wherein the driving blocks are formed by enlarged portions of the cable each surrounded by an independent casing (said casing and enlarged portion being filled with molten metal) the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolubly mounted in the support, means for revolving said second gripping device to open the wires between the two gripping devices, a table supporting the fixed gripping device and divided into sections affording a gap between each section and the one adjacent to it, means for holding a casing in position to be filled with molten metal and other means for holding in position a casing already applied to the cable both holding means being fixed in a definite position relatively to the portion of the cable being opened.

13. In apparatus for forming driving blocks on multiple wire cables wherein the driving blocks are formed by enlarged portions of the cable each surrounded by an independent casing (said casing and enlarged

portion being filled with molten metal) the combination of, a fixed cable-gripping device, a support, a second cable-gripping device opposed to and spaced away from the first and revolubly mounted in the support, means for revolving said second gripping device to open the wires between the two gripping devices, a table supporting the fixed gripping device and divided into sections affording a gap between each section and the one adjacent to it, means fixed on the table section for maintaining in an extended state the length of cable held between that portion between the clamping devices and a previously opened portion of the cable, a second device for maintaining in an extended state a similar and adjacent portion of the cable, means for holding a casing in position to be filled with molten metal and other means for holding in position a casing already applied to the cable, both holding means being fixed in a definite position relatively to the portion of the cable being opened.

14. In apparatus for forming driving blocks on multiple wire cables, the combination of a fixed cable-gripping device, a support, two jaws having on each the half of a trunnion divided longitudinally, said trunnion revolving in the support and said jaws comprising a second cable-gripping device opposed to and spaced away from the fixed grip, and means for revolving the second gripping device.

15. In apparatus for forming driving blocks on multiple wire cables, the combination of a fixed cable-gripping device, a support, two jaws having on each the half of a trunnion divided longitudinally, said trunnion revolving in the support and said jaws comprising a second cable-gripping device opposed to and spaced away from the fixed grip, and arms secured to and projecting from the jaws whereby they may be revolved.

16. In apparatus for forming driving blocks on multiple wire cables, the combination of a fixed cable-gripping device, a support, two jaws each having a trunnion and revolving in the support, said jaws comprising a second cable-gripping device opposed to and spaced away from the fixed grip, arms secured to and projecting from the jaws whereby they may be revolved, a table supporting the fixed grip and provided with gaps across which the cable can be extended, means for regulating the length of cable held between the stationary grip and a previously opened portion of the cable, a plate hinged to the table, and means for closing and holding the plate in position on such length of cable to maintain it in an extended state.

17. In apparatus for forming driving

blocks on multiple wire cables the combination of, a fixed cable-gripping device, a support, two jaws each having a trunnion end revolving in the support said jaws comprising a second cable-gripping device opposed to and spaced away from the fixed grip, arms secured to and projecting from the jaws whereby they may be revolved, a table supporting the fixed grip and provided with gaps across which the cable can be extended, means for regulating the length of cable held between the stationary grip and a previously opened portion of the cable, a plate hinged to the table and means for closing and holding the plate in position on such length of cable to maintain it in an extended state.

18. In apparatus for forming driving blocks on multiple wire cables the combination of, a fixed cable-gripping device, a support, two jaws each having a trunnion end revolving in the support said jaws comprising a second cable-gripping device opposed to and spaced away from the fixed grip, arms secured to and projecting from the jaws whereby they may be revolved, a table supporting the fixed grip and provided with gaps across which the cable can be extended, means for regulating the length of cable held between the stationary grip and a previously opened portion of the cable, a

plate hinged to the table having a groove between it and the table to receive the cable and means for closing and holding the plate in position on such length of cable to maintain it in an extended condition.

19. In apparatus for forming driving blocks on multiple wire cables the combination of, a fixed cable-gripping device, a support, two jaws each having a trunnion end revolving in the support said jaws comprising a second cable-gripping device opposed to and spaced away from the fixed grip, arms secured to and projecting from the jaws whereby they may be revolved, a table having a groove to receive the cable and provided with gaps across which the cable can be extended, means for regulating the length of cable held between the stationary grip and a previously opened portion of the cable, a plate hinged to the table and means for closing and holding the plate in position on such length of cable to maintain it in an extended condition.

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.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."