Feb. 18, 1936. P. KRANZ ET AL 2,031,566

CRINKLED TINSEL PRODUCING MACHINE

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Fig. 1.

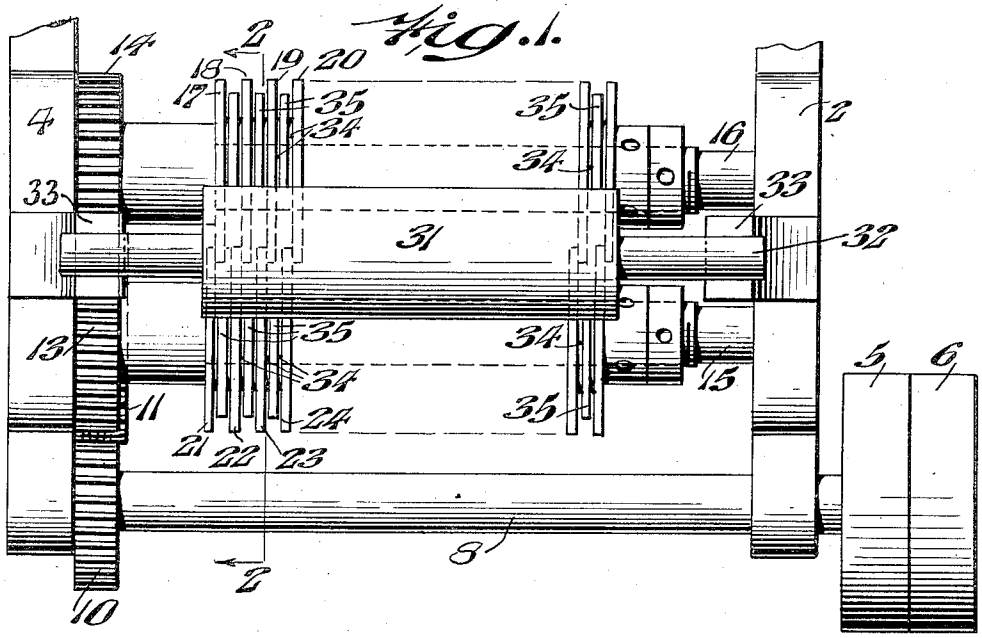


Fig. 2.

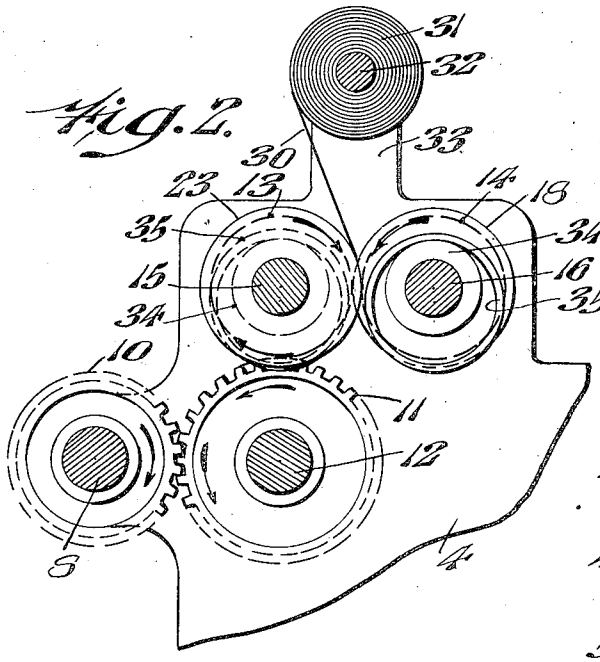
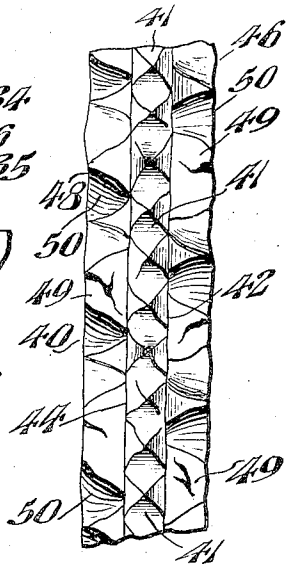


Fig. 7



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Fig. 3.

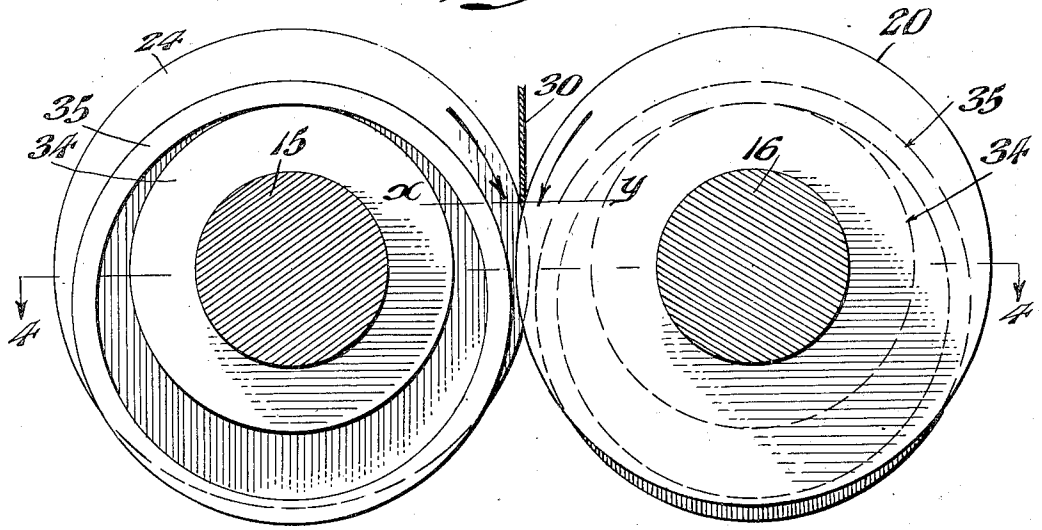


Fig. 4.

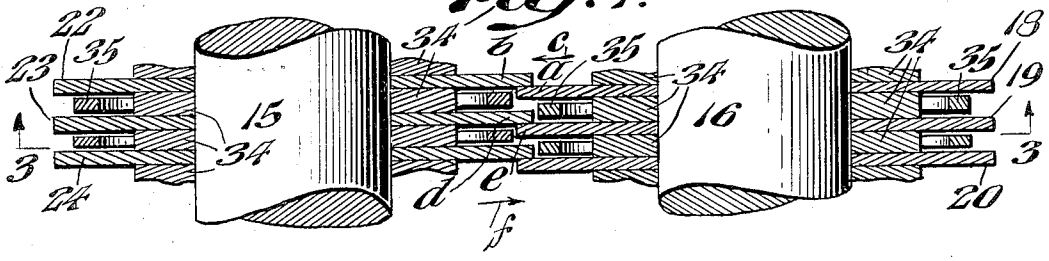


Fig. 6.

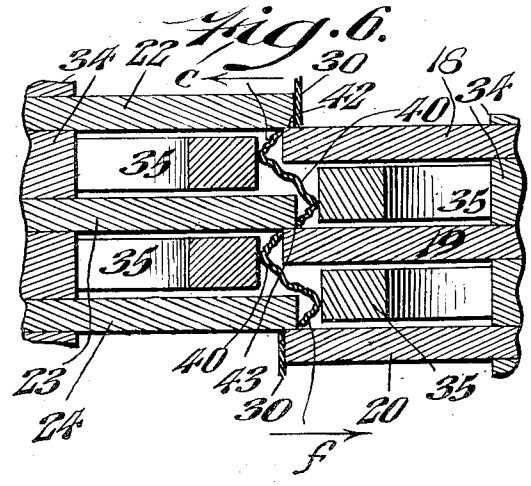
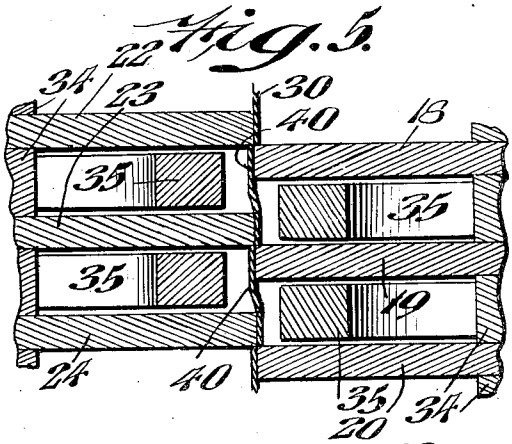


Fig. 5.



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CRINKLED TINSEL PRODUCING MACHINE

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Application December 29, 1934, Serial No. 759,706

1 Claim. (Cl. 153—77)

Our invention relates to a new and useful machine for producing a particular form of crinkled tinsel of the type which consists of narrow strips of lustrous foil commonly used in the decoration of Christmas trees and on other festive occasions.

Lustrous tinsel of this kind has heretofore been made by cutting a flat sheet of foil into strips of the desired width, generally ¼ or ⅜ of an inch wide and cut transversely in any desired lengths. While tinsel of this type is highly decorative by virtue of its light reflecting qualities, it has been deemed desirable to increase the light reflecting qualities of the tinsel and to impart to the tinsel additional light reflecting qualities by breaking up the initially smooth or flat surface of the tinsel into a plurality of light reflecting surfaces disposed in different planes, and to this end it has been the practice to subject the plain or smooth tinsel after it is cut to a second operation for the purpose of corrugating or otherwise roughening the surface of the tinsel, such as by passing the tinsel after it is cut between rollers, the contacting surfaces of which have the desired knurling, roughening, or design. Other methods for interrupting the plain, smooth surface of the tinsel with a view to increasing its light reflecting qualities have been used, but all such methods, as far as we are aware, have involved the utilization of one or more additional operations which were carried on after the tinsel had been cut from the continuous sheet, thus resulting in increased cost both in equipment and in handling. Furthermore, any roughening, corrugation, or crimping of the tinsel by means of such secondary operations as are above described resulted in a tinsel roughened or crimped or corrugated according to a predetermined design, which while different from and more attractive than the plain or smooth tinsel is nevertheless subject to the objection of monotony in that such tinsel is all uniformly embossed with a particular repeating design.

In order to overcome the foregoing objections and to produce a tinsel which has a distinctly novel crinkled appearance, and the crinkling of which presents the appearance of infinite variety, we have devised a novel machine which produces the desired crinkling in the tinsel simultaneously with the cutting thereof and without the necessity of subjecting the tinsel to a second operation after it is cut.

Our invention still further relates to a machine of this character which is as simple in its construction as the standard tinsel cutting machines now on the market so that our machine is no more expensive to produce or to operate than the standard machines which cut the plain or smooth uncrinkled tinsel.

Our invention further relates to a machine of this character which embodies in its design novel means for insuring the constant flow of tinsel through the machine to prevent the jamming of the tinsel between the cutters.

Our invention still further relates to various other novel features of construction and advantage, all as hereinafter described and claimed in connection with the accompanying drawings in which:

Fig. 1 represents a fragmentary and diagrammatic plan view of a crinkled tinsel producing machine embodying our invention.

Fig. 2 represents a section on line 2—2 of Fig. 1.

Fig. 3 represents a section on line 3—3 of Fig. 4 illustrating the relative positions of the circular cutters with respect to the sheet of foil to be cut.

Fig. 4 represents a section on line 4—4 of Fig. 3 showing details of construction.

Fig. 5 represents a fragmentary diagrammatic view illustrating the cutting of the foil into tinsel.

Fig. 6 represents a view similar to Fig. 5 but illustrating the position of the parts and the crinkling of the tinsel while it is cut as shown in Fig. 5.

Fig. 7 represents a diagrammatic plan view, on a greatly enlarged scale, of a piece of tinsel cut and crinkled according to the showing of Figs. 5 and 6.

Referring to the drawings in which like reference characters indicate like parts, our novel crinkled tinsel cutting machine comprises the end housings 2 and 4 in which are journalled the various shafts carrying the various parts with proper bearings (not shown). The machine is driven by the usual fast and loose pulleys 5 and 6 on the shaft 8 which carries the driving gear 10 which in turn meshes with the driving gear 11 on the shaft 12. The driving gear 11 meshes with the gear 13 which in turn also meshes with the gear 14. The gears 13 and 14 are fast on the shafts 15 and 16, respectively. The shaft 16 carries the cutting blades 17, 18, 19, 20, etc., and the shaft 15 carries the corresponding but staggered cutting blades 21, 22, 23, 24, etc., it being understood that the shafts 15 and 16 are provided with cutting blades over the entire length thereof, which in turn corresponds to the width of the sheet 30 of foil to be cut. The foil, as will be seen in Fig. 2, is in the form of a roll 31 on the shaft or roller 32 which is supported by brackets 33 centrally of the meeting of the juxtaposed

edges of the knives on the shafts 15 and 16. The cutting blades are rigid on their respective shafts and are spaced apart by the spacers 34, the thickness of which determines the space between any two adjacent knives. In addition to the spacers 34 there is interposed between the adjacent knives the loose rings 35 which are used as strippers or wipers and which always tend to assume the position shown in Fig. 3, in which the bottom edges of the loose rings protrude below the edges of the cutting knives, the function of these rings being constantly to push out the tinsel cut by the knives from the spaces between the knives to prevent the accumulation of the tinsel and the jamming thereof in said spaces and to insure the regular uninterrupted travel of the tinsel cut over the endless conveying belt (not shown) which moves below the cutters to deliver the cut tinsel to the packers.

Heretofore a strip tinsel of this character was completely cut by a single circular cutter, the opposite edges of which were adapted to coact with the cutting edges of two spaced juxtaposed circular cutters, the tinsel strip being thus cut along both of its longitudinal edges by the opposite cutting edges of a single blade acting in the same direction and the width of the tinsel strip being predetermined by the width of the cutting blade, which in turn corresponded to the spacing of the opposite coacting juxtaposed cutting blades. The tinsel strip thus cut, rested, during the cutting operation, flat against the smooth surface of the cutting blade intermediate the cutting edges of the blade, and the tinsel strip thus produced was flat or smooth surfaced in its finished form.

According to our invention, instead of utilizing a single blade of the width of the tinsel to be cut, and the opposite cutting edges of which severed the opposite longitudinal edges of the tinsel strip, to produce a flat tinsel, we utilize separate coacting juxtaposed pairs of relatively thin blades, (the thickness of which is well below the width of the tinsel to be cut) to cut the opposite longitudinal edges of the tinsel strip, so that a tinsel strip cut by our machine will have one longitudinal edge thereof cut by the coacting edges of one pair of juxtaposed coacting cutters (working in one direction) and the opposite longitudinal edge of the same strip will be simultaneously cut by the coacting edges of another pair of juxtaposed cutters (working in the opposite direction), the width of the strip being dependent upon the spacing of the pairs of coacting juxtaposed pairs of cutters and not on the width or thickness of one cutter or the total width or thickness of the cooperating cutters. By virtue of this arrangement the body of the tinsel strip is not supported while the opposite longitudinal edges thereof are being severed by the separate pairs of coacting juxtaposed knives, which due to the torque or strain on the opposite longitudinal edges of the strip during the cutting operation, and the bearing of the knives thereon, together with the form retaining nature of the metal foil, results in the uniformly heterogeneous crinkling of the body of the tinsel strip in the manner hereinafter more fully explained.

In order more fully to explain the structure of the strip and the manner of its formation, we now refer to Fig. 4 and in this figure the coacting blades will be referred to by letters in order to avoid confusion with the numeral references utilized in connection with Fig. 1. Thus the sheet of tin foil 30 will, according to our assembly, be cut as shown in Fig. 4, in which the blade *a* coacts with the blade *b* to sever one longitudinal edge of the strip while the blade *d* coacts with the blade *e* to cut the other longitudinal edge of the same strip of tinsel. The width of the strip thus cut is obviously determined by the distance between the coacting cutting edges of the pairs of blades *a*—*b* and *d*—*e*. Illustrating this step a little more fully, we now refer to Fig. 5 in which the sheet of foil 30 is shown immediately after it is severed into strips at a point in advance of the maximum overlapping position of the knives, Fig. 5 approximately illustrating the position of the parts along the line *x*—*y* in Fig. 3. While the sheet 30 is being cut into strips as shown in Fig. 5 and while the coacting blades are overlapping each other (until the maximum overlapping position shown in Fig. 6 is attained, which, approximately, would represent the position of the parts along the line 4—4 of Fig. 3) the strips of tinsel cut will, due to the torque exerted in opposite directions on the opposite longitudinal edges 42 and 43 during the cutting thereof, due to the progressive overlapping of the blades, and due to the peculiar, flexible and yet form-retaining character of the foils used in the production of tinsel, be transversely and longitudinally crinkled all over their area in the manner only roughly, diagrammatically and imperfectly portrayed in Figs. 6 and 7.

Referring to the illustration in Figs. 6 and 7, we wish to point out that the drawings are highly diagrammatic, since it is impossible to depict with pen and ink the exact and highly esthetic effects produced on the tinsel, it being merely pointed out in connection with Figs. 6 and 7 that the tinsel strip 40 is crimped or crinkled in a uniformly irregular manner along its length and width to form uniformly irregular and irregularly uniform light-reflecting surfaces or projections. Thus as roughly portrayed in Fig. 7 the tinsel strip 40 has the central column of crinkles 41 which, when examined closely, appear like pyramids or cones, but which, due to their imperfect formation present an infinite variety in their composite appearance or effect. The central column 41 is bordered along its longitudinal edges by the slight grooves 42 and 44 which run the entire length of the strip in a manner sufficiently uniform to give the effect of continuity and yet not with the severe exactitude of a groove made deliberately by a proper tool accurately applied. On either side of the grooves 42 and 44 are formed the columns 46 and 48 which are formed of alternating curvilinear or rectilinear high points or areas 49 and low points or areas 50. The high and low areas 49 and 50 are sufficiently alike to give the effect of continuity, but since they are not made by the positive action of exact tools they are in their details very dissimilar, one from another, thus producing the effect of infinite variety.

It will thus be seen that by the novel arrangement of the knives 17 to 20 and 21 to 24, etc., that is wherein the cutters 17 and 21 will cut one longitudinal edge of the strip 40 while the blades 18 and 22 simultaneously cut the opposite longitudinal edge of the same strip, with the body of the strip 40 squeezed into the space between the coacting blades in the direction of the arrows *c* and *f*, in Fig. 4, a tinsel strip 40 is produced which has a triple crinkling effect and the crinkling of which is sufficiently uniform to give the effect of homogeneous continuity and which at the same time represents in its details an infinite variety.

It will further be seen that our novel arrangement not only produces a more attractive crinkled

tinsel but also effects the simultaneous cutting and crinkling of the tinsel strip without the necessity of a second operation for crinkling or the necessity of additional machinery for effecting the crinkling or crimping as has heretofore been necessary. As far as we are aware by interposition of the floating rings **35** between the rotary cutters, which rings by their own weight and being loosely mounted on their respective shafts tend to assume their lowermost position, wherein said floating rings protrude beyond the effective peripheries of the cutters, we have produced novel means for closing the space between the cutters at the lower parts thereof to prevent the tinsel strips cut from entering the spaces between the cutters as distinguished from the conventional means heretofore employed for producing this result.

We claim:

A crinkled tinsel producing machine comprising a pair of juxtaposed shafts, a plurality of cutter disks rigidly mounted on said shafts in staggered cooperative relation to each other, a plurality of spacer disks mounted on said shafts intermediate said cutter disks, said spacer disks being of considerably lesser diameter than the diameter of the cutter disks, and floating rings mounted loosely on said shafts whereby the bottom edges of said floating rings extend to and below the lower periphery of said cutter disks.

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