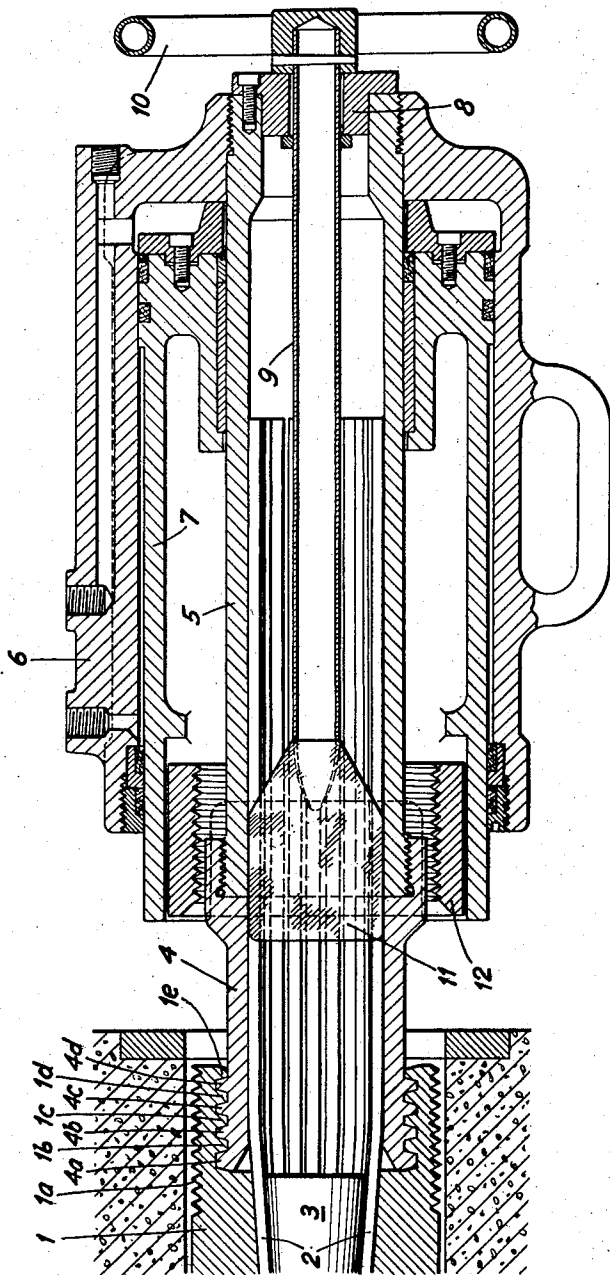


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HYDRAULIC JACK FOR TENSIONING REINFORCING
WIRES OF PRESTRESSED CONCRETE STRUCTURES
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HYDRAULIC JACK FOR TENSIONING REINFORCING WIRES OF PRESTRESSED CONCRETE STRUCTURES

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1 Claim. (Cl. 254—29)

The present invention relates to hydraulic jacks for tensioning reinforcing wires of a prestressed concrete structure which are held fast in an anchoring head and have free end portions protruding from this anchoring head. These free end portions are bent outwards and embedded in concrete after removal of the hydraulic jack.

The invention relates more particularly to a hydraulic jack of the type comprising a central tubular jacking part having an end portion intended and arranged to be passed over such wire end portions and to be subsequently operatively connected with the anchoring head in a rotational movement. Such type of jack is represented and described in my prior application No. 513,462 filed June 6, 1955.

In such copending application, the method of tensioning and anchoring the reinforcing of a prestressed concrete structure is disclosed. Such method essentially consists of placing wires of a prestressing cable in a concrete structure with the ends of the wires protruding in parallelism from the structure. The reinforcing wires are wedged between a conical funnel and a conical wedge, which form an anchoring head. A hydraulic jack is coupled to the anchoring head and is operative to stress the wires in stages. A nut is manually screwed onto the anchoring head and rests on the structure as the jack stresses the wires and when the final stress is achieved and the jack is removed, the nut rests on the structure anchoring the stressed wires.

The practice has shown that when the tubular jacking part is being connected to the anchoring head, e. g. by screwing it into or onto the same, the reinforcing wires are angularly displaced and instead of lying in parallel relation and being disposed parallel to the axis of the cable which they form, they become tangled and lie along helical lines. Consequently they are submitted to additional stresses during the subsequent tensioning operation and later when they work in the concrete structure. Such additional stresses do not contribute to the force applied by the cable of wires on the concrete structure. On the contrary, the maximum of the force which may be applied must be lowered to take into account such additional stresses put onto the wires.

The main object of this invention is to provide means by which an angular displacement of the reinforcing wires may be avoided. According to the present invention, this object is attained by providing a hydraulic jack which comprises a bearing supported by that end of said jacking part which is remote from the end portion arranged to be connected with the anchoring head. A rod extends within said jacking part along the longitudinal axis thereof and is rotatably mounted in said bearing and has a freely accessible handle member rigidly connected thereto outside said bearing, whereby said rod may be held against rotation while said jacking part is being connected to the anchoring head. Longitudinal wing means is rigidly connected to the rod end remote from said bearing and extends substantially radially to fit between pairs of adjacent wire end portions when the

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jacking part is passed over them so that when the tubular jacking part is rotated in coupling it to the anchoring head, the wires are maintained in parallel relation and prevented from becoming twisted.

The accompanying drawing represents, by way of example, an embodiment of the invention in a longitudinal section view.

In the drawing, the reference numeral 1 denotes one part of an anchoring head in which the reinforcing wires 2 are held fast by a plug 3 constituting the other part of the anchoring head. Part 1 has an external thread 1a on which a nut 12 will be screwed by manual operation during the jacking operation. In this respect, as described in my copending application, the nut 12 is screwed onto the funnel part 1 during the operation of the jack and serves to hold the wires in the position of stress imposed by the jack. The extension 4 of the jack is connected to the funnel part 1 by the complementary screw or bayonet projections formed on such parts. The part 1 has internal indentations 1b, 1c, 1d, 1e which extend over part of the periphery and which are engaged by corresponding indentations 4a, 4b, 4c, 4d provided on an interchangeable extension 4 of a central tubular jacking part 5 of a hydraulic jack. The part 5, together with a part 6 rigidly connected to it, forms an annular cylinder of the hydraulic jack. A piston 7 is mounted in this cylinder and will rest on the concrete structure during the prestressing or jacking operation. The two groups of indentations form a bayonet-joint, the engagement or disengagement of which calls for rotational movement of the parts 4, 5, 6 of the hydraulic jack with regard to part 1 of the anchoring head. A similar rotational movement would be necessary if the jacking parts 4, 5, 6 were screwably connected to, and disconnected from, the anchoring head. It can easily be seen on the drawing that such rotational movement during the connection of the jack with the anchoring head would cause a rotation of the end portions of wires protruding from the latter (towards right side in the figure) by virtue of the friction in the bayonet-joint or equivalent screw connection and of the friction between parts 4, 5 on the one hand, and the protruding wire end portions, on the other hand.

The invention now resides in the provision of very simple and effective means by which such rotational or angular movement of the wires may be prevented. These means comprise a bearing 8 supported by, and rigidly fixed to, that end of the jacking part 5 which is remote from the end portion arranged to be connected with the anchoring head. Such means further comprises a tubular rod 9 which extends within the jacking part 5 along the longitudinal axis thereof and is rotatably, but axially immovably mounted in the bearing 8. A freely accessible handle member 10, which in the embodiment shown is constituted by a wheel, but which might be replaced by a handle arm, is rigidly connected to the rod 9 beside the bearing 8. By means of this handle member 10 the rod may be held against rotation while the jack and particularly the jacking member 4, 5, is being connected to the anchoring head. Wing means 11 is rigidly connected, as by welding, to the rod end remote from the bearing 8. Such wing means may include two radially opposite wings and may in fact be replaced by three or more radial or substantially radial wings. It is only important that these wings extend until near the inner surface of the jacking part 5, or parts 4, 5, to slide between pairs of adjacent wire end portions when the jacking parts 4, 5 are passed over them. They will thus securely and positively impede a rotational or angular movement of the circular row of wire end portions if the handle member 10 is held against rotation as the tubular jacking part is being rotated to couple it

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to the anchoring head, whereby the wires will be maintained in parallel, non-twisted relation.

What I claim is:

In a hydraulic jack for use in tensioning reinforcing wires of a prestressed concrete structure which wires are held fast in an anchoring head and have free end portions protruding outwardly from the head, said jack including a jacking means having a central tubular section having an end portion adapted to be passed over the end portions of the wires and subsequently secured to the anchoring head by a rotational movement of the jacking means; the improvement which comprises a bearing mounted within the central tubular section at the end remote from the said end portion, a rod rotatably mounted within the bearing and extending coaxially within the

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tubular section, a freely accessible handle member rigidly connected to the rod outwardly of the bearing; said handle being accessible to hold the rod against rotational movement while said end portion is being connected to the head by rotative movement of the jacking means and wing means rigidly secured to the rod and extending radially and longitudinally thereof and adapted to fit between adjacent wire end portions to restrain them from rotation during the rotative movement of the jacking means.

References Cited in the file of this patent

UNITED STATES PATENTS

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