Dec. 9, 1952 J. PEIGNIER 2,620,496

DESCALING AND BRUSHING MACHINE, ESPECIALLY FOR ROUGH-DRAWN WIRE

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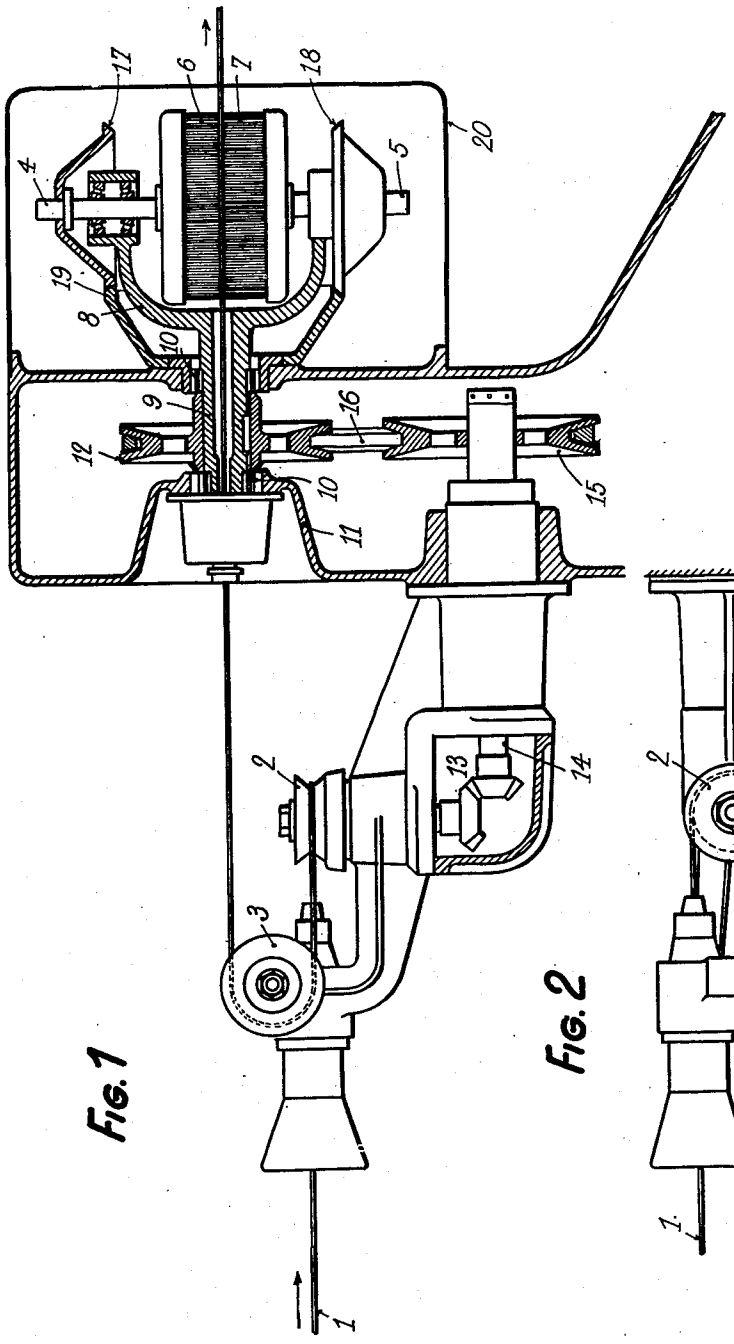


FIG. 1

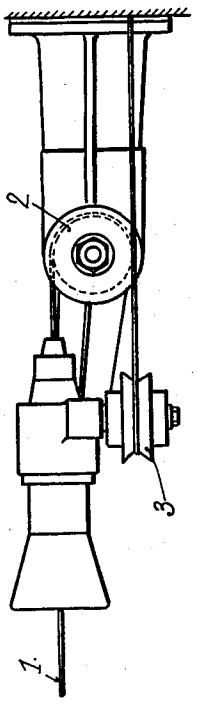


FIG. 2

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DESCALING AND BRUSHING MACHINE, ESPECIALLY FOR ROUGH-DRAWN WIRE

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4 Claims. (Cl. 15—88)

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Machines have already been suggested for descaling and brushing rough hot-rolled or extruded wire, so as to provide for directly and continuously passing such wire stock through the draw-bench

In such machines, which were interposed between the wire reel drum and the draw-bench, the wire was subjected to successive bending steps in two perpendicular planes while passing through the grooves of two rollers or friction-wheels having their axes of rotation at right angles to each other. With the coating of scale thus broken up, it was then merely necessary to subject the wire to a brushing action in order to strip it of all traces of oxide.

It is the object of this invention to provide a machine of such kind essentially characterised by the fact that both the de-scaling wheels and the brushing mechanism are operated by the feed movement of the wire as said wire is subjected to the pull of the draw-bench. Said machine accordingly will not require the use of an individual auxiliary power-plant therefor or of a drive-transmission means receiving its movement from the general power-supply of the workshop.

In the accompanying drawings, given merely by way of example:

Fig. 1 is a vertical section of the mechanism of a de-scaling machine embodying the essential features of the invention, while

Fig. 2 is a plan view of the de-scaling head thereof shown separately.

The machine forming the subject matter of this invention is so designed as first to achieve a rough preliminary de-scaling effect by mechanically breaking up the oxide layer coating the wire, then, in a finishing step, to remove any particles of said layer which may yet adhere to said wire.

To that end, the wire 1 issuing from the reel is fed over a pair of rollers or wheels, 2, 3 mounted on axes at right angles to each other. The wire is accordingly subjected to temporary deformation in two different planes. The scale, which does not possess a sufficiently high tensile elongation to withstand such deformation, breaks up and falls away. There only remain over the surface of the wire 1 small particles of scale clinging thereto and which will be removed in the subsequent brushing step.

For this purpose, the wire is fed through a pair of metal brushes. Said brushes are of the flanged or disk type and operate in a plane normal to their axis of rotation which in turn

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is arranged perpendicularly to the wire. The brushes are arranged on opposite sides of the wire, so that the latter will travel between the parallel planes of friction defined by the ends of the metallic bristles with which the brushes are fitted.

For such purpose the following mechanism is used:

The shafts 4, 5 rigid with the disks or flanges of the brushes 6, 7 are mounted coaxially with each other in a casing 8 rotatable about an axis coinciding with the path of travel of the wire 1. The casing 8 is provided with an axially recessed hub portion 9 through the axial recess of which the wire 1 is adapted to pass and is journalled in bearings 10 of the machine frame 11. The hub 9 has secured thereon a drive member or pulley 12 which according to the invention is to be actuated by the feed motion of the wire 1. To this end, the rotation of the vertical shaft of the de-scaling wheel 2 is transmitted, for instance as shown by way of the bevel gearing 13, shaft 14 and the belt transmission including pulleys 15 and 12 and belt 16, to the hub 9. Rotation of the casing 8 is also used to effect rotation of the brushes 6, 7 about their axes 4, 5. Such a planetary-gear like movement may, by way of example, be obtained as shown by the rolling frictional engagement of cone members 17, 18 rigid with the shafts 4, 5 of brushes 6, 7 with the common fixed cone member 19 rigid with the machine frame 11 and the geometrical axis of revolution of which coincides with the wire 1.

As a result of the above arrangement the two brushes 6, 7 are rotated in reverse directions, and the brushing stresses exerted on the wire 1 balance and cancel each other out. The wire is accordingly not subjected to stress and remains in a proper centred condition.

The above-described device operates as follows:

Upon the draw-bench being started in operation, the wire 1 is fed forward and the de-scaling apparatus is therefore caused to operate. Since the rate of rotation of the casing 8 carrying the brushes 6, 7 is in a fixed ratio to that of the de-scaling wheel 2, each of the pair of brushes 6, 7 will operate to clean a small peripheral area of the wire 1 fed past it, said area thus describing a helical surface. The system is so designed that the pitch of the helix will be less than the diameter of the brushes 6. 7. Moreover since the brushes 6, 7 are angularly displaced 180° from each other, the net result is similar to what would occur were the second brush ar-

ranged on the same side of wire 1 as the first brush but displaced forwardly with respect to said first brush by an amount equivalent to one half the pitch of the helix. As a result uniform brushing action is obtained throughout the surface of the wire. The brushing step is effected as shown within a sealed enclosing housing 20 adapted to prevent any oxide particles from being thrown out.

On completion of the brushing step the wire 1 is practically free of scale and the mechanical cleaning operation thus carried out affords a surface finish comparable with any that may be obtained through the use of a chemical pickling treatment, without involving any of the drawbacks of the latter.

It will thus be seen that the above-described apparatus makes it possible to supply a drawbench directly with rough-drawn wire.

It will of course be understood that various structural modifications may be made in the exemplary embodiment described and illustrated without exceeding the scope of the invention.

What I claim is:

1. In a wire de-scaling machine, a frame having an aperture for receiving the wire to be threaded, a casing having a hub rotatably mounted in said frame, said hub having an axial bore in alignment with the aperture in said frame to permit passage of the wire therethrough, a pair of brushes having shafts rotatably mounted in said casing transversely of the axis of said bore, the bristles of said brushes being oppositely disposed in such manner that the plane of juncture between all the bristle ends of said brushes coincides with the axis of said bore, whereby to permit passage of the wire between the two opposed faces of the brushes, and means for rotating said brushes synchronously with the movement of said wire between said brushes.

2. In a wire de-scaling machine, a frame having an aperture for receiving the wire to be threaded, a casing having a hub rotatably mounted in said frame, said hub having an axial bore in alignment with the aperture in said frame to permit passage of the wire therethrough, a pair of brushes having shafts rotatably mounted in said casing transversely of the axis of said bore, the bristles of said brushes being oppositely disposed in such manner that the plane of juncture between all the bristle ends of said brushes coincides with the axis of said bore, whereby to permit passage of the wire between the two opposed faces of the brushes, and means for rotating said brushes and said hub synchronously with the movement of said wire between said brushes.

3. In a wire de-scaling machine, a frame having an aperture for receiving the wire to be threaded, a casing having a hub rotatably

mounted in said frame, said hub having an axial bore in alignment with the aperture in said frame to permit passage of the wire therethrough, a pair of brushes having shafts rotatably mounted in said casing transversely of the axis of said bore, the bristles of said brushes being oppositely disposed in such manner that the plane of juncture between the bristle ends of said brushes coincides with the axis of said bore, whereby to permit passage of the wire between the two opposed faces of the brushes, transmission elements secured to the shafts of said brushes for rotating the same, a drum engaged by the wire in its travel with respect to said brushes whereby the movement of the wire rotates the drum, and means connecting said drum with said transmission elements whereby to rotate said brushes synchronously with the movement of said wire.

4. In a wire de-scaling machine, a frame having an aperture for receiving the wire to be threaded, a casing having a hub rotatably mounted in said frame, said hub having an axial bore in alignment with the aperture in said frame to permit passage of the wire therethrough, a pair of brushes having shafts rotatably mounted in said casing transversely of the axis of said bore, the bristles of said brushes being oppositely disposed in such manner that the plane of juncture between the bristle ends of said brushes coincides with the axis of said bore, whereby to permit passage of the wire between the two opposed faces of the brushes, transmission elements secured to the shafts of said brushes for rotating the same, a fixed surface engageable by said transmission elements to afford traction thereto upon rotation of said hub and elements whereby said transmission elements are rotated upon rotation of said hub, a drum engaged by the wire in its travel with respect to said brushes whereby the movement of the wire rotates the drum, and means connecting said drum with said hub whereby to rotate said hub synchronously with the movement of said wire.

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