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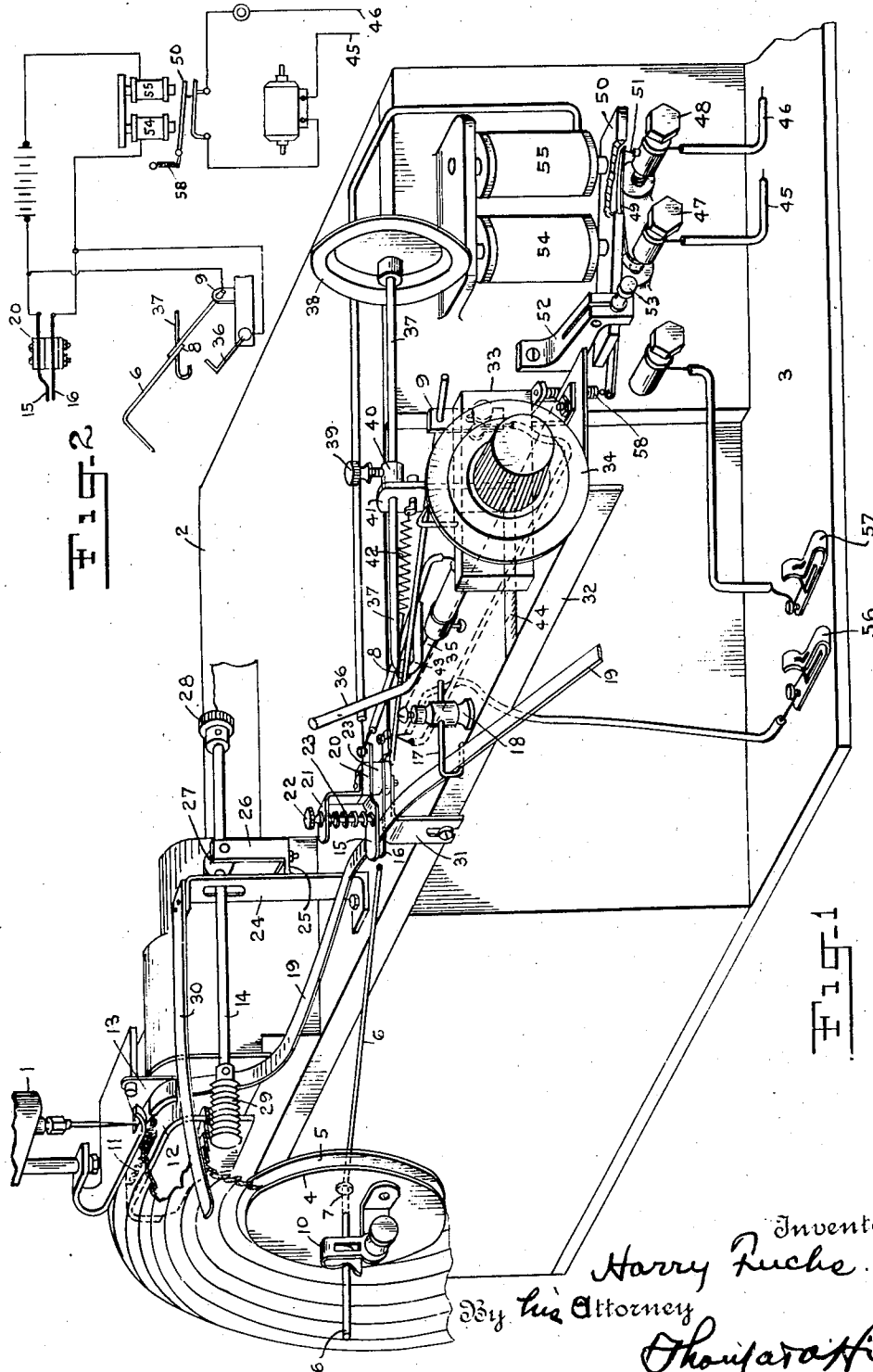
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MACHINE FOR FORMING FABRICATIONS FROM STRIP MATERIAL

Filed Feb. 26, 1930

2 Sheets-Sheet 1



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Fig. 3

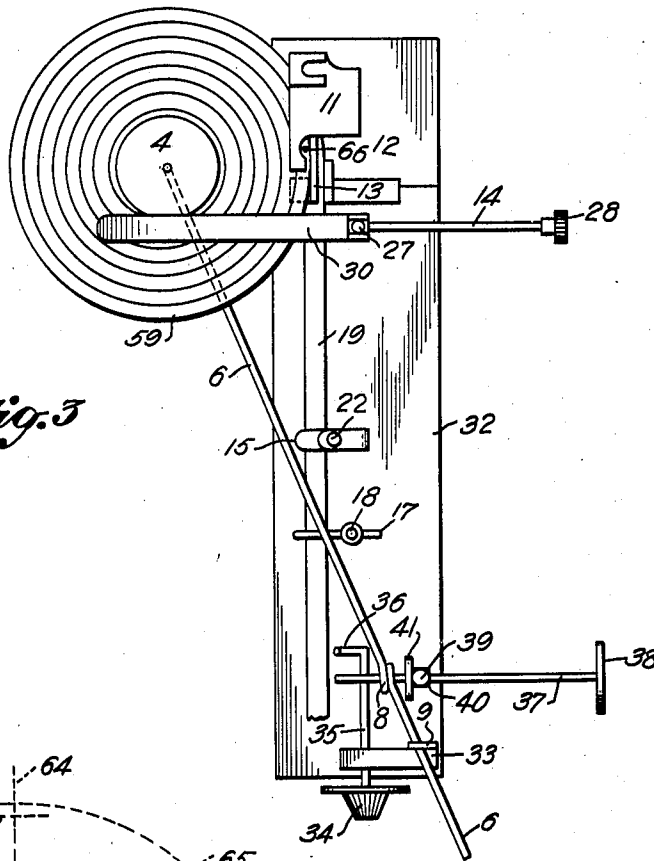
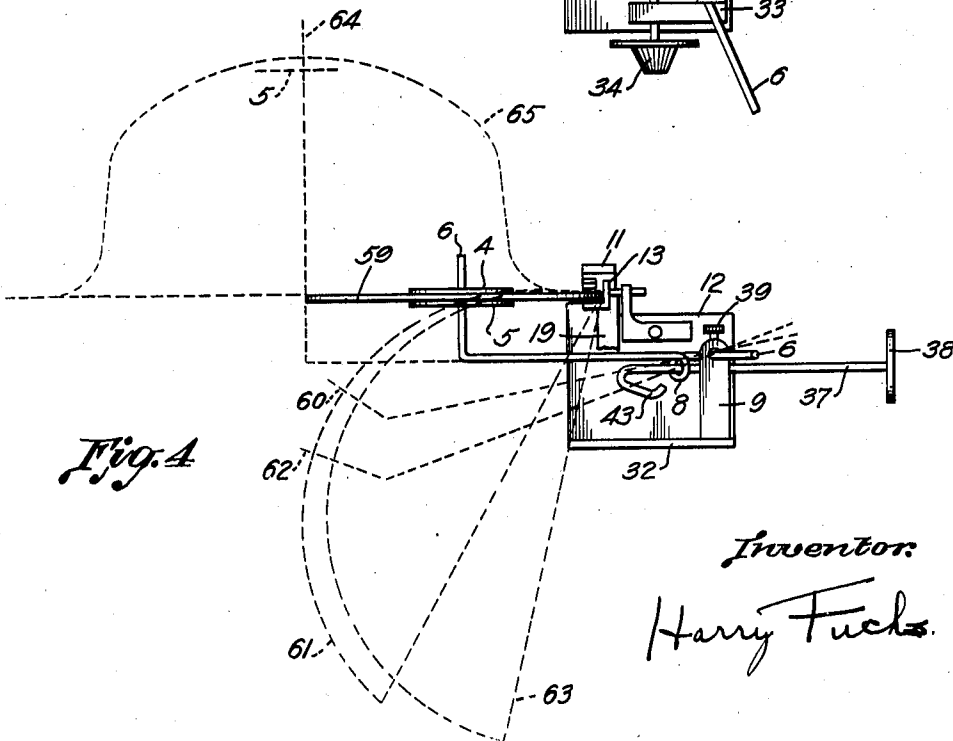


Fig. 4



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MACHINE FOR FORMING FABRICATIONS
FROM STRIP MATERIAL

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25 Claims. (Cl. 112—23)

My invention relates to improvements in sewing machines, and more particularly has reference to an attachment therefor, adapted to provide for the automatic feeding and control of a strip of material, such as braided straw, continuously into the machine forming the body of a hat or similar article.

Heretofore it has been necessary for an operator to do this work by hand, thus requiring an operator at each machine, whereas this invention is intended to render this work practically automatic, so that one operator can attend to several machines, and in case of a break in the braid or other material, the machine will automatically stop, and likewise in case of pins joining broken sections, and also when the braid has run out. In other words, once the machine has been properly started and adjusted for a given size hat crown, for instance, it will automatically continue to form the same of the proper size and shape, providing the strip of material of which the same is to be made is continuous and unimpaired.

Referring to the accompanying drawings, I have illustrated in Fig. 1 in perspective, parts being broken away, a suitable form of attachment embodying an application of my invention, and Fig. 2 is a diagram of the electrical connections. Fig. 3 is a top view of the device embodying an application of my invention, and Fig. 4 is a front view thereof in which several parts have been omitted for purpose of clearness.

This invention accordingly consists in the method, system, combinations of elements, arrangement of parts and in the several steps and relation and order of each of the same to one or more of the others, all as will be illustratively described herein. The many novel features embraced in this invention are far-reaching in their scope and are applicable in many embodiments other than that described, and I therefore do not wish to be limited except as indicated in the appended claims.

1 indicates part of a conventional form of sewing machine head, which is suitably supported upon the base 2, the lower portion of which may be projected as shown at 3 for mounting the driving motor and other appurtenances. 4, 5, indicate two discs perforated at the center to receive the rod 6, therethrough, said rod being bent substantially at right angles at 7, the longer leg of the same being provided with a loop 8, the end continuing through a hole in the post 9, as shown.

In starting to form the body of a hat, it is customary to first start the spiral of braided straw or the like by hand. After this has been done,

the partial disc thus formed is pushed on the end of the rod 6 from left to right against the disc 5, after which the disc 4 is pressed on against the partially formed disc or spiral of braid, and then a suitable clamping device such as 10, is attached to the rod as shown, to securely hold the spiral of braid between the two discs, but not so tightly as to prevent the rotation of the same therebetween. In starting, these discs 4, 5, are substantially horizontal instead of substantially vertical as shown in the view, thus presenting the partly formed spiral or top of the crown of the hat at its periphery adjacent the needle, so that the extending unformed strip of material feeds upon the partly formed spiral at the point where the needle operates, and when the proper diameter of the top of the crown has been completed, the discs then turn to the position shown in the drawings, to complete the side of predetermined depth, as hereinafter explained.

The unfastened strip 19 of material to be sewn extends from the presserfoot 11 in the direction of the operator over the plate 12, and beneath the guide 13, passing downwardly below the rod 14, and between the contact members 15, 16, through the guide loop 17, secured in the post 18, to the reel or source of supply.

The contacting jaws 15, 16, are retained beneath the base 20 of the standard 21, within which is a pin 22, provided with a spring 23, which tends to press the upper jaw 15 upon the strip 19, as it passes over the lower jaw 16, and these two jaws are electrically insulated by a suitable block of insulating material, such as 23', so that in case the strip breaks, the jaws come together and close an electric circuit, which operates a switch to break the circuit of the electric motor driving the machine, thus enabling the operator to properly connect the strip or braid before again starting the machine.

Another standard 24 is suitably secured to the base, as shown, and is provided with a bracket 25, which carries a support 26, which resiliently retains a ball 27, secured upon the rod 14, at the inner end of which is the knurled finger-piece 28, and at the outer end of which is a threaded portion 29, so that the crown of the hat while being formed, rests upon the same and in passing over the threaded portion 29, tends to feed rightwardly, looking at the drawings, so as to keep the braid in proper alignment for the presserfoot and needle, the upper resilient finger 30 bearing upon the crown to keep the same sufficiently in contact with the threads 29, to insure the feed accordingly. The bracket 31, secured to the

plate 32, serves as a support for the insulated mounting of the contact members 15, 16.

The bracket or standard 9 also mounted on the plate 32, carries the block 33, in which is rotatably mounted the dial 34, having a rod 35, secured to rotate therewith, said rod having an offset 36, substantially at right angles thereto, which crosses the path of movement of the rod 6, carrying the discs 4, 5, in order to make electrical contact therewith. The loop 8 of this rod 6, travels upon the rod 37, having a hand-piece 38 for adjustment of the same, and said rod 37 may be secured in its adjusted position by the thumb-screw 39, passing through the sleeve 40, in which said rod 37 has its bearing, said sleeve being supported on the standard 41, and 42 is a spring, one end of which is secured to said standard, and the other end to the loop 8, so that as the hat crown is formed, the rod 6 travelling along the rod 37, turns the bend 43 therein according to the adjustment of the thumb-screw 39, thus turning the discs 4, 5, from substantially horizontal to substantially vertical position, after the top of the crown of predetermined diameter has been formed, and thus forming the side of the hat, and when the proper depth of crown has been formed, the rod 6 contacting with the offset 36, of the rod 35, closes the circuit which opens the motor switch, thus discontinuing further forming of the crown after a predetermined depth has been completed. In order to predetermine the point at which the turn is to be made from the top to the side of the crown, a scale 44 is provided on the top of the plate 32, so that in adjusting the rod 37, the end of the hook 43 thereof is gaged with reference to said scale, which indicates the size of hat to be formed.

In Figures 3 and 4, 59 indicates the partially formed fabrication of braid or other suitable strip material. In making spiralled fabrications, such for instance as a separate brim, I use a center piece such for instance as of cardboard which is supported by rod 6 in the same manner as the top of a crown, and the braid or other suitable material is spiralled around the periphery thereof until the proper diameter is completed, when the contact of rod 6 with offset 36 will discontinue the operation of the motor operating the sewing machine. In making straight fabrications of longitudinally joined strip material such for instance as a band or belt, the forming fabrication is supported by either rod 14 or finger 30 and kept against guide 13 in proper alignment for the needle, by rod 6 tensioned by spring 42, until the contact of rod 6 with offset 36 will stop the motor thereby also indicating that the proper width of the band or belt has been completed.

Figure 4 illustrates how the crown is automatically formed and the sewing machine continues uninterruptedly during the movement of the loop 8 around the bend 43. Spring 23 is adjusted to suitably tension the strip material 19. When the proper diameter of the top of the crown has been completed, the movement of loop 8 around bend 43 causes the rod 6 to assume the position indicated by dotted line 60 thereby automatically shaping the crown fabrication indicated by dotted outline 61, while the sewing operation continues uninterruptedly. As the sewing continues and strip material 19 feeds upon the forming fabrication 61, the rod 6 progresses to the position indicated by dotted line 62, thereby shaping the fabrication to the form indicated by dotted outline

63. (The discs 4 and 5 have been omitted from lines 60 and 62 for purpose of clearness.) When the fabrication 63 reaches the proper size, rod 6 contacts with the preadjusted rod 35, and automatically stops the sewing operation. The rod 6 supporting the forming fabrication may be tensioned by spring 42 and the rod 37 may be slightly tensioned by thumbscrew 39. It is apparent that the friction between rod 37 and thumbscrew 39 is greater than between rod 6 and loop 8. It will of course be understood that rod 6 and bend 43 may be of any suitable form and size. 64 indicates a form of rod 6 for supporting a hat while the brim is automatically formed of spiralled strip material, and the dotted outline 65 indicates the forming fabrication. The rod 6 exerts a pull upon the apex of the forming fabrication 59, in a direction opposite to that in which the sewing machine moves the fabrication and the strip material as the successive sections of strip material 19 are spiralled thereon, the other parts of the device being suitably adjusted so that the rod 6 exerts a pull sufficient to keep the periphery of fabrication 59 against guide 13 and in proper alignment for the needle as the sewing machine operates. It will also be observed that the axis of rotation of the fabrication 59 is below the stitching point 66 in the direction of feed of the strip material 19.

The motor circuit is indicated by the reference characters 45, 46, and these terminate in binding posts 47, 48, the binding post 47 being provided with a spring 49 carrying the keeper 50, said spring normally keeping said keeper downwardly upon the contact point 51, of the binding post 48, thus keeping the motor circuit normally closed. This keeper is pivotally mounted in the bracket 52, by the pin 53, and is susceptible of the action of the magnets 54, 55, which are in the battery circuit 56, 57, which said circuit also includes the contacting rods 6, 36, and the contacting jaws 15, 16, so that when contact is made at either of these points, the magnets being energized, lift the keeper 50, breaking contact at 51, thereby discontinuing the operation of the motor which remains inactive until the circuit is again opened at the particular point where it was closed, as aforesaid. The spring 58 also serves to keep the right end of the keeper 50 down upon the contact 51, and may replace the spring 49, if desired, or be used in conjunction therewith as shown.

A suitable diagram of the electrical connections is indicated in Fig. 2, wherein it will be observed that the motor, motor switch, and automatic cut-off are connected in series, likewise the magnets, contact jaws, and battery, and in multiple with the latter, the cut-off for determining the size of hat to be formed.

Of course it will be understood that various modifications may be made in the construction 135 and arrangement of parts without departing from the spirit of the invention as claimed.

I claim:—

1. In an invention for making fabrications of strip material, in combination with a power driven device for joining strip material, means movable to and from the joining device, adapted to hold an apex for spiral joinder of successive sections of strip material, said holding means adapted to move away from the point of joinder as the size of fabrication increases, and means for turning the holding means and the fabrication to a different plane at the completion of a predetermined size.

2. In an invention for making fabrications of

strip material, in combination with a power driven device for joining strip material, means movable to and from the joining device, adapted to hold an apex for spiral joinder of successive sections of strip material, said holding means adapted to move away from the point of joinder as the size of fabrication increases, and gaging means positioned in the path of movement of said holding means.

3. In an invention for making fabrications of strip material, in combination with a power driven device for joining strip material, means movable to and from the joining device, adapted to hold strip material for lengthwise joinder of successive sections of strip material, said holding means adapted to move away from the point of joinder as the size of fabrication increases, and gaging means positioned in the path of movement of said holding means and adapted to contact therewith.

4. In an invention for making fabrications of strip material, in combination with a power driven device for joining strip material, means movable to and from the joining device, adapted to hold an apex for spiral joinder of successive sections of strip material, said holding means adapted to move away from the point of joinder as the size of fabrication increases, and means for guiding the holding means to assume angular positions suitable for shaping the fabrication.

5. In an invention for making fabrications of strip material, in combination with an electric motor driven device for joining strip material, means movable to and from the joining device, for holding strip material for joinder of successive sections thereof, means for keeping the forming fabrication and the strip material in proper alignment for joinder, and electric contact means adapted to open the motor circuit when a break occurs in the material fed.

6. In an invention for making fabrications of strip material, in combination with an electric motor driven device for joining strip material, means movable to and from the joining device, adapted to hold strip material for joinder of successive sections thereof, means for keeping the holding means and the strip material in proper alignment for joinder, and gaging means positioned in the path of movement of said holding means, said holding means and said gaging means being connected in an electromagnetic circuit adapted to open the motor circuit, when they contact.

7. In an invention for making fabrications of strip material, in combination with a motor driven device for joining strip material, holding means movable to and from the joining device, adapted to assume angular positions for shaping the fabrication, means for keeping the forming fabrication and the strip material in proper alignment for joinder of successive sections of strip material, and gaging means for determining the size of fabrication, positioned in the path of movement of said holding means.

8. In an invention for making fabrications of strip material, in combination with an electric motor driven device for joining strip material, holding means movable to and from the joining device, adapted to cooperate with guiding means to assume angular positions for shaping the fabrication, means for keeping the forming fabrication and the strip material in proper alignment for joinder of successive sections of strip material, gaging means positioned in the path of movement of said holding means and adapted

to contact therewith when the fabrication reaches the proper size, and an electrical relay connected in circuit with a source of current and the holding and gaging means, adapted to open the electric motor circuit and arrest the operation of the joining device when the holding means and gaging means contact.

9. In an invention for joining successive sections of strip material, in combination with a power driven device for joining strip material, means for keeping the forming fabrication and the strip material in proper alignment for joinder as the size of fabrication increases, and means for turning the fabrication to another plane at the completion of a predetermined size.

10. In a machine for automatically forming fabrications of strip material, in combination with a device for joining strip material, single means adapted to hold a nucleus and move laterally as successive sections of strip material are spiralled upon said nucleus, and gaging means positioned in the path of movement of said single means adapted to cooperate therewith to stop the operation of the joining device when a sufficient number of loops of strip material have been spiralled upon said nucleus.

11. In a machine for automatically forming fabrications of strip material, in combination with a device for joining strip material, single means adapted to hold a nucleus and move laterally as successive sections of strip material are spiralled upon said nucleus, an electroresponsive device adapted to stop the operation of the joining device, conductors from a source of current connected to said electroresponsive device, and a circuit controlling device, connected to said electroresponsive device and said conductors from a source of current, adapted to be kept open by the strip material and adapted to energize the electroresponsive device to stop the operation of the joining device when a break occurs in said strip material.

12. A machine for forming fabrications from strip material, comprising the combination of a power driven sewing machine, and means for holding a nucleus for joining successive sections of strip material thereon whereby the edges thereof may be united by the sewing machine by stitching.

13. A machine for forming fabrications from strip material, comprising the combination of a power driven sewing machine, means for holding a nucleus for joining successive sections of strip material thereon whereby the edges thereof may be united by the sewing machine by stitching, a stopping device for controlling the operation of the sewing machine, and automatic mechanism acting on the stopping device for stopping the sewing machine when a sufficient amount of sections of strip material have been united to the nucleus by stitching.

14. A machine for forming fabrications from strip material, comprising the combination of a power driven sewing machine, a lever adapted to hold a nucleus for the joinder of successive sections of strip material thereon whereby the edges thereof may be united by the sewing machine by stitching, the said lever being adapted to move said nucleus in a plane at substantially right angles to the line of feed of the sewing machine as the edges of the successive sections of strip material are united by the sewing machine.

15. A machine for forming fabrications from strip material, comprising the combination of a power driven sewing machine having a needle and a guideway, a lever adapted to hold a nu-

nucleus for the joinder of successive sections of strip material thereon whereby the edges thereof may be united by the sewing machine by stitching, the said lever adapted to keep the forming fabrication against the guideway in the path of the needle for joinder to the unformed strip material.

16. A machine for forming fabrications from strip material, comprising the combination of a power driven sewing machine, a lever adapted to hold a nucleus for the stitching of successive sections of strip material thereon to form a fabrication, and yieldable means associated with said lever for holding the nucleus or fabrication in operative engagement with the sewing machine.

17. A machine for forming fabrications from strip material, comprising the combination of a device for joining the edges of strip material, a lever adapted to hold a nucleus for joinder of successive sections of strip material thereon to form a fabrication, and means adapted to bear upon the forming fabrication to maintain it in proper position for engagement by the joining device.

18. A machine for forming fabrications from strip material, comprising the combination of a device for joining strip material, single means adapted to hold a nucleus and adapted to be progressively separated from the joining device as successive loops of strip material are joined upon said nucleus, and teeth disposed at acute angles adapted to bear upon the forming fabrication to maintain it in proper alignment for joinder to the unformed strip material.

19. A machine for forming fabrications from strip material, comprising the combination of a device for joining strip material, a lever in movable relation with the joining device adapted to hold a nucleus for joinder of successive sections of strip material thereon to form a fabrication, and means associated with said lever adapted to maintain the forming fabrication in a constant plane with respect thereto.

20. A machine for forming fabrications from strip material, comprising the combination of a device for joining strip material, single means adapted to hold a nucleus for joinder of successive sections of strip material thereon to form a fabrication, and means for exerting tension upon the strip material.

21. A machine for forming fabrications from strip material, comprising the combination of a device for joining strip material, a pivotally mounted lever adapted to hold a nucleus and move

laterally as successive loops of strip material are spiralled upon said nucleus, and means adapted to bear upon the fabrication to maintain it in proper position.

22. A machine for forming fabrications from strip material, comprising the combination of a device for joining strip material, means positioned in the line of feed adapted to support a forming fabrication, an element movable transverse to the line of feed adapted to engage the forming fabrication, and a spring adapted to confine its force on said element to keep the forming fabrication in proper alignment for operation by the joining device.

23. A machine for forming fabrications from strip material, comprising the combination of a device for joining strip material, a lever movable to and from the joining device adapted to hold a nucleus for joinder of successive sections of strip material thereon to form a fabrication, means for exerting tension upon the unformed strip material, and means in contact with the fabrication adapted to maintain the edge of said fabrication in proper alignment for operation by the joining device.

24. A machine for forming fabrications from strip material, comprising the combination of a device for joining strip material, single means adapted to hold a nucleus and adapted to be separated from the joining device as successive sections of strip material are joined upon said nucleus, means for exerting tension upon the unformed strip material, and gaging means adapted to be influenced by the fabrication to stop the operation of the joining device when a sufficient amount of sections have been joined upon said nucleus.

25. A machine for forming fabrications from strip material, comprising the combination of a device for joining strip material, single means adapted to hold a nucleus and adapted to be progressively separated from the joining device as successive loops of strip material are joined upon said nucleus, means for exerting tension upon the unformed strip material, means in contact with the forming fabrication adapted to maintain the edge of said fabrication in proper alignment for operation by the joining device, and gaging means adapted to be influenced by the fabrication to stop the operation of the joining device when a sufficient number of loops of strip material have been joined upon said nucleus.

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