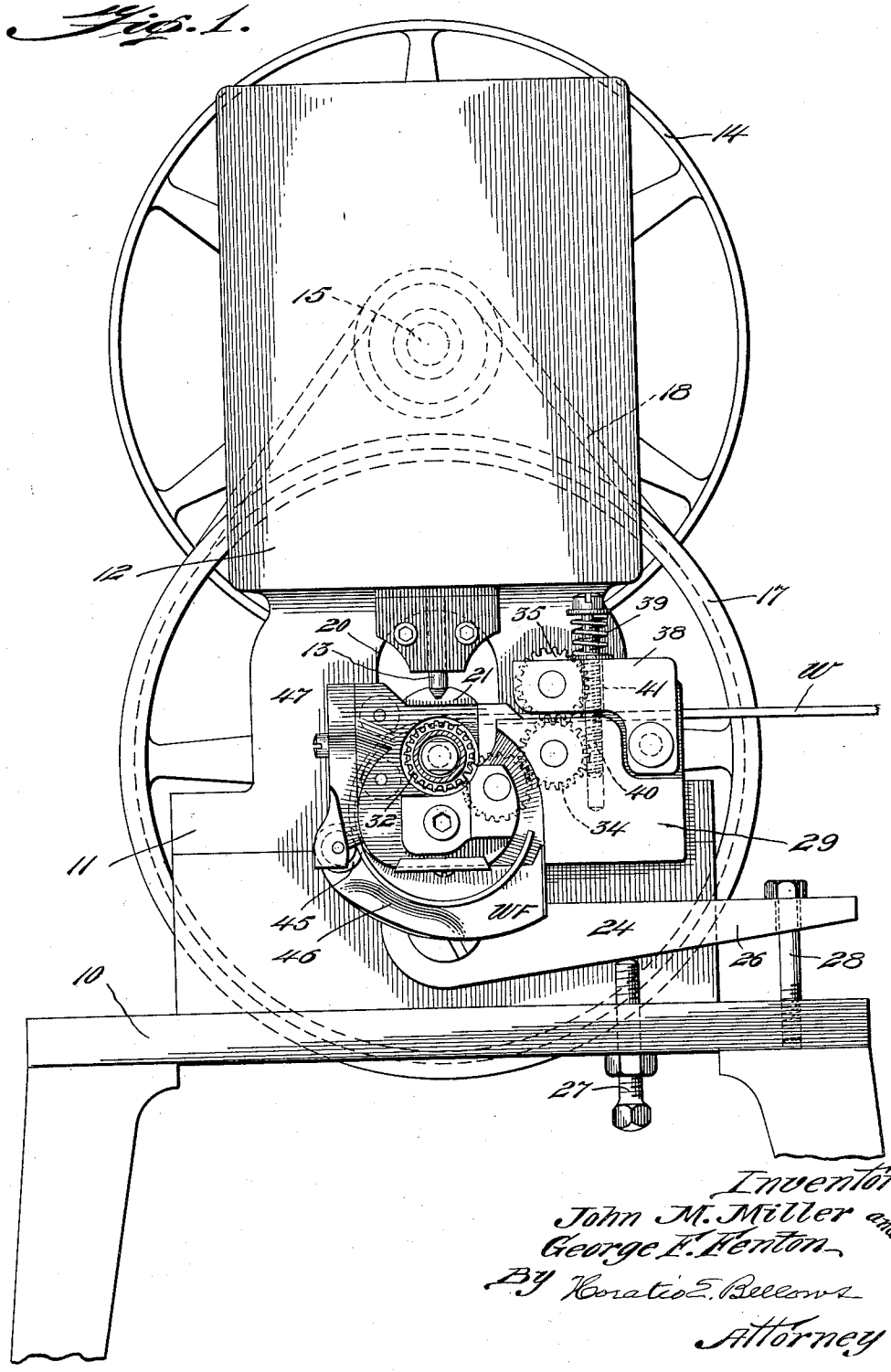
July 9, 1935. J. M. MILLER ET AL 2,007,303

JEWELRY ORNAMENTATION

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Fig. 1.



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JEWELRY ORNAMENTATION

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Fig. 2.

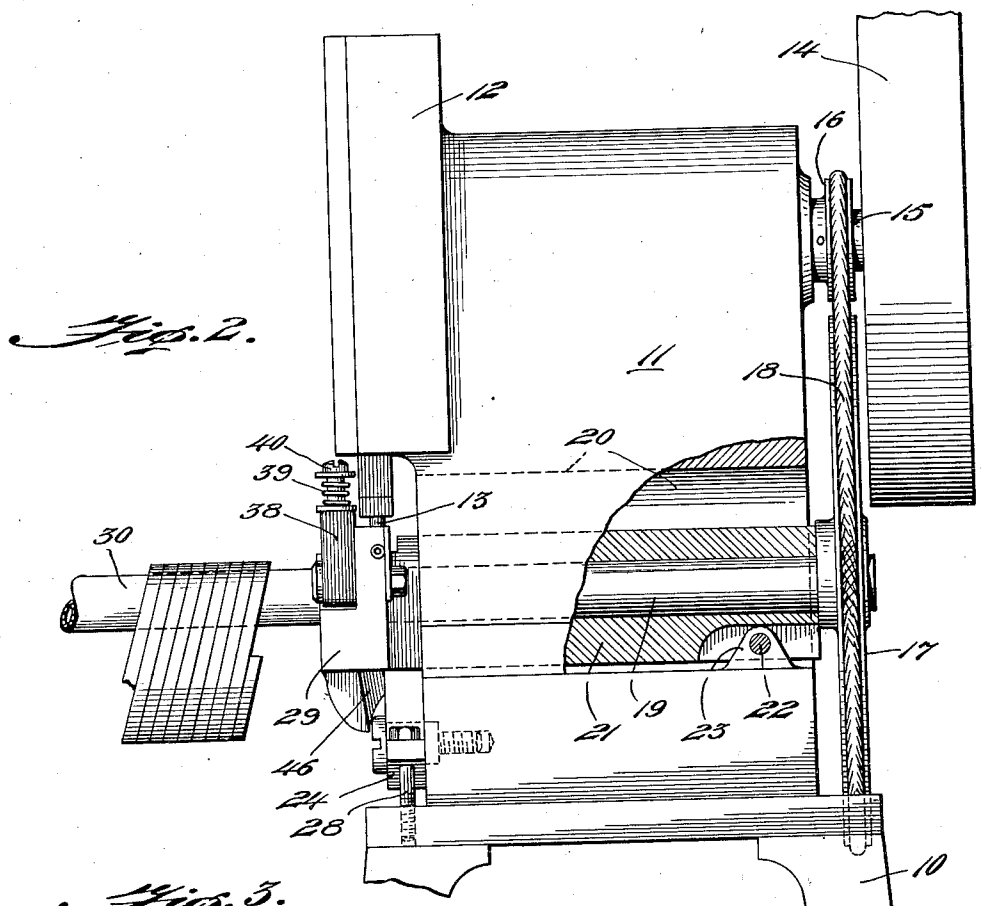
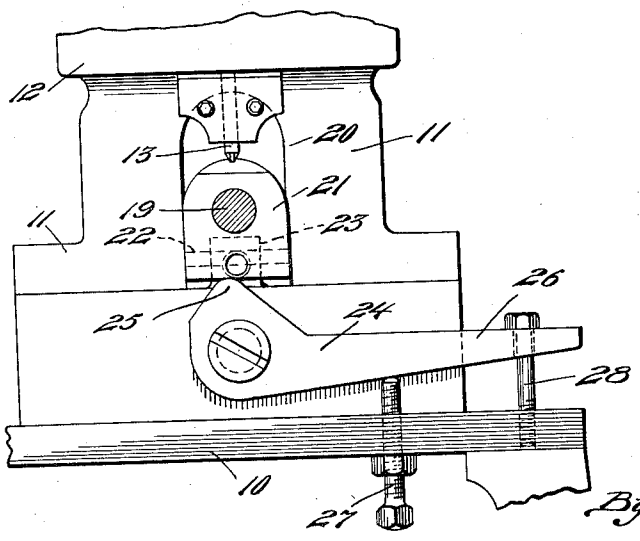


Fig. 3.



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Fig. 4.

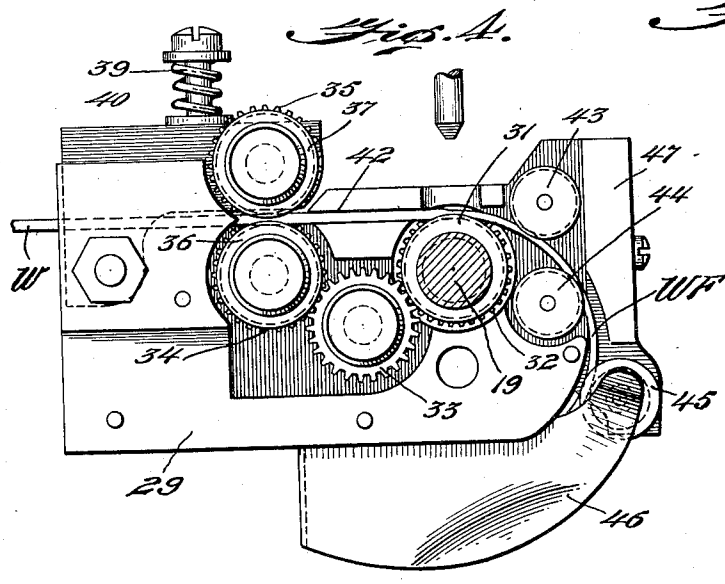


Fig. 7.

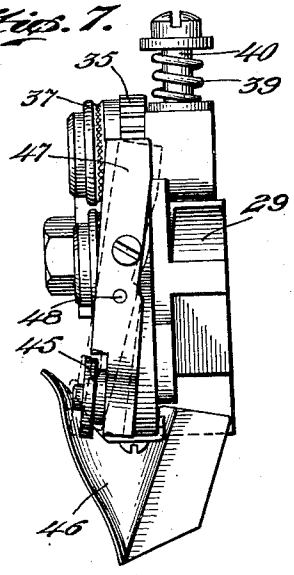


Fig. 8.

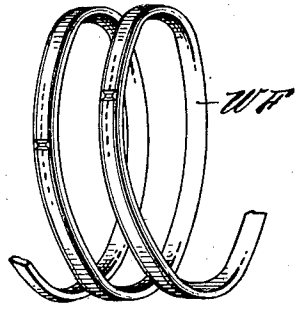


Fig. 5.

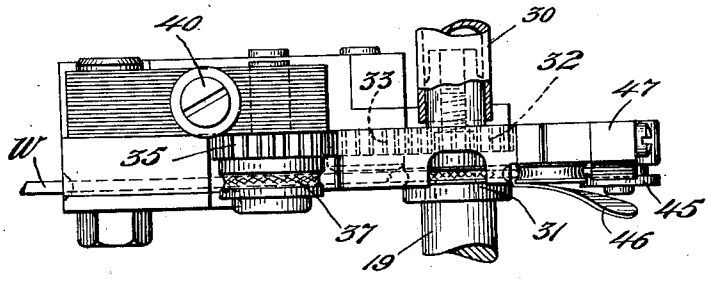


Fig. 9.

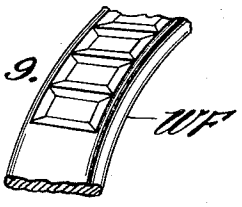
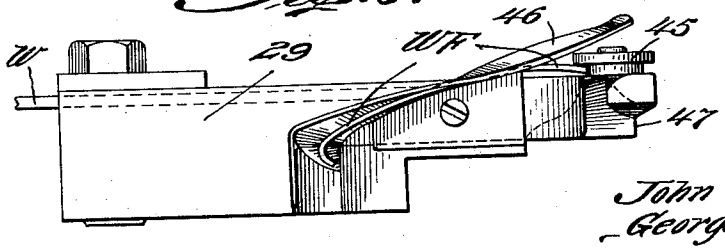


Fig. 6.



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UNITED STATES PATENT OFFICE

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JEWELRY ORNAMENTATION

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Application November 23, 1933, Serial No. 699,476

9 Claims. (Cl. 29—160.6)

Our present invention relates to the art of jewelry manufacture, and has particular reference to the manufacture of ornamental stock for bracelets, anklets, girdles, and other articles of jewelry.

The ornamental stock now in use include stock formed with prismatic depressions, preferably formed by stamping the stock with diamond dies, whereby the stock when made into jewelry reflects light brilliantly and presents the appearance of jewel inserts. This stock when used for bracelets, for example, has heretofore been made as single rings for use in groups of three or more, the separate rings being joined or secured together by means of a connecting band or the like.

We have devised a novel method and apparatus for producing the novel stock in the form of a continuous metal helix, of any desired length; and we have devised a manufacturing arrangement to control the spacing of the helix turns, whereby the turns may be close, or may be uniformly spaced apart to permit the insertion of an ornamental helix of different material, such as for example catalin of different colors.

To this end, we have improved the process of manufacturing ornamental helix, and we have improved the apparatus therefor, so as to utilize soft metal wire, which is hardened and elongated by working, whereby a novel product consisting of a continuous ornamental metal helix of predetermined size and spacing is automatically obtained.

With the above and other objects and advantageous features in view, our invention consists of a novel process, and a resulting novel product, as more fully disclosed in the detailed description following in conjunction with the accompanying drawings, and as more specifically defined in the claims appended thereto.

In the drawings,

Fig. 1 is a front elevation of the improved apparatus;

Fig. 2 is a side elevation, parts being broken away;

Fig. 3 is a detail view, showing the mechanism for regulating the depth of the impression on the metal wire;

Fig. 4 is a detail rear elevation of the novel anvil fixture cooperating with the imprinting plunger;

Fig. 5 is a top view thereof, the wire being broken away to show the anvil surface;

Fig. 6 is a bottom view thereof, illustrating the shape of the plate guide;

Fig. 7 is a side elevation of Fig. 4, disclosing the spacing adjustment;

Fig. 8 is a perspective view of the resultant helix, showing the spacing between the helix turns; and

Fig. 9 is a detail perspective view showing the impressed design.

Referring to the drawings, the novel apparatus is generally similar to standard punch or impressing mechanism, and includes a base **10** adapted to be mounted on a bench or the like, a body **11** receiving an anvil fixture, and a head **12** containing the usual plunger operating mechanism, the head **12** housing a reciprocating plunger **13**. A power pulley **14**, see Fig. 2, rotates the usual shaft **15** of the plunger operating mechanism, and a pulley **16** is keyed on the plunger shaft to impart rotative movement to a fixture pulley **17**, as by a belt **18**, whereby the fixture shaft **19** is rotated in timed relation to the reciprocating movement of the plunger.

The fixture shaft mounting

The body **11** is provided with a horizontal longitudinal slot **20** in which a fixture shaft holder **21** is slidably mounted, this holder being recessed at the rear and pivotally mounted on a transverse pivot **22** extending through an ear **23**, integral with the body **11**. The fixture shaft **19** is housed in the holder, which acts as a bearing therefor. A cam lever **24**, see Fig. 3, is swingingly mounted on the face of the body **11**, and has a cam nose **25** which engages the lower face of the holder, whereby adjustment of the arm **26** of the lever by means of the spaced lock screws **27, 28** swings the holder to lift the fixture shaft **19** and thus regulate the depth of impress of the reciprocating plunger on the metal wire, as hereinafter described. The belt **18** has sufficient resilience to compensate for slight changes in angularity of the fixture pulley **17**.

The anvil fixture

The anvil fixture **29**, see Fig. 2, is mounted on the body **11** in operative engagement with the forward end of the fixture shaft, and a guide shaft **30** is positioned on the end of the fixture shaft to receive the completed helix as it leaves the anvil fixture.

Referring now to Figs. 1, 4, and 6, the anvil fixture **29** has an anvil **31** rotatably mounted thereon and adapted to be keyed to the shaft **19**, whereby the anvil is positively rotated. A gear **32**, see Fig. 5, is secured to or formed integral with the anvil, and rotates an idler **33** for

imparting positive motion to the gears **34**, **35**, secured to or integral with a lower feed roll **36**, and an upper feed roll **37** which is mounted in a swinging arm **38** and is resiliently pressed towards the lower feed roll by a spring **39**, the spring being locked on an adjusting bolt **40** which is threaded in the fixture body and passes through a suitable bore **41** in the swinging arm. The lower feed roll is preferably knurled to provide a firm grip on the wire, and may be roughened or embossed to firmly grip the wire or to impress an attractive design on the inner surface thereof. A horizontal guideway **42** is provided in the fixture between the anvil and the feed rolls.

Two guide rollers **43**, **44**, see Fig. 4, receive the impressed wire after it leaves the anvil, and an adjustable forming roller **45** then guides the wire onto a forming plate **46** having curved elevations and depressions which cooperate with the forming roller to set the curvature of the wire, the vertical setting of the adjustable forming roller determining the diameter of the formed helix, and the lateral setting of the forming roller determining the spacing of the formed coils. The forming roller **45** is rotatably mounted in an arm **47**, see Figs. 4 and 7, which is detachably secured to the fixture body, and may be shifted vertically by removing and resetting a pivot pin **48**, on which it may also be adjustably swung, see Fig. 7, in order to secure a predetermined uniform spacing between coils, as indicated in Fig. 8.

The operation of the mechanism

The operation is best disclosed with reference to Figs. 4, 5, and 1; the metal wire W is received in the fixture between the two feed rolls, and is positively fed to the anvil, at which point it receives the rapid impacts of the rapidly reciprocating plunger. The wire W is of the variety known as "dead soft" in the trade, but becomes hardened by the working, as the plunger impacts on the anvil reduce its cross section and elongate its length to harden the wire. The worked wire is now led to the forming roller and the forming plate, which act as bending elements to curve the wire into a helix of definite diameter and spacing, the diameter of the helix being dependent on the vertical adjustment of the forming roller and the coil spacing being dependent on the lateral adjustment thereof.

Although the stock may be with any desired design, the most suitable imprints are of diamond formation, and the preferred type is illustrated in Fig. 9, and is in the form of an inverted truncated pyramid having a rectangular base, a rectangular top, and sloping faces between the corresponding sides of the base and top.

The above described operation, using a rotary anvil, punches the impression on the stock at the start of the curve, and thus produces an impression in which the design is not distorted and the brilliancy is not effected by the actual curving, such as would result when the impressed stock is wound on an arbor. The brilliancy and clean punch effect of the impression in the final helix is thus unimpaired.

It is thus evident that the invention comprises a novel process in that a dead soft metal wire is worked to obtain a desired impressing and to harden the wire, and is then bent into a spiral of predetermined diameter; a novel apparatus in that the mechanism is adjustable to gauge the impression and to set the spiral obtained for diameter and for spacing; and a novel product in that an ornamental spiral of desired width and spacing and of springy metal is obtained.

While we have described a specific constructional embodiment of our invention, it is obvious that desired changes in the arrangement and the size of the parts and in their function and operation, may be made without departing from the spirit and the scope of the invention as defined in the appended claims.

We claim:

1. A helix of hardened resilient material having indented ornamentation on the outer surface thereof.

2. A helix of hardened resilient material having indented ornamentation on the outer surface thereof, the coils of the spiral being uniformly spaced apart.

3. A hardened resilient stock for use in making ornamental jewelry, having adjacent impressions of truncated rectangular pyramidal shape.

4. In the manufacture of ornamental jewelry, the steps of hardening a metal wire by indenting the upper part while holding the sides and the lower part against spreading, and winding the hardened wire into a helix.

5. In the manufacture of ornamental jewelry, the steps of hardening a metal wire by indenting the upper part while holding the sides and the lower part against spreading, and winding the hardened wire into a helix of predetermined diameter.

6. In the manufacture of ornamental jewelry, the steps of hardening a metal wire by indenting the upper part while holding the sides and the lower part against spreading, and winding the hardened wire into a helix of predetermined diameter and predetermined spacing between the coils thereof.

7. A helix of hardened resilient material having indented ornamentation on the outer surface thereof, the sides and the lower surface of said material being substantially smooth.

8. A helix of hardened resilient material having indented ornamentation on the outer surface thereof, the coils of the helix being uniformly spaced apart, the sides and the lower surface of said material being substantially smooth.

9. A hardened resilient stock for use in making ornamental jewelry, having adjacent impressions of truncated rectangular pyramidal shape, the sides and the lower surface of said stock being substantially smooth.

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