Dec. 31, 1946. W. D. WISER 2,413,595

AUTOMATICALLY ADJUSTABLE WIRE ROPE DIE

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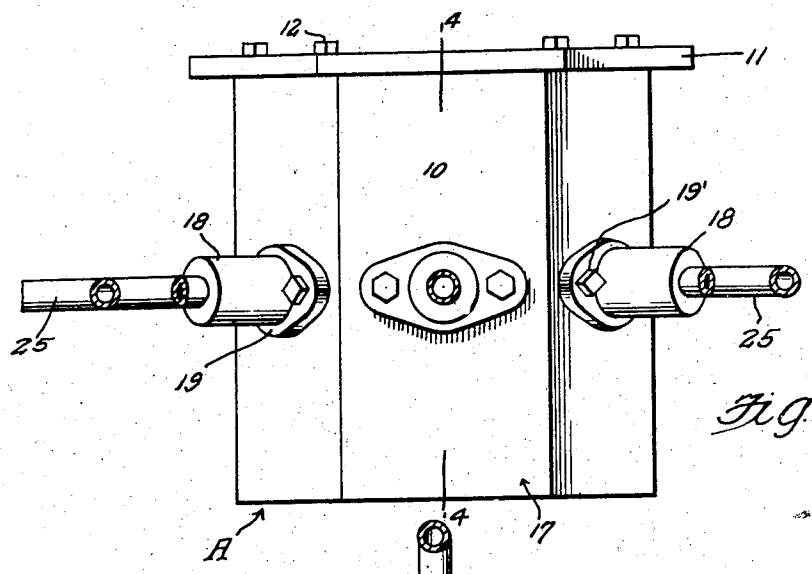


Fig. 1.

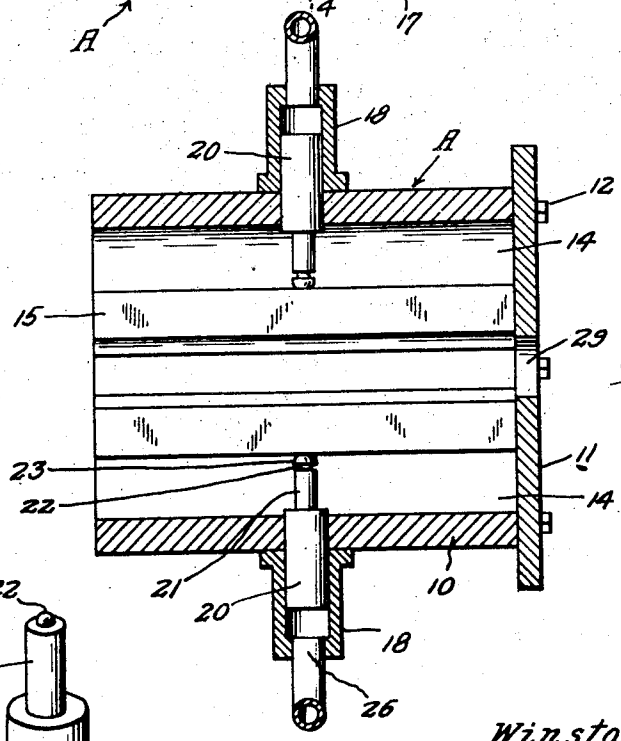


Fig. 4.

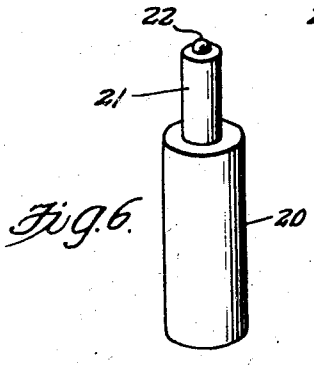


Fig. 6.

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Fig. 2.

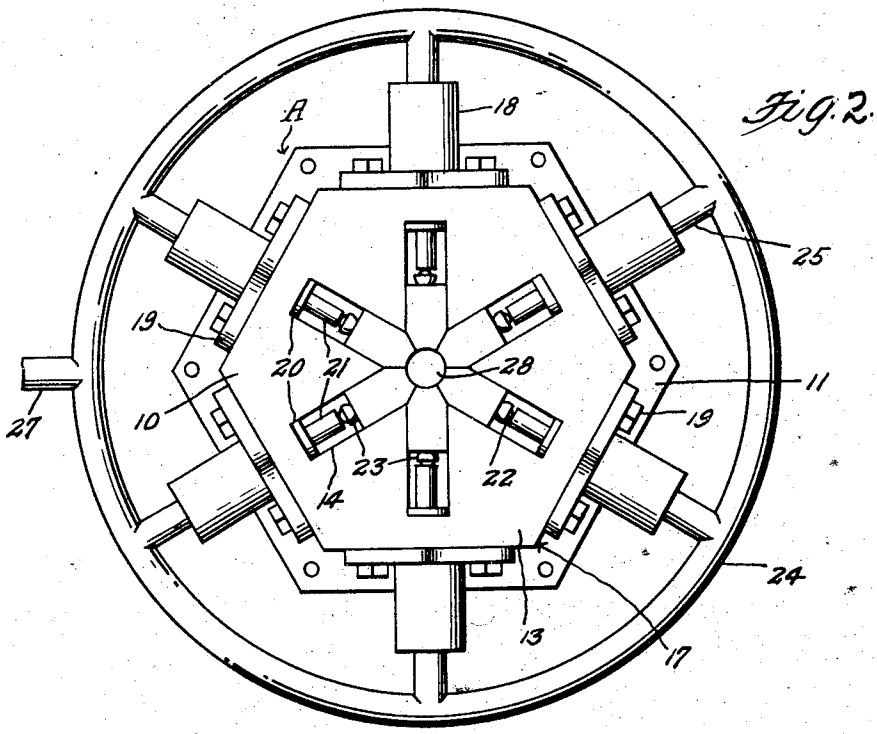
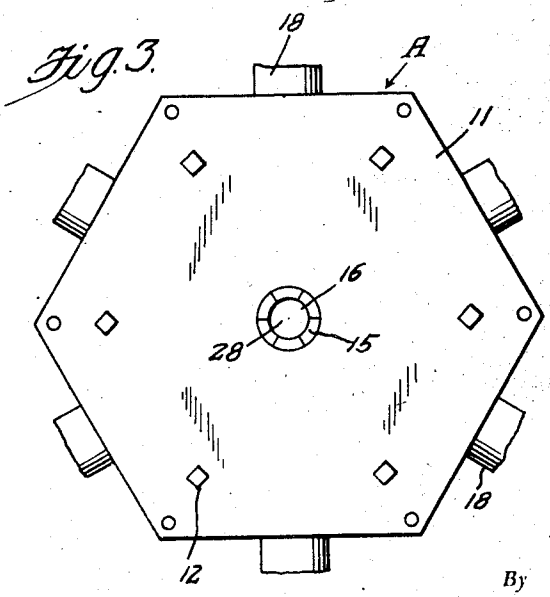


Fig. 3.



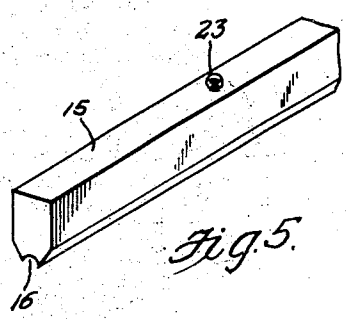


Fig. 5.

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AUTOMATICALLY ADJUSTABLE WIRE ROPE DIE

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Application August 28, 1945, Serial No. 613,191

4 Claims. (Cl. 57—138)

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The invention relates to a wire rope die, and more especially to a hydraulically controlled, automatically adjustable wire rope die.

The primary object of the invention is uniformly and evenly to compress a plurality of wire strands into a wire rope.

A feature of the invention is the provision of an automatic die, adjustable to a variety of sizes, so constructed as to exert a substantially uniform pressure throughout the diameter of the grouped strands without any binding action thereon during the rope forming operation.

Another feature of the invention is the provision of a die having radially disposed strand engaging tool pieces which cooperate with each other under hydraulic pressure to form a plurality of wire strands into a wire rope, having a uniform cross sectional diameter, the strands, of which are tightly compressed.

A further feature of the invention is the provision of a die comprised of a plurality of rope engaging tool pieces, each of which is automatically and synchronously adjustable through the medium of a hydraulic pressure controller from a master hydraulic unit under the command of an operator.

A still further feature of the invention is the provision of a die which is simple in construction, reliable and efficient in operation, and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, and the combination and arrangement of parts, all as will be hereinafter fully described, illustrated in the accompanying drawings, which disclose a preferred embodiment of the invention, and pointed out in the claims hereunto appended.

In the accompanying drawings—

Figure 1 is an elevation of a die constructed in accordance with the invention.

Figure 2 is a fragmentary plan view thereof, adjuncts of the same being partly in section.

Figure 3 is a fragmentary view similar to Figure 1 looking toward the opposite side thereof.

Figure 4 is a sectional view taken on the line 4—4 of Figure 2 looking in the direction of the arrows.

Figure 5 is a perspective view of one of the work-engaging tools of the die.

Figure 6 is a perspective view of one of the tool plungers removed from the die.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, the die constituting the present invention comprises a substantially hexagon-shaped hollow head designated generally at A, including a body 10 preferably of steel closed at one end by an end plate 11 which at the outer periphery thereof is shaped to correspond to the head and is detachably secured in place by fasteners 12. Interiorly of body 10 and integral therewith is a core 13 which extends the full length of the body and which is formed with radially disposed guideways 14 which open into each other at its longitudinal central axis. The grouping of these guideways corresponds to the spoke formation in a vehicle wheel and in their lengths are co-extensive with the longitudinal extent of the body 10. Working within the guideways 14 and coextensive therewith are work engaging tools or tool pieces 15, each having an outwardly tapered concave working face 16 coextensive with the length thereof.

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Mounted exteriorly on the body 10 on the central portion of the flat external faces 17 thereof are a plurality of plunger cylinders 18, each having a base flange 19 attached by fasteners 19' to the face 17. Reciprocatingly mounted interiorly of each such cylinder is a plunger 20 having a reduced fulcrum stem 21 making contact with a cup or ball fulcrum 22 the cup 23 therefor being counterseated in an adjacent tool piece 15, which plunger 20 automatically adjusts its associated tool piece 15 in the working of the die as a unit.

Concentrically above the body 10 is a pressure feed ring or line 24 having inwardly directed radial branches 25 aligned with the cylinders 18 and terminating in nipples 26, while leading to ring or line 24 is a main feed conduit 27 which extends from a master hydraulic pressure pump unit installed in a rope machine (not shown). The master unit is under the control of the operator of the machine. Uniform hydraulic pressure is transferred to the cylinders 19 through ring 24 for the operation of the plungers 20 therein so that the tool pieces 15 will approach each other through the automatic adjustment thereof under pressure for the formation of a wire rope from a group of wire strands (not shown).

The strands of wire for the formation of the wire rope are directed through the circular open way 28 created by the channeled faces 16 of the tool pieces 15 and the head A and under pressure hydraulically tool pieces 15 are compressed about the strands of wire passing through and filling the opening 28 thereby compressing these strands into a wire rope body as such strands are passed through the die and its equipment by a rope making machine. The plate 11 has the center hole

29 registering with the way 28 between the tool pieces 15 for the passage of the formed rope from the die. When the wire rope is finished the pressure on the work tool pieces 15 is relieved and when these are subjected to pressure the latter is uniform throughout the series of pieces.

The die, by reason of the construction as before described, is susceptible of adjustment to any desired size rope within its range. In the operation of the device the rope is initially passed into the die with all pressure released and when the strands of wire have been initially inserted the operator controls the master unit to put the desired pressure on the tool pieces 15 for the successful operation of the die in the wire rope formation.

From the foregoing it will now be seen that there is herein provided a device accomplishing all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of the inventive concept, and as many modifications may be made in the embodiment herein shown and described it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

What is claimed is:

1. A die of the character described, comprising a head having a plurality of centrally disposed automatically adjustable tool pieces therein grouped to form a strand wire rope-way therebetween, and individual hydraulic plunger means

operable upon each of said pieces for exerting uniform pressure thereon throughout the group.

2. A die of the character described, comprising a head having a plurality of radially disposed automatically adjustable tool pieces therein grouped to form a strand wire rope-way therebetween, hydraulic means operable upon said pieces for exerting uniform pressure thereon throughout the group, the last mentioned means including individual fulcrum plungers acting directly on said tool pieces at their midpoints.

3. A die of the character described, comprising a head having a plurality of radially disposed automatically adjustable tool pieces therein grouped to form a strand wire rope-way therebetween, hydraulic means operable upon said pieces for exerting uniform pressure thereon throughout the group, the last mentioned means including fulcrum plungers acting directly on said tool pieces, and means for exerting pressure on the respective plungers.

4. A die of the character described, comprising a head having a plurality of radially disposed automatically adjustable tool pieces therein grouped to form a strand wire rope-way therebetween, hydraulic means operable upon said pieces for exerting uniform pressure thereon throughout the group, the last mentioned means including fulcrum plungers acting directly on said tool pieces, means for exerting pressure on the respective plungers, and a core within the head and having guideways for each of said tool pieces.

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