Jan. 2, 1934. O. KLEINSCHMIT 1,942,249

APPARATUS FOR PRODUCING WIRE STAPLES IN COHERENT STRIPS

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Fig. 1.

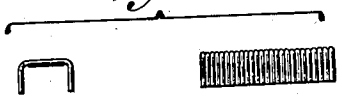


Fig. 1a.

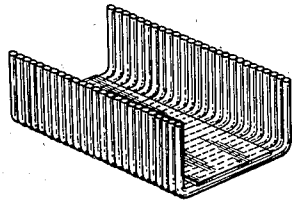


Fig. 2.

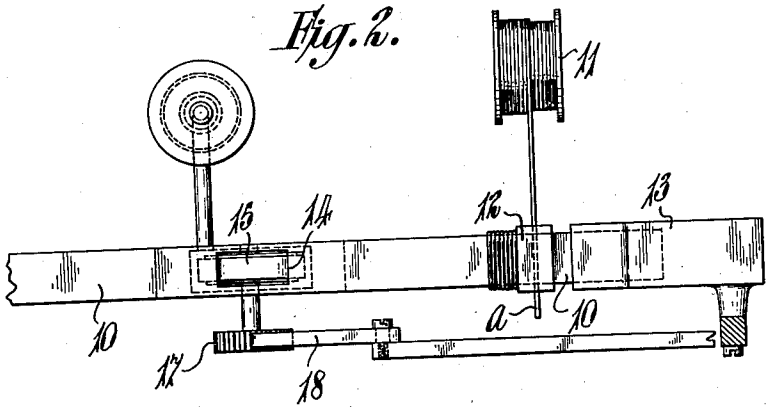
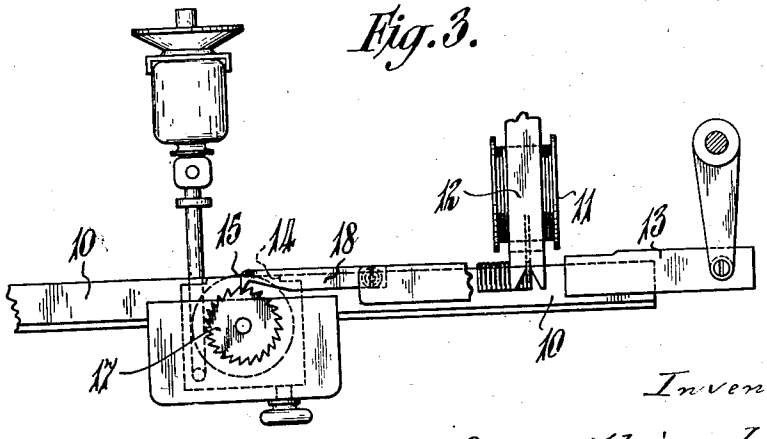


Fig. 3.



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APPARATUS FOR PRODUCING WIRE STAPLES IN COHERENT STRIPS

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20 Claims. (Cl. 59—71)

The present invention relates to wire staples and is more particularly concerned with a method of producing such staples in coherent strips of the required length for insertion in the magazine of a wire-stitching or like machine.

The production of such strips is already known to the art, the staples, when secured in this form, being handled and fed to the machine much more conveniently than when loosely arranged on a bar. In the known forms of staple strips, the interconnection of the individual staples is effected by soldering the adjacent staples together or by applying a strip of solder or cementitious material along the back or horizontal surfaces of the assembled staples. Methods of interconnecting the staples by applying solder or strips of paper to the outer angles of the staples have also been disclosed.

In the above known methods where solder is employed the disadvantage is experienced that the soldering flux which is indispensable for the operation causes discolouration of the outwardly situated soldered surfaces of the staples. This is particularly noticeable when the staple strips are left for a considerable time and not only spoils the appearance of the staples but also tends to render them unfit for use.

On the other hand, connecting the staples together by cementing the back surface has the disadvantage that the contractive action of the cementitious layer, when drying, warps the staple-strips and entails the supplementary work of trueing the strips after drying, thus entailing extra work and a proportion of rejected strips.

In any of the known methods above described, the securing means is left on the outer exposed portion of the applied staple and so spoils the finished appearance of the latter.

The object of the present invention is to connect the staples together, in the course of manufacture, in a manner which will produce staple-strips which are both perfectly straight and will remain unwarped and which also are unsoiled on the surface displayed by the applied staples.

According to this invention apparatus is provided for carrying into effect a method of producing a coherent strip of staples whereby an inner side of a row of staples, assembled in a manner known per se, is coated with quick drying adhesive the contractive force of which, during the drying thereof, causes the several sides of the adjacent assembled staples to press together, so that the resulting staple-strips remain firmly connected in a straight line.

Apparatus for carrying this method into effect, is shown in the accompanying drawing, embodied in a staple producing machine.

Fig. 1 illustrates diagrammatically the method of securing the row of staples into a coherent strip.

Fig. 1*a* is a perspective view of a staple-strip so formed.

Fig. 2 is a side elevation of part of a staple forming machine showing the apparatus used for assembling and securing together the rows of staples, and

Fig. 3 is a plan view thereof.

Referring to Figs. 1 and 2, the staple forming anvil 10, projecting from the machine in the longitudinal forward direction, is associated with a wire-supply reel 11 and staple forming mechanism 12, of known type. The latter cuts the wire, periodically fed from the reel 11, into suitable lengths *a* each of which is bent into rectangular channel form over the anvil 10, by means of the staple-former 12. The staple, thus formed, is moved forward along the anvil 10 by means of a reciprocating pusher member 13, in common with the staples subsequently formed. In this manner, a row of staples is progressed along the anvil 10 and caused to pass over a vertical recess 14 formed at a convenient point of the anvil.

An adhesive applying roller or disc 15 is rotatably mounted in a tray or bath containing an adhesive such as lacquer and positioned immediately below the recess in the anvil 10. The roller is arranged to project through the recess 14 and so contact at its periphery with the underside of the row of staples being pushed past the recess as above described. The roller 15, which is preferably faced with an absorbent material, is slowly rotated continuously or intermittently so that a freshly moistened portion of the periphery engages each of the staple-strips that are progressed past.

One means of intermittently rotating the adhesive roller is shown in Figs. 2 and 3. An extension of the shaft, upon which the adhesive roller is mounted, carries a ratchet wheel 17. A pawl member 18 connected to the mechanism which actuates the pusher member 13, engages the ratchet wheel as shown. In this manner, the adhesive roller 15 is carried round one step during each stroke of the reciprocating pusher member 13. The adhesive tray or bath is continuously replenished with adhesive by known means as shown.

The roller 15 could be moistened, if preferred, by a drip feed or other known means.

In this manner the staples in the slowly moving row are coated on the underside of the transverse portion with a strip of adhesive such as quick drying lacquer as shown in Figs. 1 and 1a which provides the binding force as above described.

Positioned at the delivery end of the anvil, is an automatically controlled severing device (not shown) which severs the interconnected staples, thus joined, into coherent strips of the desired length.

I claim:

1. Apparatus for use in a staple-strip producing machine, comprising a staple-shaping anvil having a recess formed therein, an adhesive applying member projecting through the said recess, and means for placing each member of the said row of staples into contact, consecutively, with the said adhesive applying member.

2. Apparatus for use in a staple-strip producing machine, comprising a staple-shaping anvil, an adhesive applying member associated with said anvil, and means for intermittently rotating the said adhesive applying member in timed relationship to the movement of the staple strip.

3. Apparatus for use in a staple-strip producing machine, comprising a staple-shaping anvil having a recess formed therein, an adhesive container, an adhesive applying member positioned in the said container and projecting through the said recess, means for progressing a row of staples along the said anvil to contact internally with the adhesive-applying member, and means for intermittently rotating the said adhesive-applying member in timed relationship to the staple-positioning mechanism.

4. Apparatus for use in a staple-strip producing machine, comprising a staple-shaping anvil, an adhesive applying member associated with the anvil, means for contacting each member of a row of staples with the adhesive-applying member, and means for supplying the said adhesive-applying member with adhesive from a continually replenished container.

5. Apparatus for producing a coherent strip of staples, comprising, in combination, staple forming mechanism, a staple-shaping anvil having a recess formed therein, an adhesive applying member projecting through the said recess, means for advancing the staples along the said anvil to contact with the said adhesive-applying member, means for intermittently rotating the said adhesive-applying member in timed relationship to the staple advancing means, and means for supplying adhesive to the adhesive-applying member.

6. Apparatus for use in a staple-strip producing machine, comprising a staple-shaping anvil, an adhesive-applying member associated with the said anvil, an adhesive-supply container, means for contacting each member of a row of staples with the adhesive-applying member, and a controlled feed device to feed the adhesive to the said adhesive-supply container.

7. Apparatus for producing a coherent strip of staples, comprising in combination, a staple forming mechanism, a staple-shaping anvil, an adhesive container, an adhesive applying member associated with the said container and projecting beyond one surface of the said anvil, means for advancing a row of staples along the said anvil to contact an undersurface of the said row with the said adhesive-applying member, a controlled feed device to supply the said adhesive-container with adhesive, and means for replenishing with adhesive the surface of the adhesive-applying member.

8. Automatically actuated apparatus for use in a staple-strip producing machine, comprising means for assembling a row of staples in strip formation, a source of adhesive-supply, adhesive-applying means associated with said adhesive-supply and means for moving the strip of staples past the adhesive-applying means to apply adhesive to an underside of each staple assembled in the said staple-strip.

9. Apparatus for use in a staple-strip producing machine, comprising means for assembling mechanically a row of staples in strip formation, a source of adhesive-supply, a mechanically actuated adhesive-applying member, and means for contacting the said adhesive applying member with an inner side of each staple assembled in the said staple-strip.

10. Apparatus for use in a staple-strip forming machine, comprising a staple-strip guide, a source of adhesive supply, means mechanically operated upon passage of the staple-strip in contact therewith for imposing said adhesive upon the inner faces of a row of staples assembled upon said guide.

11. Apparatus for use in a staple-strip forming machine, comprising a staple shaping anvil having a recess formed therein, a source of adhesive supply, and mechanically operated means for passing adhesive through said recess to contact with an undersurface of each staple of a row of staples assembled upon said anvil.

12. Apparatus for use in a staple-strip producing machine, comprising a staple support having a longitudinal aperture formed therein, an adhesive-applying device adapted to register with said aperture, means for assembling mechanically a row of staples upon said support, and means for progressing the staple-strip past said aperture so that the portion of each staple registering with said aperture receives adhesive from said adhesive-applying device.

13. Apparatus for use in staple-strip forming machine, comprising a staple-strip guide, means for progressing an assembled staple-strip along said guide, and an adhesive-applying member adapted to contact with an exposed surface of each of the assembled staples during its progress along said guide.

14. Apparatus for use in a staple-strip forming machine, comprising a staple-strip guide, means for progressing an assembled staple-strip along said guide, a source of adhesive supply, and an adhesive-applying member adapted to transfer adhesive from the adhesive supply to an underside of each of the assembled staples during its progress along said guide.

15. Apparatus for use in a staple-strip forming machine, comprising a staple-strip guide, means for progressing an assembled staple-strip along said guide, and an adhesive-applying member adapted to project into the path of movement of said staple-strip so as to contact with and apply adhesive to an exposed surface of each staple comprising said strip during its progress along said guide.

16. Apparatus for use in a staple-strip forming machine, comprising a staple-strip guide, means for progressing an assembled staple-strip along said guide, a rotary adhesive-applying member arranged to project into the path of movement of said staple-strip, and means for rotating said adhesive-applying member to present an adhesive covered surface for contact with an ex-

posed surface of each staple of said strip during the movement of the latter.

17. Apparatus for use in a staple-strip forming machine, comprising a staple-strip guide, means for progressing an assembled staple-strip along said guide, an adhesive container, and an adhesive-applying roller adapted to rotate in said container and arranged to project into the path of travel of said strip to contact with an under-surface of each staple comprising the strip.

18. Apparatus for use in a staple-strip forming machine, comprising a staple-strip guide, means for progressing an assembled staple-strip along said guide, an adhesive container, an adhesive-applying roller, adapted to rotate in said container and arranged to project into the path of travel of said strip to contact with an exposed surface of each staple comprising the strip, and means for intermittently rotating said roller to present an adhesive-covered surface for such contact.

19. Apparatus for use in a staple-strip forming machine, comprising a staple-strip guide, means for progressing an assembled staple-strip along said guide, and means for applying adhesive to a surface of the staple-strip as it is progressed along said guide.

20. Apparatus for use in a staple-strip forming machine, comprising means for assembling staples in strip formation, means for applying adhesive to a surface of the strip of assembled staples, and means for moving the assembled staples past the adhesive-applying means to effect the application of adhesive thereto.

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