Dec. 9, 1941. L. J. WAHL 2,265,932

DRY SHAVING DEVICE

Filed Feb. 23, 1939 2 Sheets-Sheet 1

Fig. 1.

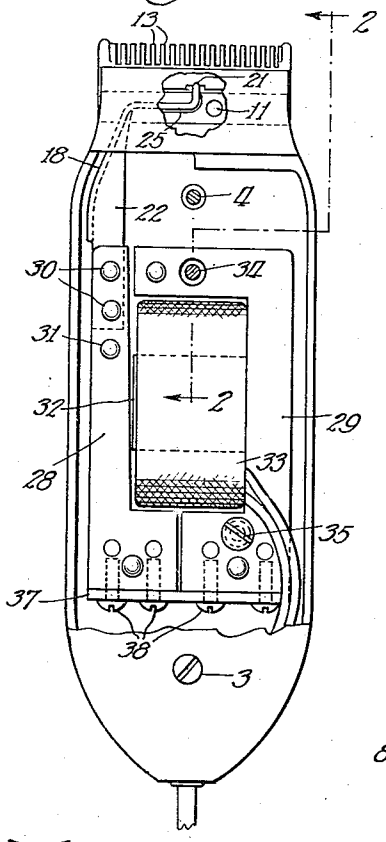


Fig. 2

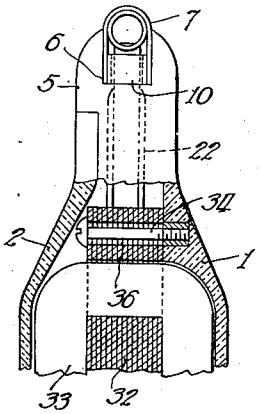


Fig. 6.

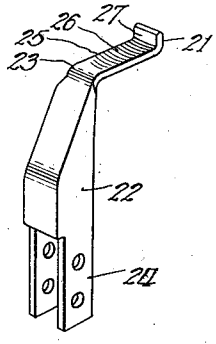


Fig. 3.

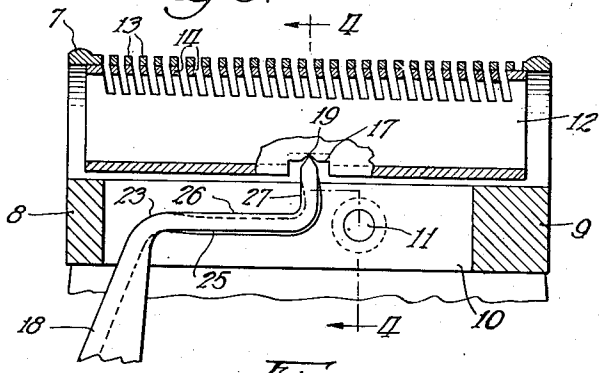


Fig. 4

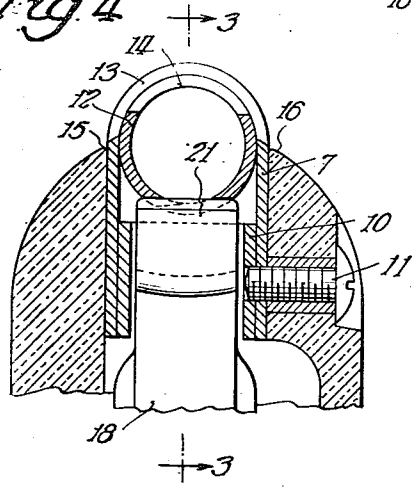
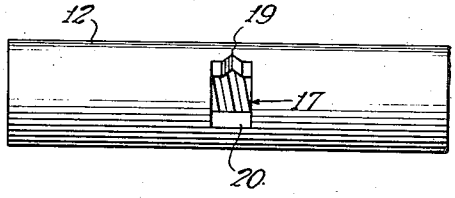


Fig. 5.



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Fig. 7

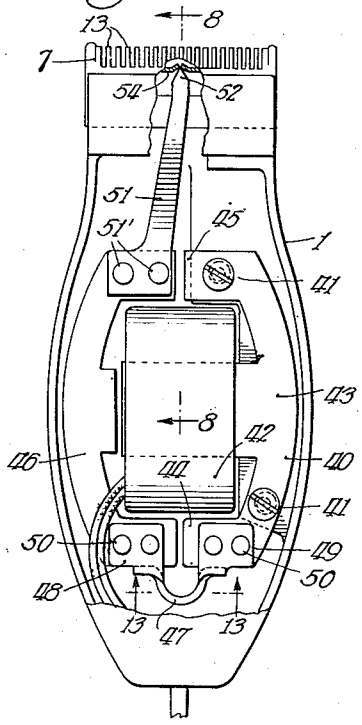


Fig. 8

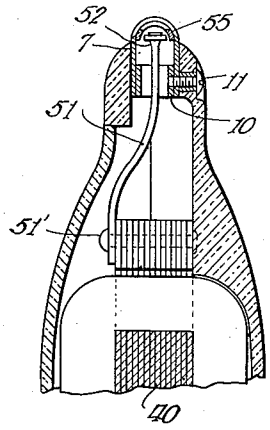


Fig. 9

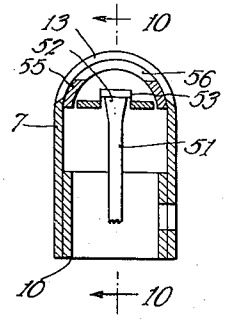


Fig. 10

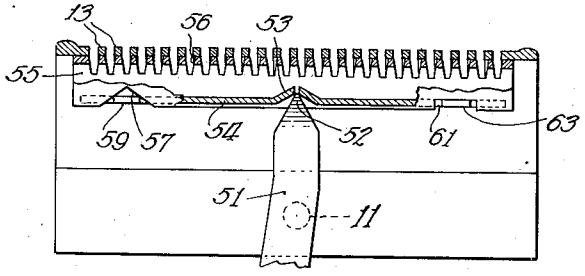


Fig. 13

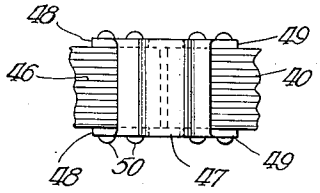


Fig. 11

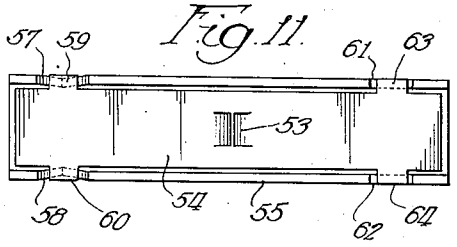
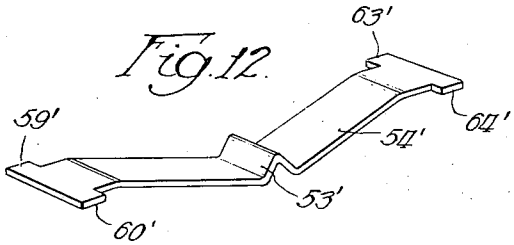


Fig. 12



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Patented Jan. 9, 1945 2,366,932

UNITED STATES PATENT OFFICE

2,366,932

METHOD FOR MANUFACTURING BEADED CORD

Leonard Z. Plebanek, Chicago, Ill., assignor of one-third to Anthony Bird and one-third to Charles J. Strebel

Application March 10, 1944, Serial No. 525,915

10 Claims. (Cl. 18—59)

This invention relates to a method or process for manufacturing beaded cord that involves a substantially continuous process at relatively high speed and that produces a product almost as strong and durable as a bead chain but at a much cheaper cost. The method further includes the seasoning of the stock and then finishing the same with the desired color or hue or with a metallic coating or the like.

In accordance with this invention, a flexible string-like member which may be a cord, wire, chain or rope, but preferably a cord, is fed in a horizontal path for the application of spots of glue in properly spaced relation, the drying of the glue spots, the application of suitable composition to the glue spots, finishing the beads thus formed under hot temperature and passing the same thru a quick freezing chamber, then dipping the same in a prime coating solution to close the pores or crevices and preserving the shape as raw material stock for a period of seasoning, after which the beaded cord may be colored or provided with a metallic finishing coating as desired.

The invention comprises the novel process hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawing which illustrates an apparatus for carrying out this invention and in which similar reference numerals refer to similar features in the different views:

Fig. 1 is a side elevational view shown somewhat in diagrammatic form of an apparatus for carrying out this invention.

Fig. 2 is a sectional view taken upon the line 2—2 of Fig. 1 looking in the direction of the arrows and showing parts in elevation.

Fig. 3 is a sectional view taken substantially upon the line 3—3 of Fig. 1 looking in the direction of the arrows.

Fig. 4 is a diagrammatic view of a coloring unit forming a part of the apparatus.

In referring to the drawing, there is shown in Fig. 1, a reel or drum 5 which supports a supply of cord upon which it is desired to place beads. This cord which is designated 6 is passed between a pair of guide rolls 7—7 supported on a bracket 8 rising from a glue tank 9. A rotatable shaft 10 is supported in the wall of the glue tank and this shaft carries a gluing arm 11 within the tank. Rotation of the shaft will rotate the arm 11 causing the same to dip into the glue in the tank and deposit such glue as adheres to its tip against the cord when the arm rises sufficiently. As the cord travels substantially continuously, while the arm 11 strikes the cord intermittently, the glue spots which are represented by the reference 12 will occur in uniform spaced relation.

The glue spots 12 which are made by a fast drying glue are subjected to the drying influence of a rotary fan 13 which is conveniently positioned adjacent the path of travel of the cord for the purpose of expediting the drying of the glue spots. The cord next passes between a pair of co-operating rolls 14 and 15 which are provided respectively with semi-spherical cavities 14a and 15a in their peripheries so spaced in each roll that a cavity in one will register with a cavity in the other roll at the point of tangency of the rolls, that is at the point where they come closest together. With reference to Fig. 3, it will be noted that the rolls 14 and 15 are provided respectively with off-set rim portions 14b and 15b in which the cavities are formed.

Contacting the inner surface of each off-set rim of the rolls, there is an air inlet member 16 which is provided with an air inlet duct 17 to which air under pressure may be periodically supplied from an air hose 18. An air passage 19 extends from each duct 17 to the off-set rim 14b or 15b for periodic registration with air ducts 20 in the off-set rims which ducts communicate with the cavities therein. The members 16 are provided with curved surfaces to correspond with the inner surfaces of the rims and they are positioned centrically of the common diameter of the rolls that passes thru the point of tangency of the rolls. As a result, when a pair of cavities come into registration, their air ducts 20 will register with the air ducts 19 whereby air under pressure may be supplied or forced into the cavities to release the half beads as will later more fully appear.

A suitable composition in the form of a viscous, plastic and somewhat liquid material is adapted to be supplied to the cavities in the rolls 14 and 15. As a matter of illustration, there is shown a tank 21 adjacent the roll 14 for containing the plastic composition. A pair of co-operating material transfer rolls 22, one engaging roll 14, are supported by the tank 21 for transferring the material therefrom to the cavities in the roll 14. For this purpose, the rolls 22 may be brush rolls or the like or have suitable conveying surfaces. They may be rotated by any suitable means.

At the bottom of the roll 15, there is a second tank 23 for containing a similar plastic composition material which is adapted to be supplied to the cavities 15a in the roll 15 by a rotatable

brush roll 24 or the like supported in the tank 23 so as to dip into the viscous composition therein. Excess material may be scraped from the rolls 14 and 15 and the cavities cleaned by suitable brushes 25. In addition, scrapers 26 bearing against the rolls may be used if desired for cleansing the peripheries of the rolls.

The beaded string-like member next passes between a pair of semi-cylindrical rolls 27 which have threaded peripheries upon their arcuate surfaces of such a pitch as to cause a speed equal to the speed of travel of the cord. As the beaded cord passes between these half moon rolls, any fins that may have been formed during the application of the beads are removed and the beads are more or less burnished. These rolls are adapted to be heated by the gas jets 28, one adjacent each roll. These rolls might be termed finishing rolls for the beads.

The beaded cord or string-like beaded member then passes thru a freezing or refrigeration tank 29 containing a quick freezing mixture or chamber.

From the refrigerating tank 29, the beaded cord passes over a guide roll 30 and into a dipping tank 31 containing a prime coating solution which closes the pores of the beads and preserves the shape. The beaded cord then passes from the tank over another guide roll 32 and onto a reel or drum 33 for a period of seasoning. This product may be termed the raw stock which, after seasoning, is ready for finishing according to desired specifications.

After a suitable period of seasoning and when it is desired to utilize or dispose of part or all of the raw stock, it may be finished as to color or coating by passing the same thru the finishing or coating mechanism shown in Fig. 4 which will have been supplied with the proper coloring solution or spray. To accomplish this, the beaded cord or string-like member from the storage roll 33 is passed over a guide roll 34 supported above the dipping tank 35 from which roll, the beaded cord is allowed to dip into the tank for receiving a dress color of some depth and from which it emerges over another guide roll 36.

From the guide roll 36, the colored beaded cord is passed to another dipping tank 41 which may contain a solution for a smooth lacquer finish, a pear cellulose finish or a crackle finish. In passing between these tanks, the beaded cord is subjected to the drying influence of a rotary fan 42. A metallic spraying device 38 is shown between the tanks 35 and 41 which is adapted to remain idle when desired, but which may be used for giving the beaded cord a metallic finish when desired; in such an event, the tanks need not be utilized. For such a purpose, the beaded cord may be passed down between the two parts 38 of the spraying device thru the guide rolls 37 and 39; then up over a guide roll and into the tank 41.

From the dipping tank 41, the beaded cord is led over a guide roll 43 and unto a second storage roll 44. For drying purposes, a rotary fan 45 may be positioned adjacent the beaded cord between the tank 41 and the roll 44.

In cases where it is desired to impart to the beaded cord a metallic finish, the tank 35 may be provided with a suitable paint for giving the beaded cord a second coating and the spray 38 turned on for imparting the metallic finish to the beads. The metallic coated beaded cord is acted upon by a rotary buffer wheel 46 as it leaves the guide roll 39 and proceeds to the dipping tank 41 where it is dipped into a clear lacquer which is adapted to be supplied to the tank for such a purpose. The finally finished beaded cord may then be dried by the fan 45 and stored upon the reel 44.

It will be evident that the process herein set forth, after started, will preform the different operations simultaneously and greatly expedite the manufacture of such devices. Thus the acts of putting glue spots on the cord, of applying beads to glue spots, of burnishing formed beads, of cooling the beaded cord and of dipping the same in a solution can be preformed at the same time. Further, the process is a continuous one in that there is constant travel of the cord while the different operations are preformed. While the driving mechanisms for the different elements are not illustrated in the drawing, any suitable driving means may be used.

I am aware that changes may be made in this process and the steps thereof without departing from the principles of this invention, so I do not propose limiting the patent granted thereon otherwise than necessitated by the appended claims.

I claim as my invention:

1. The herein described method of making a beaded flexible member which consists in supporting, guiding and moving a string-like member in a predetermined path, applying glue spots in spaced relation to said member, partially drying said spots, then forming semi-spherical bead members and simultaneously pressing them from opposite directions upon a glue spot to form a bead, then properly shaping and burnishing said bead under heating temperature and then cooling and dipping the same.

2. The herein described method of applying beads to a string-like member which consists in supporting, guiding and moving a string-like member in a predetermined path, applying glue spots in spaced relation to said member, subjecting said glue spots to air currents for partially drying the same, forming a pair of semi-spherical bead members, simultaneously pressing the same from opposite directions on a glue spot, then burnishing said bead and subjecting the same to a freezing temperature.

3. The herein described method of applying beads to a string-like member which consists in continually moving said member in a predetermined path, applying glue spots on said member at one point in said path, subjecting said glue spots to air currents at another point in said path, forming a pair of semi-spherical bead members at another point in said path and simultaneously pressing them from opposite directions upon a glue spot, burnishing said glue spots under a heating temperature at another point in said path and then cooling the beaded cord or string-like member.

4. The herein described method of applying beads to a string-like member which consists in simultaneously moving said member in a predetermined path, applying glue spots at spaced points to said member at one point in said path, subjecting said glue spots to air currents at another point in said path, forming semi-spherical bead members and pressing them in pairs from opposite directions upon said string-like member over a glue spot at another point in said path, burnishing the formed beads under heating temperature at another point in said path and then cooling the string-like bead member thus formed.

5. The herein described method of making a beaded cord which consists in moving a cord in

a flattened wedge-shaped knife edged tip 52 which is adapted to engage in a notch 53 of a connecting member 54. The connecting member 54 is adapted to connect a cutter blade 55 to the arm 51. The cutter blade 55 is of a semi-circular cross-section and is slotted to provide teeth 56 adapted to cooperate with the corresponding teeth on the comb blade 7. In order to maintain the proper positioning of the cutter blade 55, it is best to have a yielding pressure tending to hold the cutter blade in position against the comb blade and to also have the point of drive as near to the teeth 56 as it can reasonably be placed.

To provide this kind of mounting with unyielding driving action in the direction of reciprocation of the cutter blade, I mount the member 54 in the cutter blade so that it may spring toward and away from the teeth of the cutter blade but cannot move endwise of the cutter blade. The cutter blade is provided with two notches 57 and 58 in which are mounted two ears 59 and 60 on the member 54. Slots 61 and 62 are cut in the back edges of the cutter blade adjacent the other end thereof, and ears 63 and 64 are provided on the member 54 for pressing in the slots 61 and 62. The ears 63 and 64 are smaller than the slots 61 and 62 so that they may move endwise in the slots. The member 54 is a spring blade and is yieldingly pressed toward the teeth of the cutter blade by the tip of the arm 51. The notches 57 and 58 provide for a driving connection to reciprocate the cutter blade, and this driving connection is the same even though the amount the member 54 is pressed toward the teeth 56 may vary in different devices and may vary in the same device due to the wear of the parts. It will be appreciated that if the member 54 is bent out of a straight line the distance between the ears 59 and 60 at one end and the ears 63 and 64 at the other end will change slightly. The straight edge slots 61 and 62 allow for this change in length without allowing any play in the driving connection which is through the notches 57 and 58.

In Fig. 12 a slightly modified form of the member 54 is shown. In this form the notch 53 is provided by bending the member 54 instead of by punching up sections thereof as in the main form. The ears 59 and 60, 63 and 64, are adapted to cooperate with the cutter blade in the same fashion as in the other form.

From the foregoing description it is believed that the construction and operation of the device will be clear to those skilled in the art. Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A shaving instrument comprising, in combination, a casing having an elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, power means in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane extending lengthwise of said blades, said member having a portion thereof extending in said plane, said portion being transversely curved, said member being yieldable in a direction at right angles to the cutter blade.

2. A shaving instrument comprising, in combination, a casing having an elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, power means in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane extending lengthwise of said blades, said member having a portion thereof extending in said plane back of said cutter blade, said portion being transversely curved, said member being yieldable in a direction at right angles to the cutter blade.

3. A shaving instrument comprising, in combination, a casing having an elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, power means in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane extending lengthwise of said blades, said member having a portion thereof extending in said plane, said member being yieldable in a direction at right angles to the cutter blade, said member terminating in a knife edge, said cutter blade having a cooperating notch and straight edge at the rear thereof to receive said knife edge.

4. A shaving instrument comprising, in combination, a casing having an elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, power means comprising an alternating current electromagnet having an armature in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane extending lengthwise of said blades, said member having a portion thereof extending in said plane, said portion being transversely curved, said member being yieldable in a direction at right angles to the cutter blade.

5. A shaving instrument comprising, in combination, a casing having an elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, power means comprising an alternating current electromagnet having an armature in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane extending lengthwise of said blades, said member having a portion thereof extending in said plane, said portion being transversely curved, said member being yieldable in a direction at right angles to the cutter blade, said member terminating in a knife edge, said cutter blade having a cooperating notch and straight edge at the rear thereof to receive said knife edge.

6. A shaving instrument comprising, in combination, a casing having a hollow elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, the inner surface of the cutting part of said comb blade and the outer surface of the cutting part of the cutter blade being closely fitting cylindrical surfaces, power means in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane lengthwise of said blades, said member having a portion thereof extending in said plane, said portion being transversely curved, said member being yieldable in a direction at right angles to the cutter blade.

7. A shaving instrument comprising, in combination, a casing having a hollow elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, the inner surface of the cutting part of said comb blade and the outer surface of the cutting part of the cutter blade being closely fitting cylindrical surfaces, power means in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane lengthwise of said blades, said member having a por-

tion thereof extending in said plane, said portion being transversely curved, said member being yieldable in a direction at right angles to the cutter blade, said member terminating in a knife edge, said cutter blade having a cooperating notch and straight edge at the rear thereof to receive said knife edge.

8. A shaving instrument comprising, in combination, a casing having an elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, power means comprising an alternating current electromagnet having an armature in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane extending lengthwise of said blades, said member having a portion thereof extending in said plane, said portion being transversely curved, said member being yieldable in a direction at right angles to the cutter blade, said electromagnet being movable a limited amount on its mounting in the casing to vary its position with respect to the comb blade.

9. A shaving instrument comprising, in combination, a casing having an elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, power means comprising an alternating current electromagnet having an armature in said casing which includes a member connecting said means with said cutter blade reciprocating in a plane extending lengthwise of said blades, said member having a portion thereof extending in said plane, said portion being transversely curved, said member being yieldable in a direction at right angles to the cutter blade, said armature being made up of a plurality of laminations, and said connecting member having portions overlapped with said laminations and clamped together with the laminations.

10. A shaving instrument comprising, in combination, a casing having an elongated comb blade mounted at one end thereof, an elongated cutter blade in said comb blade, power means in said casing, including a substantially rigid driving arm extending toward said blades, and connecting means between said driving arm and said cutter blade, said connecting means being provided with a part extending lengthwise of said blades, which part is substantially non-yielding with respect to the blades and driving arm in a plane lengthwise of the blades in response to driving force applied by vibration of said arm but which is resiliently yieldable in a direction at right angles to the cutter blade, said cutter blade having a notch and a straight edge engaging said connecting means at spaced points.

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