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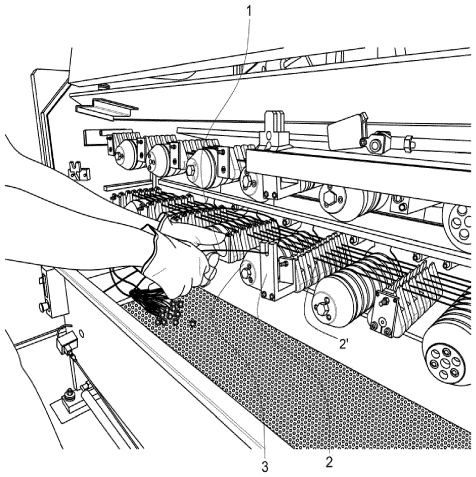
(54) **WIRE STRETCHING DEVICE IN A SINGLE-WIRE OR MULTI-WIRE MACHINE OR IN A WIRE DRAWING PROCESS**

(57) The present invention relates to a wire stretching device in a single-wire or multiwire machine or in a wire drawing process, which is enabled for its installation and/or operation in a machine and/or in a wire drawing process of the same wire, comprising a clamp and a die holder with an auxiliary die arranged in a longitudinal bed, the die holder with an auxiliary die being attached to the bed and the clamp being movable on the same bed, and it also comprises drive means linked to the bed and linked to the clamp and enabled for communicating a linear movement to the clamp on the same bed, the clamp being enabled for a fastening and attachment therein of one end of a wire, and the die holder with an auxiliary die being enabled for a passage and circulation therethrough of the same wire attached by its end to the clamp, the linear movement of the clamp communicated from the drive means thus entailing a stretching and tensioning of the wire that is fastened in the clamp as this wire passes and circulates through the die holder with an auxiliary die.

FIG.1



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Description

OBJECT OF THE INVENTION

[0001] The purpose of this invention application is the registration of a wire stretching device in a single-wire or multi-wire machine or in a wire drawing process, which incorporates notable innovations and advantages compared to the techniques used up to now.

[0002] More specifically, the invention proposes the development of a wire stretching device in a single-wire or multi-wire machine or in a wire drawing process, which, due to its particular arrangement, allows avoiding a series of manual stretchings of several wires in a multi-wire machine or in a drawing process.

BACKGROUND OF THE INVENTION

[0003] It is known in the current state of the art of the well-known single-wire or multi-wire machines and wire drawing processes, for example in the case of industrial copper wires, the need for prior stretching of the wires in their positioning on the same multi-wire machine and wire drawing process.

[0004] In a threading process of a wire drawing machine, the following aspects must be taken into account:

- Generating a reduction in the diameter of the wire at one of its ends.
- The reduction in diameter must be sufficient to be able to pass through the next die without difficulty.
- Once the wire has passed through the next die, it is then when the operator's manual force is required to generate sufficient wire length, by stretching same, to be able to attach it by means of several turns on the following pull roller.

[0005] Said prior stretching of the wires for threading the machine is carried out manually, by an operator who manually grasps the wire in question at one of its ends, and must stretch same for its proper positioning and winding on the rollers of a wire drawing machine in order to proceed with its usual wire drawing.

[0006] This implies the problem of having an operator adequately trained and prepared for this purpose, in addition to having sufficient physical qualities to carry out such an operation.

[0007] In addition to this, said manual operation is susceptible to causing some type of accident, especially by entrapment of the hand or falling to the ground, mainly due to the intense physical effort required by the operator that is demanded for this task.

[0008] The problems explained above are also very likely to occur in machines of a rotating nature, already known for this purpose in the state of the art.

[0009] The present invention contributes to solving and resolving this problem, since it allows the usual and well-known stretching and manual operation of a previous wire for proceeding to its drawing to be replaced by stretching, but only mechanically, and without requiring any manual stretching or operation on the wire for this purpose.

DESCRIPTION OF THE INVENTION

[0010] The present invention has been developed in order to provide a wire stretching device in a single-wire or multi-wire machine or in a wire drawing process, which is enabled for its installation and/or operation in a machine and/or in a wire drawing process of the same wire, comprising a clamp and a die holder with an auxiliary die arranged in a longitudinal bed, the die holder with an auxiliary die being attached to the bed and the clamp being movable on the same bed, and it also comprises drive means linked to the bed and linked to the clamp and enabled for communicating a linear movement to the clamp on the same bed, the clamp being enabled for a fastening and attachment therein of one end of a wire, and the die holder with an auxiliary die being enabled for a passage and circulation therethrough of the same wire attached by its end to the clamp, the linear movement of the clamp communicated from the drive means thus entailing a stretching and tensioning of the wire that is fastened in the clamp as this wire passes and circulates through the die holder with an auxiliary die.

[0011] Alternatively, in the wire stretching device in a single-wire or multi-wire machine or in a wire drawing process, the drive means are pneumatic in nature.

[0012] Alternatively, in the wire stretching device in a single-wire or multi-wire machine or in a wire drawing process, the drive means are electrical in nature.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

Figure 1 is an indicative view of an exemplary embodiment of the prior state of the art.

Figure 2 is a schematic plan and elevation view of a preferred embodiment of the wire stretching device in a single-wire or multi-wire machine or in a drawing process of the proposed invention.

Figure 3 is a schematic perspective view indicating a use of a preferred embodiment of the wire stretching device in a single-wire or multi-wire machine or in a wire drawing process of the proposed invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0014] Single-wire or multi-wire machines and wire drawing processes are known in the current state of the art, in which such machines can stretch several wires at the same time in parallel, and said wires usually having a diameter equal to or less than 2 mm. This implies the need for a prior stretching of the wire to achieve a sufficient wire length for its proper winding and tensioning on

the rollers of a single-wire or multi-wire drawing machine, in order to undergo longitudinal tensioning on the aforementioned rollers, which will be the ones that will carry out the driving force and thus achieve a reduction in the diameter of the same wire as a result of this wire drawing process.

[0015] As shown in figure 1, for this purpose the wire 1 is manually passed and stretched through a threading die or die holder 2, in order to provide sufficient longitudinal tension to the same wire 1 in its winding on a roller 3 and passing through a wire drawing die or die holder 2' in a single-wire or multi-wire drawing machine.

[0016] Immediately afterwards, the same wire 1 wound on the roller 3 is longitudinally stretched and tensioned in order to achieve a reduction in the diameter of the same wire 1 as a result of this wire drawing process.

[0017] The wire stretching device in a machine or in a wire drawing process of the proposed invention is designed to replace the manual stretching of the wire 1, the passage through a threading die or die holder 2 and the winding on a roller 3 referred to above and represented in an example in figure 1 and which is already known in the state of the art.

[0018] For this, the wire stretching device in a machine or in a wire drawing process of the proposed invention is designed to enable a stretching from a mechanical drive, in order to provide sufficient longitudinal tension in the wire 1 in its winding on the rollers 3, and for this purpose removing any manual operation or stretching on the wire 1 with the drawbacks that this entails.

[0019] Accordingly, the wire stretching device in a machine or in a wire drawing process of the proposed invention is enabled for its installation and/or operation in a single-wire or multi-wire drawing machine, and which are already known in the state of the art.

[0020] As can be schematically seen in figures 2 and 3, said wire stretching device in a machine or in a wire drawing process of the proposed invention, comprises a clamp 4 and a die holder with an auxiliary die 5 arranged on a longitudinal bed 6.

[0021] The bed 6 is in turn enabled for its arrangement and attachment to a wire drawing machine of those already known in the state of the art.

[0022] The die holder with an auxiliary die 5 is attached to the bed 6, and the clamp 4 is linearly movable on the same bed 6 in the direction indicated by the bidirectional arrow in figures 2 and 3.

[0023] The wire stretching device in a machine or in a wire drawing process of the invention also comprises drive means 7 linked to the clamp 4 and arranged on the bed 6, and enabled for communicating the linear movement to the clamp 4 in the same bed 6.

[0024] In addition, the same clamp 4 is enabled for a fastening and attachment therein of one end of a wire 1, and the die holder with an auxiliary die 5 is enabled for a passage and circulation therethrough of the same wire 1 attached by its end to the clamp 4, which will allow the reduction of wire 1 by means of the die to achieve the required wire length 1 to be able to attach it to the following pull roller 3, by means of turns in the same roller 3, the linear movement of the clamp 4 communicated from the drive means 7 thus entailing a stretching and tensioning of the wire 1 that is fastened in the clamp 4 as this wire passes and circulates through the die holder with an auxiliary die 5, as indicated by the arrow in figure 2.

[0025] In different preferred embodiments of the wire stretching device in a machine or in a wire drawing process of the invention, the drive means 7 can be of a pneumatic nature, or an electrical drive, for example.

[0026] Therefore, the wire stretching device in machine or in a wire drawing process of the invention, allows the usual and well-known stretching and previous manual actuation of a wire 1 for proceeding to its drawing and represented in an example in the figure 1 to be replaced by stretching but now in a purely mechanical manner, and without requiring any manual stretching or operation on the wire 1 for this purpose and with the consequent advantages that this entails.

[0027] Therefore, the eminently linear arrangement in the wire stretching device in a single-wire or multi-wire machine or in a wire drawing process of the proposed invention, also entails a notable advantage in relation to other machines of the known state of the art, such as in the case of rotary machines already known for this purpose in the state of the art.

[0028] The details, shapes, dimensions and other secondary elements, as well as the materials used in manufacturing the wire stretching device in a single-wire or multi-wire machine or in a wire drawing process of the invention, may be suitably replaced with others that are technically equivalent and do not depart from the essential nature of the invention or from the scope defined by the claims included below.

Claims

1. A wire stretching device in a single-wire or multi-wire machine or in a wire drawing process, which is enabled for its installation and/or operation in a machine and/or in a wire drawing process of the same wire (1), **characterised in that** it comprises a clamp (4) and a die holder with an auxiliary die (5) arranged in a longitudinal bed (6), the die holder with an auxiliary die (5) being attached to the bed (6) and the clamp (4) being movable on the same bed (6), and it also comprises drive means (7) linked to the bed (6) and linked to the clamp (4) and enabled for communicating a linear movement to the clamp (4) on the same bed (6), the clamp (4) being enabled for a fastening and attachment therein of one end of a wire (1), and the die holder with an auxiliary die (5) being enabled for a passage and circulation therethrough of the same wire (1) attached by its end to the clamp (4), the linear movement of the clamp (4)

communicated from the drive means (7) thus entailing a stretching and tensioning of the wire (1) that is fastened in the clamp (4) as this wire (1) passes and circulates through the die holder with an auxiliary die (5).

2. The wire stretching device in a single-wire or multi-wire machine or in a wire drawing process according to the preceding claim, wherein the drive means (7) are pneumatic in nature.

3. The wire stretching device in a single-wire or multi-wire machine or in a wire drawing process according to claim 1, wherein the drive means (7) are electrical in nature.

FIG.1

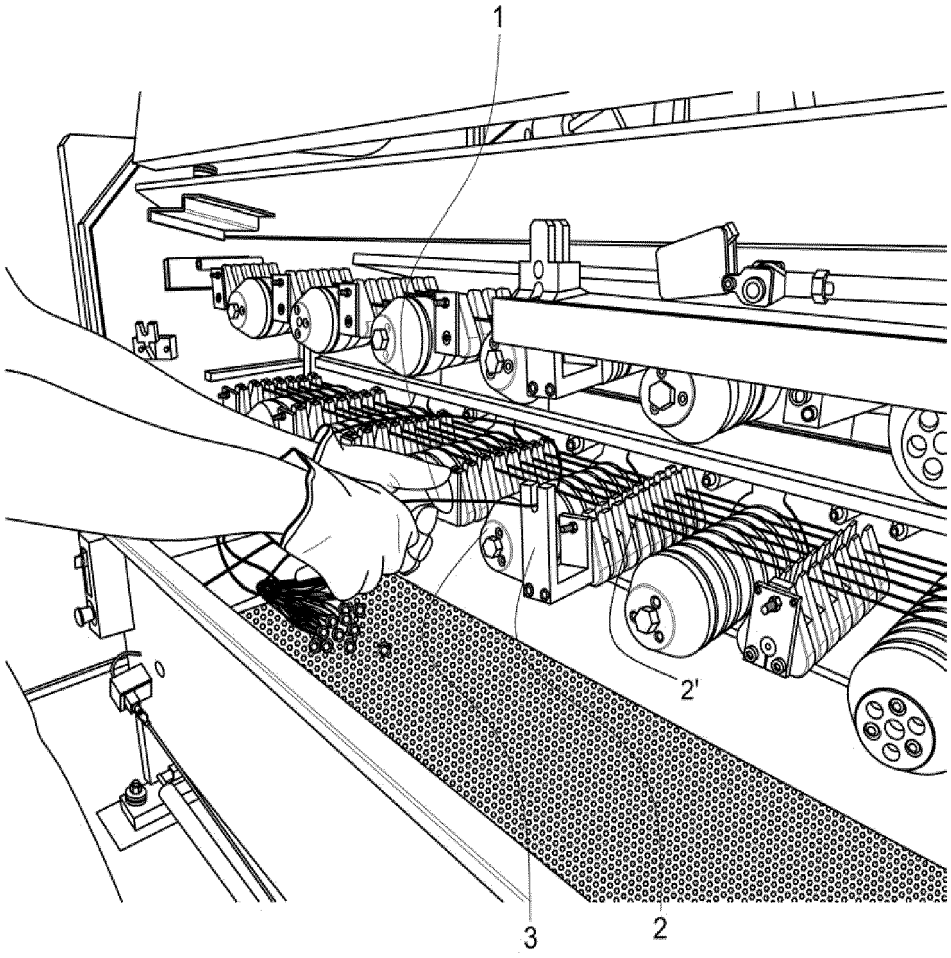


FIG.2

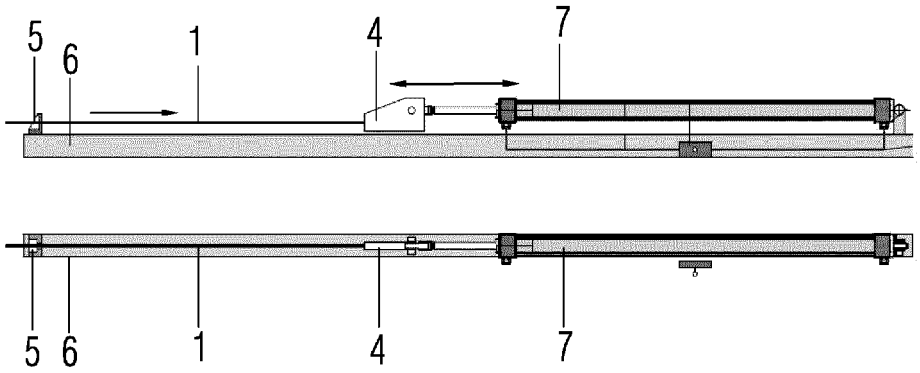
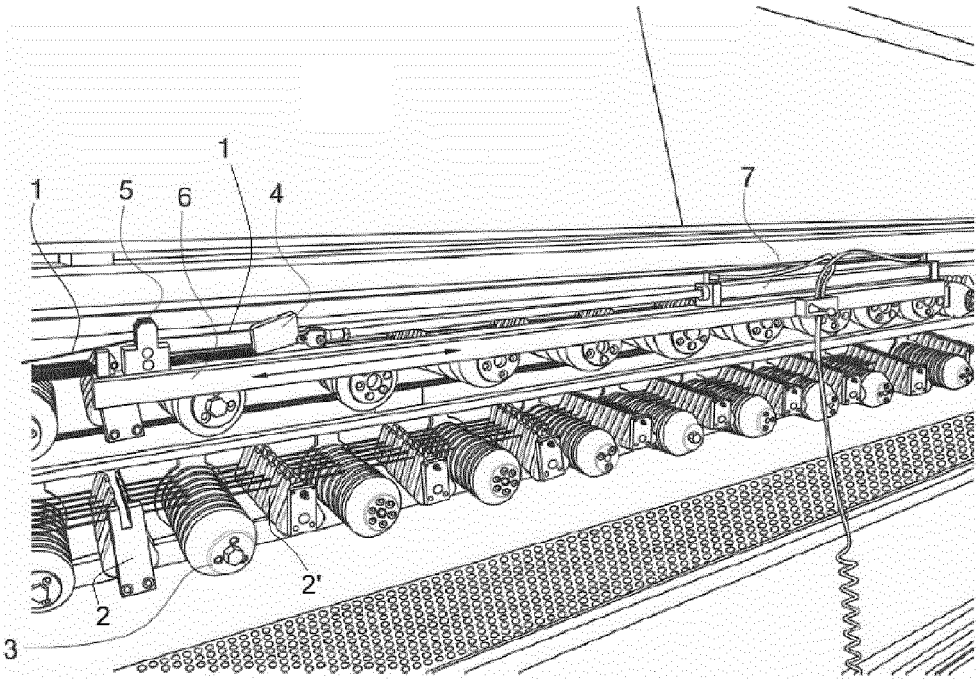


FIG.3



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EUROPEAN SEARCH REPORT

Application Number
EP 23 38 2817

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 33 29 459 C2 (BUDERUS SCHLEIFTECHNIK [DE]) 8 December 1994 (1994-12-08) * column 1, line 63 - column 2, line 14; figures *	1-3	INV. B21C1/02 B21C1/16 B21C1/27 B21C1/28
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TECHNICAL FIELDS SEARCHED (IPC)
B21C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 January 2024	Charvet, Pierre

CATEGORY OF CITED DOCUMENTS

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