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R. W. HENRY

2,379,801

METHOD OF PRODUCING STEPPED WIRE

Filed May 3, 1943

FIG. 1.

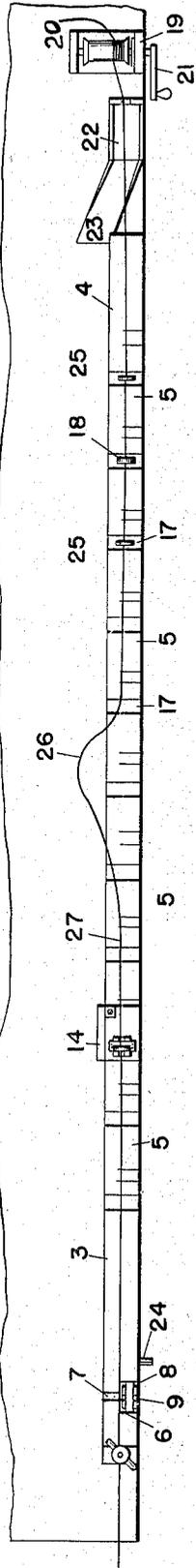


FIG. 2.

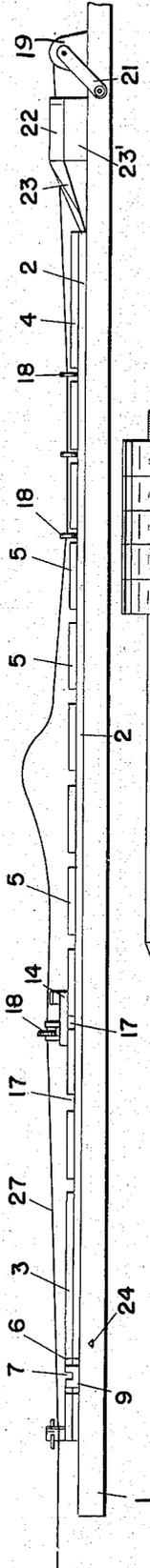


FIG. 3.

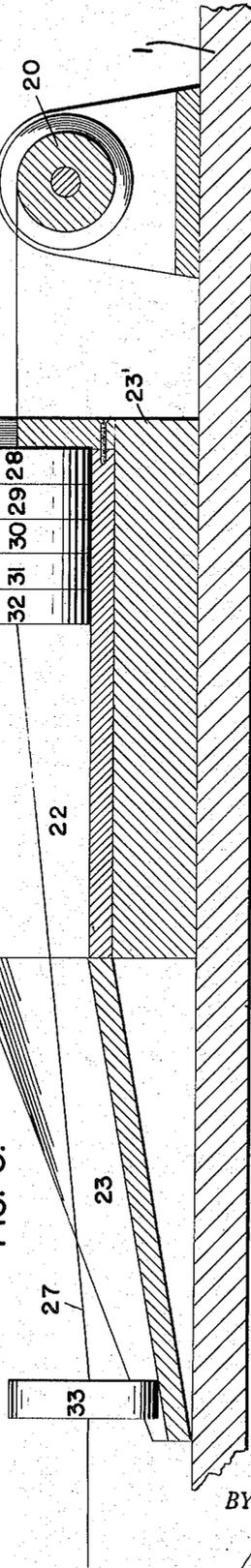


FIG. 4.

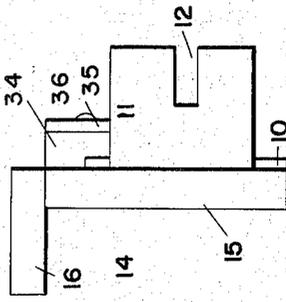


FIG. 5.

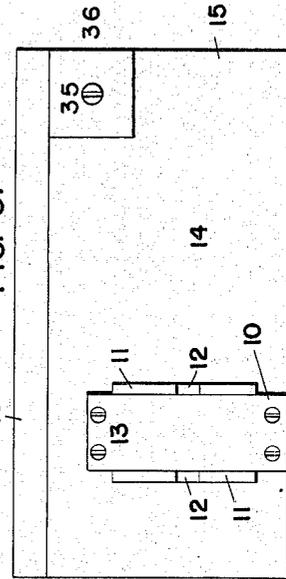
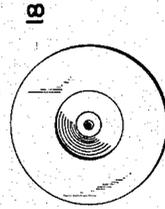


FIG. 6.



INVENTOR.  
RALPH W. HENRY

BY

*James D. Heilman*  
ATTY.

# UNITED STATES PATENT OFFICE

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## METHOD OF PRODUCING STEPPED WIRE

Ralph Walter Henry, Manor Township, Lancaster County, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.

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2 Claims. (Cl. 205—21)

This invention relates to a method and apparatus for producing stepped wire.

The object of the invention is to produce a wire having several different diameters.

A further object is to produce a wire that will be divided into lengths of different cross-sectional area.

A further object is to produce a wire having a series of sections arranged in gradually increasing diameters.

A further object is to provide a wire having a series of equal central sections with relatively larger end sections, said sections being arranged in increasing diameter.

The invention is illustrated to support the method in the drawing in which:

Fig. 1 is a plan view of the apparatus.

Fig. 2 is a front view of the same.

Fig. 3 is an enlarged section on line 3—3 of Fig. 1.

Fig. 4 is an end view of the slide.

Fig. 5 is a plan view of the slide.

Fig. 6 is a view of the die.

The invention as shown is manually operated but the method could be easily adapted to complete automatic operations and is not herein limited to the apparatus here shown and described.

Referring to the drawing a table or bench 1 supports a base 2 on which are fixed end sections 3 and 4 and central sections 5. The end sections are two or more times the length of the central sections for a purpose hereinafter disclosed. Each of the central sections is approximately two feet long which length is essential.

The end section 3 is formed with a cut out portion 6 having a reduced portion 7 and an enlarged portion 8. The base 1 under the enlarged portion is also cut away to make room for a die holder 9. This die holder has a base 10 with upturned sides 11 having a central slot 12 formed therein. This die holder is similar to the die holder 13 of the slide 14 and whose parts are numbered accordingly.

The slide 14 is formed with a base 15 and a downwardly projecting guiding edge 16 and is large enough to bridge the spaces 17 between the sections 5. The slide 14 carries a wire drawing die 18 in the die holder 13.

Located at the end 4 of the apparatus is a reeling standard 19 having a spool 20 carried thereby and a crank 21 to turn said spool. A ratchet mechanism (not shown) or any suitable stop is used to prevent the spool turning except in one direction.

A die receiving trough 22 is mounted on a base 23 which rest on the table 1 between the end 4 and the standard 19. A ramp 23 leads from the table level to the trough which is on a level with the spool.

In the carrying out of the method by the apparatus shown it is, of course, necessary to have a number of dies equal to one less than the number of graduated steps desired in the finished wire. The dies must, of course, be of different size openings and used in order, largest first. The wire is measured for the desired length, secured to the spool and stretched the length of the apparatus. The end is tapered by holding the wire between two pairs of pliers and manually drawing back and forth across the triangular pin 24 until the wire breaks from stretching. This leaves a pointed end which may be easily threaded through the smallest size die. A leather block 34 is secured to the slide 14 by a plate 35 and screw 36 and is used to temporarily secure the end of the wire during the time the wire is drawn through the die which is in holder 9. This prevents the accidental kinking or colling of the wire during this initial operation. The largest die is threaded onto the wire by hand and the die dropped into the die holder 9, the wire being drawn farther through the die until the wire is taut. The die is then lifted from the die holder 9 and dropped into the die holder 13 on the slide, which is positioned adjacent the cut out portion 6, and the end of the wire secured in the vise. The slide is moved manually across the sections until it reaches a mark 25 on section 4. This mark is calculated for the stretch 26 in the wire 27 due to drawing, which stretch over the entire operation varies from one-tenth the length of the wire to the entire length of the wire.

In calibrating for stretch as many stop marks may be used as there are wires of different diameters drawn. For convenience only two stopping marks are shown. The last section is left untouched as the wire is selected for a diameter equal to the desired largest diameter. The die is then removed from the holder and dropped in one of the spaces 17 and the slide moved to the vise end to repeat the operation with a slightly smaller die. After the last die has been drawn along the wire, the wire with its accompanying dies is rolled off the sections onto the table, the wire being then wound on the spool, the dies 28, 29, 30, 31 and 32 being shown in place in the die receiving trough, 33 while die 33 is shown (Fig. 3) being drawn along

the ramp towards the trough. This reeling operation automatically stacks the dies in order. As the dies have only to be withdrawn the short length of a single section before the reduction in diameter clears the die there is practically no further stretch in the wire.

Wire formed by this method may have various uses, one of which being to ream a jewel opening where the process is carried out in several steps each with a different size wire. By making this stepped wire production is increased due to the time saved in stringing the jewels on the wire. Undoubtedly there are many other uses to which a wire made in accordance with this invention could be put.

What is claimed is:

1. A method of drawing wire consisting of threading a plurality of dies having gradually decreasing diameters on said wire, said dies being threaded successively and each die completely carried through its operation before the next successive die is threaded on the wire, anchoring one end of the wire, moving the die having the largest diameter substantially the full length of the wire, retaining a short length of the wire of original diameter, moving the next die in decreasing order of diameter size along the length of the wire, terminating the movement of said second mentioned die at a distance from the end of the wire sufficient to retain a portion of the wire of a diameter equal to the first mentioned die, moving a third die in decreasing order of diameter along the wire a distance to leave a predetermined amount of wire equal in diameter to the diameter of said second mentioned die, moving a fourth die in decreasing order of diameter along the wire a distance to retain a length of wire equal to the diameter of the third mentioned die, moving a fifth die along the wire a sufficient distance to retain a portion of the wire equal to the diameter of the fourth mentioned die and moving a sixth die along the wire a distance sufficient to retain a portion of the wire equal in diameter to the fifth mentioned die and an additional

portion of the wire equal in diameter to the sixth mentioned die, spooling the wire from the large end, the dies being arrested by a trough, the wire being drawn completely through the dies, leaving said dies in graduated position in the trough.

2. A method of drawing wire consisting of threading a plurality of dies having gradually decreasing diameters on said wire, said dies being threaded successively and each die completely carried through its operation before the next successive die is threaded on the wire, anchoring one end of the wire, moving the die having the largest diameter substantially the full length of the wire, retaining a short length of the wire of original diameter, moving the next die in decreasing order of diameter size along the length of the wire, terminating the movement of said second mentioned die at a distance from the end of the wire sufficient to retain a portion of the wire of a diameter equal to the first mentioned die, moving a third die in decreasing order of diameter along the wire a distance to leave a predetermined amount of wire equal in diameter to the diameter of said second mentioned die, moving a fourth die in decreasing order of diameter along the wire a distance to retain a length of wire equal to the diameter of the third mentioned die, moving a fifth die along the wire a sufficient distance to retain a portion of the wire equal to the diameter of the fourth mentioned die and moving a sixth die along the wire a distance sufficient to retain a portion of the wire equal in diameter to the fifth mentioned die and an additional portion of the wire equal in diameter to the sixth mentioned die, all of said portions of the wire of different diameters being substantially of equal length, spooling the wire from the large end, the dies being arrested by a trough, the wire being drawn completely through the dies, leaving said dies in graduated position in the trough.

RALPH WALTER HENRY.