

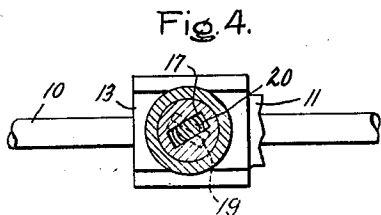
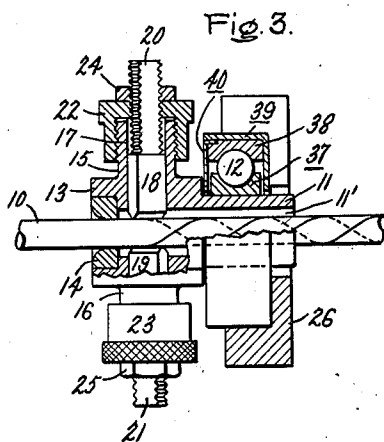
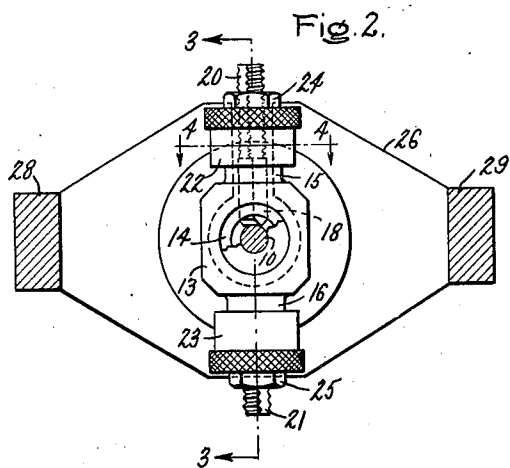
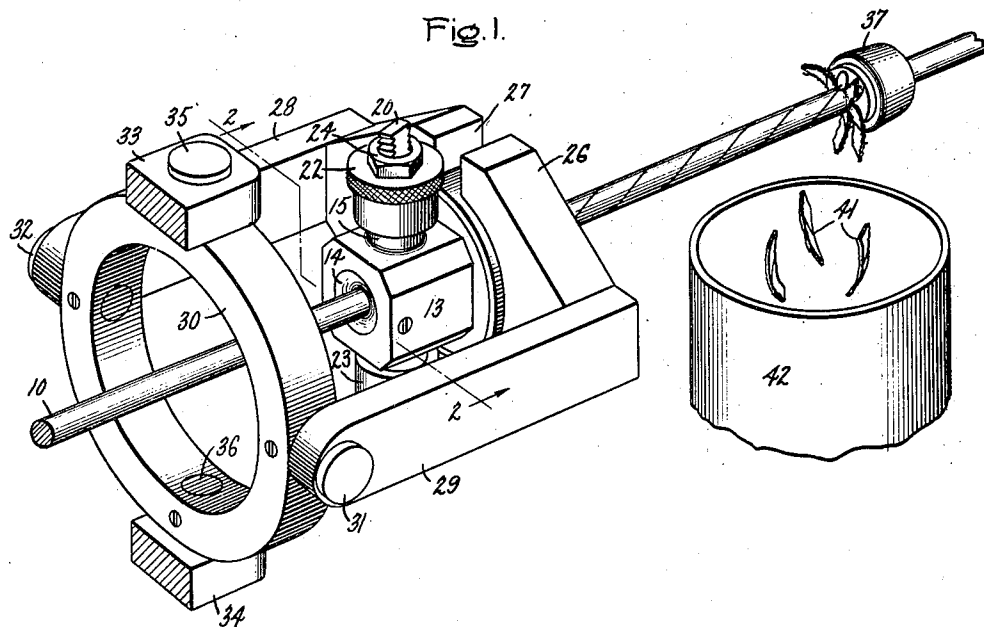
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C. A. BAILEY

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SCORING DEVICE

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2,323,700

SCORING DEVICE

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3 Claims. (Cl. 90—29)

My invention relates to scoring devices and more specifically to a device for scoring the surface of a wire.

One object of my invention is to provide an improved device for automatically producing a spiral score upon the surface of a wire during axial movement of the wire, and for a consideration of what I believe to be novel and my invention, attention is directed to the following specification and the claims appended thereto.

One application of my invention is in the preparation of wire which is to be shaved in accordance with the process set forth in U. S. Patent 2,233,928 issued to Caius E. Weaver March 4, 1941. The process described and claimed in that patent provides for the separation of the wire surface into ribbons, which ribbons are simultaneously removed from the surface of the wire. This operation is carried on at such high speeds that the disposition of these continuous ribbons emerging from the shaving apparatus becomes a troublesome problem.

It has been suggested that the scoring of the wire surface at suitably spaced intervals laterally of the axis will tend to produce a breaking of the removed ribbons at such scores, and apparatus has been used for producing such scoring of the wire surface. In accordance with my invention I provide an improved device for producing suitable scores on the surface of the wire and such scoring is produced as a result of, and only during, an axial movement of the wire with only a minimum of axial stress placed upon the wire.

In the accompanying drawing Fig. 1 is a perspective view of my improved device as applied to the scoring of a wire surface; Fig. 2 is a sectional elevation taken along line 2—2 of Fig. 1; Fig. 3 is a sectional elevation taken along line 3—3 looking in the direction of the arrows in Fig. 2; and Fig. 4 is a sectional elevation taken along line 4—4 of Fig. 2.

Referring to the drawing in detail, a wire or rod 10 which is to be scored is drawn through my improved scoring device comprising a tubular member 11 provided with a bore 11' mounted in a ball bearing 12 for rotation about the axis of the wire 10. The member 11 is provided at its forward end with a rectangular head 13 having inserted at its end a centering sleeve, or die, 14 through which the rod 10 passes into and through the bore 11'. The bore in this die is shaped similarly to that of a drawing die having its forward end rounded, but is of such diameter as to center the wire 10 with a minimum of friction, its

function being to guide the wire into the center of the bore 11' and to hold it against any displacing force that may be exerted upon it.

At a short axial distance from the die 14, the head is provided with tubular extensions 15 and 16 extending vertically from the sides of the head, diametrically opposite each other, their common axis intersecting the axis of the bore 11'. These extensions are provided with rectangular openings 17 (see Fig. 4) the major axes of which are arranged at substantially 30° to the axis of the wire and at 60° to each other. Into these rectangular openings scoring tools 18 and 19 are placed. The scoring tools are provided with scoring edges which are coincident with the major axes of the tools. This angular relationship of the scoring edges to the axis of the wire drawn through the device effects a rotation of the tools about the axis of the wire, to produce spiral scores, whenever there is a relative axial movement between the wire and the device. The pitch of the spirals so produced is determined by the specific angle that is chosen for the displacement between the scoring edge and the wire axis. These scoring edges are slightly flattened so as to produce a score rather than a cut on the wire surface thereby to prevent too deep a penetration of the wire surface.

The tools 18 and 19 are moved axially by threaded studs 20 and 21 placed into the rectangular openings. These normally round studs are flattened, by the removal of portions of the threads, sufficiently to fit between two sides of the rectangular openings 17 and the remaining portion of the screw-thread thereon is of such diameter that the studs may freely pass up and down between the other two sides of the opening 17. For the purpose of moving the studs 20 and 21, caps 22 and 23 are screwed over the ends of the extensions 15 and 16. Each of the caps is provided with a threaded opening at its axis through which the stud may pass. The screw-thread on the tubular extension and the screw-thread on the stud are of different pitch. In the illustrated example, the threads on the tubular extension are 20 to the inch and the threads on the studs are 24 to the inch. For this reason the turning of the cap which is provided with respectively corresponding threads produces an axial movement of the cap which is greater than the opposite movement of the stud relative to the cap resulting in a movement of the stud which is proportional to the difference in the pitch of the threads. A minute axial adjustment of the tools is thereby obtainable with a relatively large

rotational movement of the caps. Lock nuts 24 and 25 are provided on the outer surface of the caps to lock them against rotation after a proper adjustment of the tools is obtained.

The scoring tool with its bearing is supported during operation by a stirrup bracket 26 which is provided with a suitable recess to receive the bearing 12 and is provided with a slot 27 projecting from one side of the stirrup past the center of the recess so that the scoring device may be placed on the wire and thereafter the bracket 26 may be moved into position to support the device. During this movement of the bracket the wire moves in this slot toward the center of the recess until the bracket recess is in position to receive the bearing 12. The bracket 26 is provided with arms 28 and 29 attached to the bracket at one end and pivoted to a ring 30 at two diametrically opposite pins 35, 36, the common axis of these two pins being at 90° to the pivotal axis (pins 31, 32) of the stirrup arms whereby a limited universal movement of the stirrup may be obtained about the axis of the ring 30. The ball bearing 12 is preferably of the type that is adapted to resist a thrust force. It comprises the inner race 37, an outer race 38 and an enclosure comprising two telescoping members 39, 40. The outside diameter of the enclosure is such that it slides readily into and out of the recess provided for it in the stirrup bracket 26.

In operation the wire 10 is threaded through the die 14 and bore 11'. The wire is then moved and tension is placed upon it (by capstans not shown) until the bearing 12 is placed into the recess in the bracket 26. The wire is then held stationary and the caps 22 and 23 are turned until the tools penetrate the surface of the wire. The wire is then restarted. This adjustment is repeated, if necessary, until a suitable depth is obtained for the scoring. This is evidenced by the breaking up of the chips 41 falling into a suitable container 42 at the shaving die 37. It is possible to control the length of the chips by a slight adjustment of these tools. If the tools are adjusted, for example, to a depth equaling the thickness of the chips, then the chips will break at each one of the scores. A slight reduction of this depth, however, will cause the

chips to break at alternate scores or at less frequent intervals so as to produce a longer chip. Longer chips are sometimes desirable since they may be pressed into bales held together only by wire, no container being necessary.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a scoring device, the combination of a tubular member, tubular extensions protruding from the side of said tubular member, scoring tools mounted in said tubular extensions and adjustable relatively to the axis of said member, a stirrup bracket, a universal connection between the said bracket and a stationary support, and a thrust bearing between said tubular member and said bracket providing for relatively free rotation of said tubular member about its axis.

2. In a scoring device, the combination of a tubular member, scoring tools mounted in said tubular member at right angles to the axis thereof, means for adjusting said tools relatively to the axis of said member, a stirrup bracket, a universal connection between said bracket and a stationary support, a bearing mounted upon one end of said tubular member, a recess in said stirrup to receive said bearing, and a slot in said stirrup bracket extending from one edge past the center of said recess whereby said scoring tool may be placed upon a rod to be scored and the stirrup bracket thereafter moved into place about said wire to receive said bearing.

3. In a scoring tool, the combination of a tubular member, tubular extensions projecting from the side of said tubular member, scoring tools mounted in said projections, and means for adjusting said tools relatively to said axis comprising a cap threaded upon said tubular extension, a threaded stud projecting through a centrally located threaded opening in said cap and movable axially to adjust the scoring tool in said sleeve, the pitch of the thread on said cap and tubular extensions being greater than the pitch of the thread in the opening in the center of said cap and on said stud whereby a rotation of said cap provides an axial movement of said stud relatively to said cap which movement is proportional to the difference in the pitch of the two threads.

CARL A. BAILEY.