

[54] **DIMENSIONAL CONTROL APPARATUS**
[75] Inventors: **Ronald C. Martin**, Newark, Del.;
Marty E. Sixt, Napoleon, Ohio
[73] Assignee: **Advanced Drainage Systems, Inc.**,
Columbus, Ohio
[22] Filed: **Mar. 22, 1971**
[21] Appl. No.: **127,052**

Related U.S. Application Data

[63] Continuation of Ser. No. 804,963, March 6, 1969,
abandoned.
[52] U.S. Cl.**425/140**, 264/40, 264/209,
425/71, 425/171, 425/289, 425/336,
425/392, 425/445
[51] Int. Cl.**B29c 3/06**, B29c 17/02, B29c 17/16
[58] Field of Search18/2 HA, 2 I, 19 A,
18/19 TC, 19 TM, 4 S, 4 P, 14 R, 14 S, 14 G;
264/40, 209; 25/30; 425/71, 171, 289, 392,
445, 340, 343, 364, 336, 369

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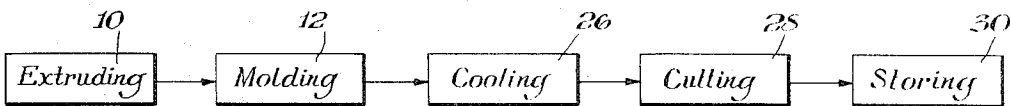
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Primary Examiner—Robert L. Spicer, Jr.
Attorney—Connolly & Hutz

[57] **ABSTRACT**

Apparatus and method control dimensions of corrugated tubing by stretching tubing predetermined amount as it travels between molding unit and downstream pulling assembly running at about same rate tubing is discharged from molding unit. First counter mechanism adjacent discharge end of molding unit counts predetermined number of corrugations in tubing and immediately thereafter generates signal indicating that predetermined number has been counted. Generation of signal from first counter triggers signal from second counter mechanism indicative of number of corrugations passing pulling assembly. Signal from second counter indicates more than predetermined number of corrugations has been counted, less than predetermined number has been counted, or count substantially equal to predetermined number. When more than predetermined number of corrugations is counted speed of pulling assembly is incrementally decreased to lessen stretch of tubing, and conversely, when less than predetermined number is counted speed of pulling assembly is incrementally increased to increase stretch of tubing. Second counter mechanism is initially adjusted so that no signal is generated by second counter when tubing between molding unit and pulling assembly is stretched predetermined amount.

6 Claims, 8 Drawing Figures



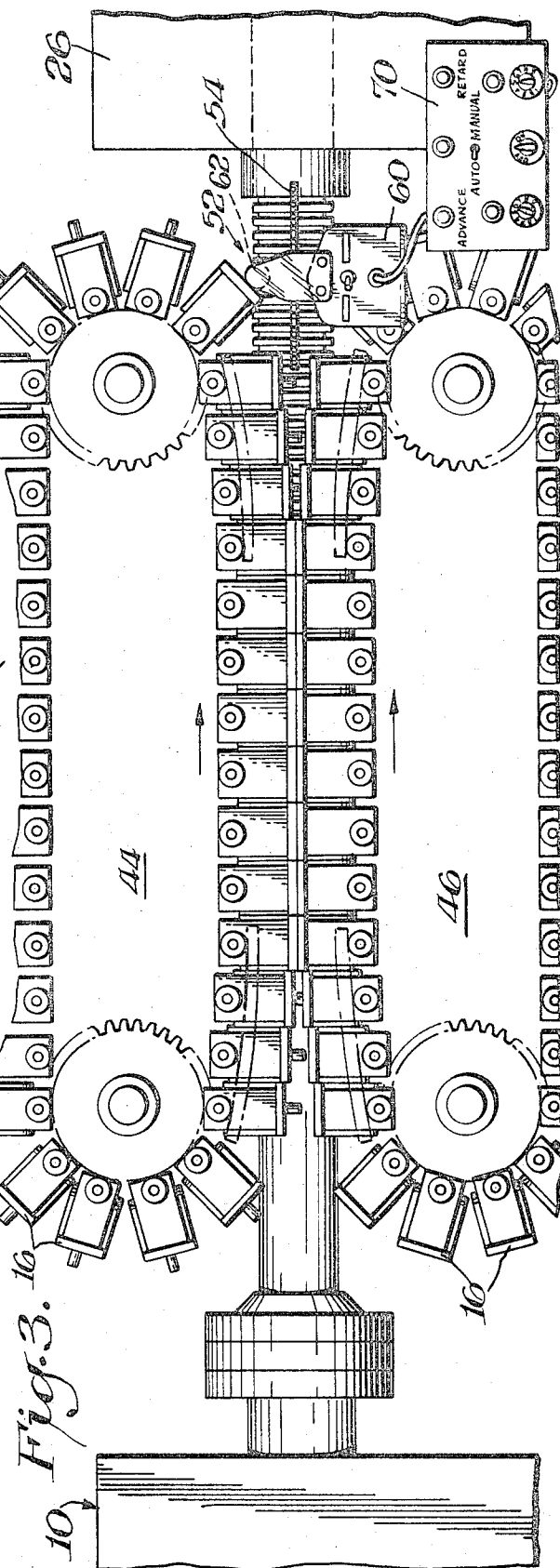
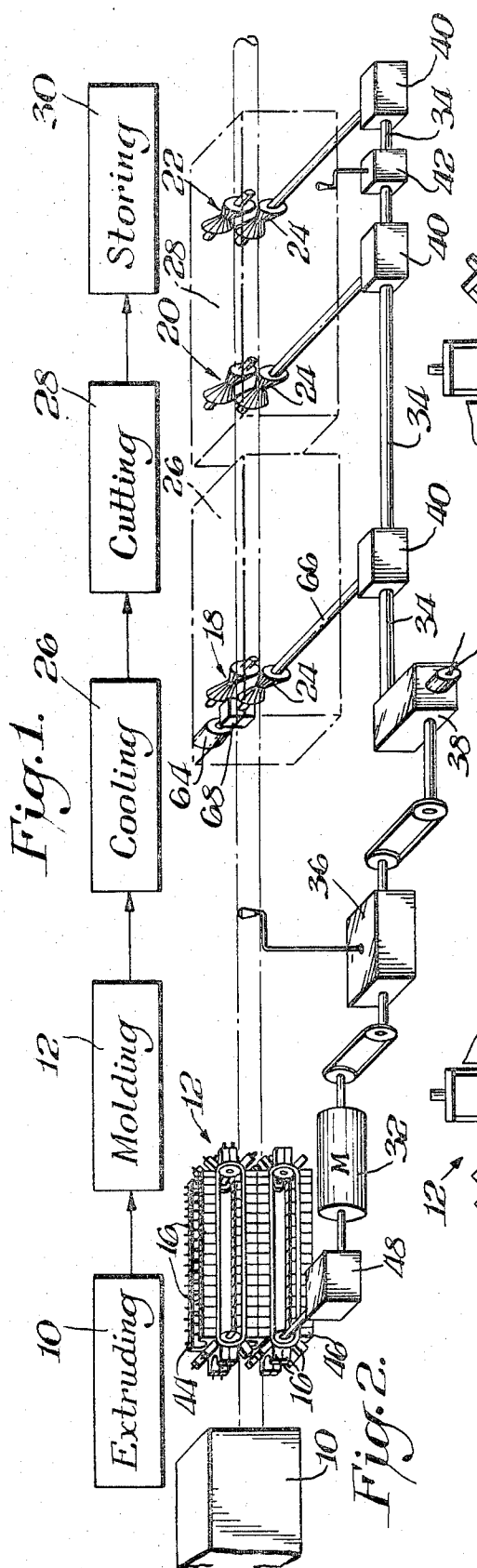


Fig. 4.

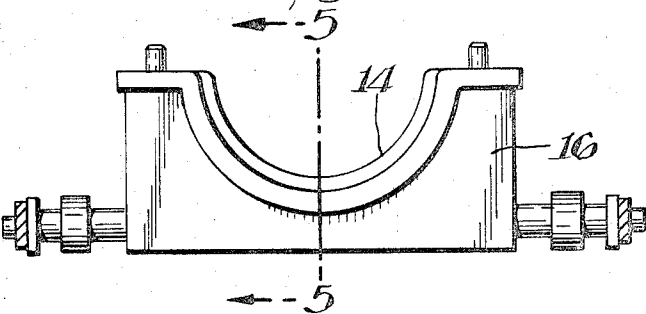


Fig. 5.

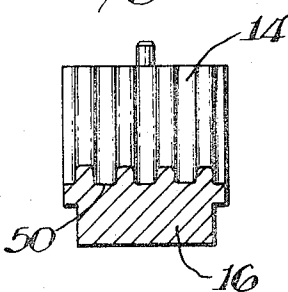


Fig. 6.

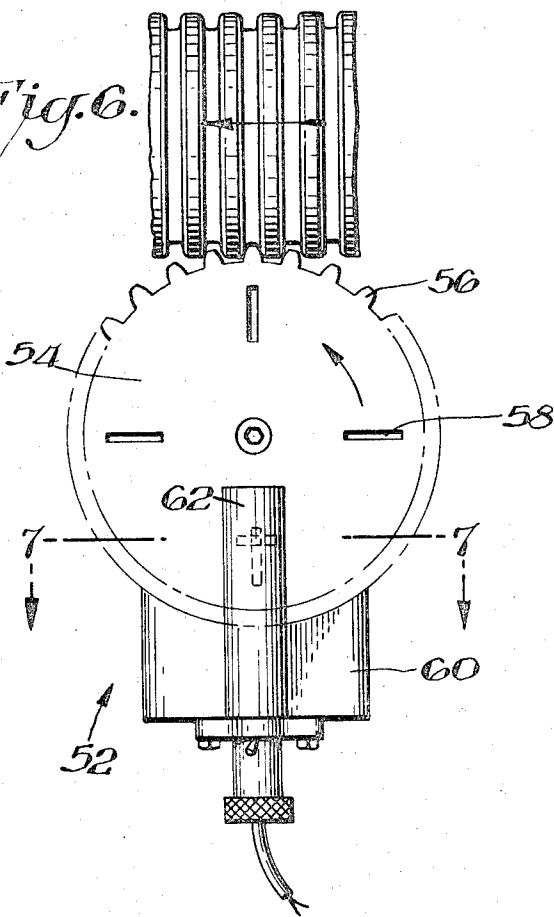
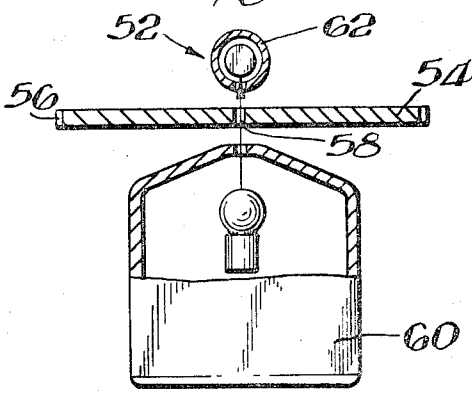
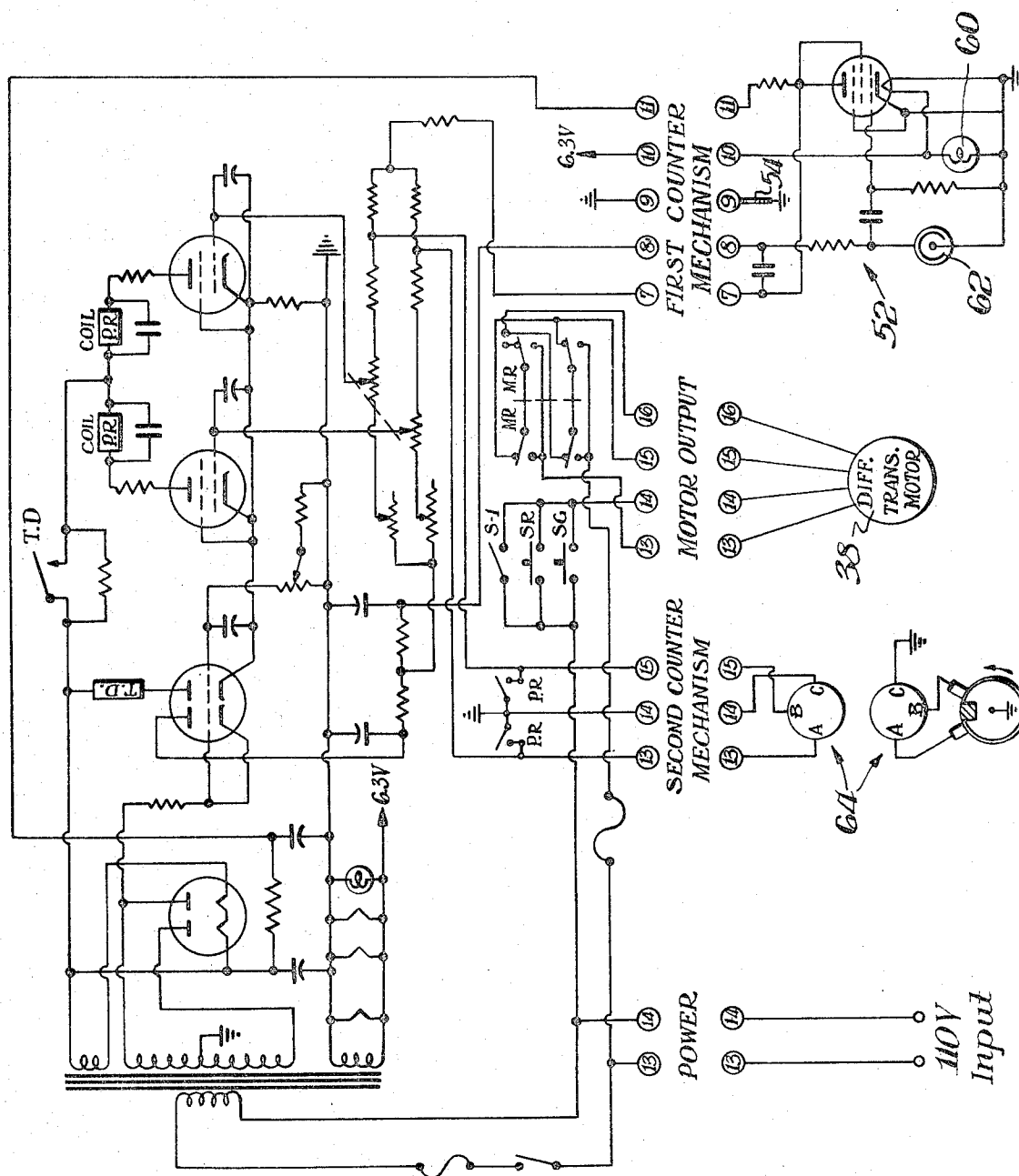


Fig. 7.





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DIMENSIONAL CONTROL APPARATUS

RELATED U.S. APPLICATION

This application is a continuation of Ser. No. 804,963, filed Mar. 6, 1969, now abandoned.

BACKGROUND OF THE INVENTION

The present invention relates to an apparatus and method for continuously producing corrugated tubing, and more particularly to an apparatus and method for controlling the dimensions of corrugated tubing by stretching the tubing a predetermined amount as it travels between a molding unit and a downstream pulling assembly running at about the same rate as the tubing discharged from the molding unit.

Corrugated tubing has become extremely popular for use in the construction of subsurface drainage networks. Usually, corrugated drainage systems installed below ground comprise several main lines and a series of lateral lines which empty into the mains. The tubing has slots in the valleys of the corrugations so that liquid is drained away from the surrounding earth into the slots and through the tubing. For the most part, the production of corrugated tubing is quite simple and many procedures are well known in the art. One convenient method of manufacture involves extruding the tubing and immediately thereafter delivering it into the entrance end of a continuously rotating molding unit. The individual molds of the molding unit are suitably configured to impart the desired configuration to the smooth-walled tubing, and suction or air pressure may be utilized to force the newly formed tubing into engagement with the molds. Ultimately the extruded tubing reshaped with corrugations leaves the discharge end of the molding unit and is conveyed downstream for cooling and subsequent operations.

A serious problem caused by numerous factors arises immediately after the corrugated tubing leaves the discharge end of the molding unit. This problem is the intermittent and erratic expanding and contracting of the tubing as it moves downstream of the molding unit. The net result of the expansion and contraction of the tubing is a finished product with ununiform dimensions. Without some form of dimensional control the peaks of successive corrugations in the finished product are unequally spaced apart. While unequal spacing alone is not critical, especially when the tubing is used for drainage purposes, the main problem caused by the lack of dimensional uniformity occurs when the tubing is further processed after cooling. For example, if the corrugated tubing is to be utilized for drainage purposes openings must be cut or otherwise formed along the length of the tubing. These openings preferably take the form of elongate slots in selected valleys of the corrugations. From the standpoint of manufacturing, numerous openings must be cut in the tubing at one time and a gang saw may be utilized for this purpose. If the spacing between the valleys of the tubing is not accurate the gang saw cuts into the peaks and other undesired portions of the tubing. Such an arrangement of cuts or drainage slots adversely effects the strength of the tubing as well as its drainage characteristics.

As mentioned above, the erratic expansion and contraction of corrugated tubing during manufacturing is

caused by many factors. Slight variations in the molding material from batch to batch contributes significantly to the erratic behavior of the newly formed tubing. Temperature variations of the material in the extruder is also another significant factor. Variations in the drive for the molding unit and the system utilized for conveying the tubing away from the molding unit also cause too much or too little stretching of the tubing as well as variations in the wall thickness of the tubing, the net result being the lack of uniformity between successive corrugations in the finished product. Moreover, the individual molds of the molding unit often vary somewhat in size which also causes variations in the wall thickness of the corrugated tubing formed by these molds. Variations in wall thickness cause erratic expansion and contraction of the tubing and therefore ununiform dimensions in the finished product.

Accordingly, it is an object of the present invention to provide a unique apparatus for controlling the dimensions of corrugated tubing in a highly beneficial and efficient manner.

Another object of the present invention is to provide a novel method for controlling the dimensions of corrugated tubing in a simple and highly dependable manner.

SUMMARY OF THE INVENTION

In accordance with the present invention an apparatus for continuously producing corrugated tubing comprises a molding unit, an assembly downstream of the molding unit for pulling the tubing therefrom at a rate substantially the same as the rate the tubing is discharged from the molding unit, and a system for controlling the dimensions of the tubing by stretching the tubing a predetermined amount as it travels between the molding unit and pulling assembly. The dimensional control system includes a first counter mechanism upstream of the pulling assembly adjacent the discharge end of the molding unit. The first counter mechanism is arranged to count a predetermined number of corrugations in the tubing and immediately thereafter generate a signal indicating that the predetermined number has been counted. A second counter mechanism associated with the pulling assembly is arranged to count the number of corrugations in the tubing passing the pulling assembly and generate an advance, retard, or null signal when the signal from the first counter mechanism is generated. An advance signal indicates that substantially less than the predetermined number of corrugations has been counted by the second counter mechanism while a retard signal indicates that substantially more than the predetermined number of corrugations has been counted by the second counter mechanism. A null signal is generated when substantially the predetermined number of corrugations has been counted by the second counter mechanism. A speed changer arrangement connected to the pulling assembly incrementally alters the speed of that assembly in response to advance and retard signals. An advance signal causes an incremental increase and a retard signal causes an incremental decrease in the speed of the pulling assembly. An arrangement is also provided for initially adjusting the second counter mechanism so that the null signal is

generated when the tubing between the molding unit and the pulling assembly is stretched the predetermined amount.

The process of the present invention controls the dimensions of corrugated tubing by stretching the tubing a predetermined amount as it travels between a molding unit and an assembly for pulling the tubing therefrom. This is accomplished by counting the corrugations in the tubing located between the molding unit and the pulling assembly and generating a first signal immediately after a predetermined number of corrugations has been counted. The corrugations passing the pulling assembly are also counted and a signal representative of that count is generated when the first signal is generated. The second signal comprises an advance signal when substantially less than the predetermined number of corrugations has been counted, a retard signal when substantially more than the predetermined number of corrugations has been counted, or a null signal when substantially the predetermined number of corrugations has been counted. The present process also involves incrementally advancing and retarding the speed of the pulling assembly in response to advance and retard second signals. Additionally, the generation of the second signal is initially adjusted at the start of a run so that the null signal is generated when the tubing between the molding unit and the pulling assembly is stretched the predetermined amount.

BRIEF DESCRIPTION OF THE DRAWING

Novel features and advantages of the present invention in addition to those mentioned above will become apparent to one skilled in the art from a reading of the following detailed description in conjunction with the accompanying drawing wherein:

FIG. 1 is a block diagram illustrating various steps in the manufacture of corrugated drainage tubing;

FIG. 2 is a perspective view of an apparatus for performing the process of FIG. 1 according to the present invention;

FIG. 3 is a side elevational view of the molding unit and other components of the apparatus shown in FIG. 2;

FIG. 4 is a side elevational view of one mold element of the molding unit shown in FIG. 3;

FIG. 5 is a sectional view taken along line 5—5 of FIG. 4;

FIG. 6 is a top plan view of a counter mechanism according to the present invention;

FIG. 7 is a sectional view taken along line 7—7 of FIG. 6; and

FIG. 8 is an electrical schematic of circuitry utilized to perform the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring in more particularity to the drawing, FIG. 1 diagrammatically illustrates a process for producing corrugated drainage tubing. Initially, smooth-walled tubing is formed by an extruder 10 and then delivered therefrom to the entrance end of a continuously moving molding unit 12. Suction or air pressure is utilized to urge the soft smooth-walled tubing against the configured surfaces 14 of the individual mold elements 16 forming the molding unit 12. Corrugated tubing is

pulled from the discharge end of the molding unit 12 by a pulling assembly comprising three spaced apart pairs of pulling wheels 18, 20, 22. As explained more fully below, the pulling wheels are interconnected so that each pair rotates at the same speed. Each of the pulling wheels has teeth 24 that mesh with the corrugations in the tubing to pull the tubing downstream of the molding unit.

A cooling tunnel 26 is also located downstream of the molding unit for cooling the tubing and thereby hardening it. The cooling of the tubing occurs between the first and second pairs of pulling wheels 18, 20, and the tubing located therebetween shrinks slightly as it is cooled. This shrink factor may be determined for a given set of processing conditions and a particular molding material. After cooling drainage slots are cut into the tubing by a cutting arrangement 28 located between the second and third pairs of pulling wheels 20, 22. The slots are cut into selected valleys of the corrugated tubing, and the cutting operation may be accomplished by utilizing a gangsaw so that numerous slots can be cut at the same time. After the slots are cut in the corrugated tubing it is stored at station 30 for ultimate shipment to the consumer.

The motivating system for the apparatus of the present invention is best illustrated in FIG. 2. This system comprises a single drive source 32 connected to the pulling assembly 18, 20, 22 and the molding unit 12. For reasons discussed above, it is important that the pulling assembly move the corrugated tubing away from the molding unit 12 at about the same rate the corrugated tubing is discharged from the molding unit. Also, it is important that a predetermined amount of stretch be imparted into the tubing located between the molding unit 12 and the first set of pulling wheels 18. By stretching the tubing a predetermined amount the dimensions of the tubing are accurately controlled so that the downstream cutting operation is easily and accurately performed, as explained below.

The drive source 32 of the motivating system is connected to a line shaft 34 through a speed changer 36 and a motor driven differential transmission 38 that changes the relationship between the speed of the molding unit and the speed of the pulling assembly, as explained more fully below. The line shaft 34 includes three right angle gear boxes 40 for transmitting power from the line shaft to each pair of pulling wheels. Each right angle gear box 40 also reduces the transverse output therefrom to about 1/5 that of the line shaft. This relationship serves to minimize backlash in the pulling assembly and decrease the torque on the line shaft 34. A differential transmission 42 is located in the line shaft 34 between the second and third pairs of pulling wheels 20, 22 for momentarily changing the relative speed of the third pulling wheel pair 22 relative to the speed of the second pair of pulling wheels 20. The purpose of this correction is described more fully below. The single drive source 32 of the motivating system is also connected to rotate the upper and lower halves 44, 46 of the molding unit 12, and a right angle reducing gear box 48 is connected between the drive source and the molding unit. At this point it is important to understand that the number of corrugations in the tubing leaving the discharge end of the molding unit per unit time approximately equal the number of corrugations per unit

time pulled past the first pair of pulling wheels 18 when the speed changer 36 and the motor driven differential transmission 38 are both set for a 1:1 input to output relationship.

FIGS. 3, 4 and 5 illustrate the molding unit 12 in more detail. Each of the upper and lower halves of the molding unit includes a plurality of mold elements 16 which are cammed into and out of engagement with each other, as shown best in FIG. 3. Also, each mold element is suitably configured with flutes or corrugations 50 so that a similar configuration is imparted into the tubing as it moves through the molding unit. Air pressure inside the tubing trapped between a bullet (not shown) in the tubing and the extruder 10 may be utilized to force the soft tubing into engagement with the configured surfaces 14 of the individual molds 16 forming the molding unit. It is believed that the drawing illustrates the molding unit in sufficient detail so as to understand its particular function and how it operates to perform that operation. Since the molding unit itself forms no part of the present invention it is not considered necessary to further explain the obvious operation of this machinery.

It is necessary to stretch the tubing a predetermined amount as it travels between the molding unit 12 and the first pair of pulling wheels 18. By stretching the tubing a predetermined amount the dimensions of the tubing, particularly the distance between the corrugations of the final product, are accurately controlled. Basically, the predetermined stretch is computed by utilizing the shrink factor of the particular material being molded. An additional amount is also included in the predetermined stretch in order to maintain the tubing under tension between the second and third pairs of pulling wheels, as described more fully below. For the purpose of example, let us assume that the distance between three flutes or corrugations in the molding unit equals 1.476 inches and that the shrink factor is 0.020 inch/inch. Accordingly, the tubing between the molding unit 12 and the first pair of pulling wheels 18 must be stretched so that the distance between three flutes or corrugations in the tubing equals 1.506 inches. Thus, when the tubing shrinks 0.020 inch/inch its linear dimension in inches between three corrugations is reduced by the product of 1.506 and 0.020. In other words, after the tubing shrinks, the distance between three corrugations is reduced by 0.030 inches whereby the distance between three corrugations in the tubing is 1.476 inches, exactly the linear dimension between three corrugations in the molds. It is also important to stretch the tubing between the molding unit 12 and the first pair of pulling wheels 18 an additional amount so that tension exists in the tubing after the tubing shrinks. In this regard, let us assume that cutting blades at the cutting arrangement 28 cut at least one drainage slot in every third valley of the corrugations in the tubing. By purposely spacing the cutting blades 0.086 inches more than the dimension between three corrugations in the molds or 1.562 inches it then becomes necessary to add an amount of stretch to the stretch needed to compensate for shrinkage alone. This added stretch causes an increase of 0.086 inches per the linear distance between three corrugations in the molds (1.476 inches) after cooling of the tubing. Using the shrink factor of 0.020 inch/inch the added stretch equals 0.088 inches.

Thus, in this example, the tubing between the molding unit 12 and the first pair of pulling wheels 18 must be stretched so that the distance between three corrugations in the tubing equals 1.506 inches plus 0.088 inches or 1.594 inches. After the tubing shrinks 0.020 inch/inch the linear dimension between three corrugations in the tubing equals 1.562 inches which is the distance between adjacent cutting blades. Accordingly, the cutting blades accurately enter selected valleys in the tubing and accurately cut the drainage openings therein. Also, it is clear that after the tubing shrinks in the cooling tunnel it still remains in a stretched condition although that stretch is slightly less than the predetermined amount. This stretch tensions the tubing so that the cutting can be accomplished under control conditions which would not be the case if the tubing was not tensioned during its travel between the second and third pairs of pulling wheels 20, 22.

A first counter mechanism 52 upstream of the first pair of pulling wheels 18 is located adjacent the discharge end of the molding unit 12. The function of the first counter mechanism 52 is to count a predetermined number of corrugations in the tubing and immediately thereafter generate a signal indicating that the predetermined number has been counted. This is accomplished in the following manner. The first counter mechanism 52 includes a rotatable scanning wheel 54 with peripherally arranged teeth 56 in driving engagement with the corrugations in the tubing. Thus, as the tubing is discharged from the molding unit 12 the scanning wheel 54 is caused to rotate. As shown best in FIG. 6, the scanning wheel 54 has four openings 58 equally spaced from each other and from the periphery of the wheel. The openings rotate in a path of travel which causes a light source 60 on one side of the wheel to strike a photoelectric cell 62 on the other side of the wheel each time one of the openings 58 passes between the light source and the photoelectric cell. When this condition occurs a signal is generated to indicate that the particular scanning wheel of FIG. 6 has rotated 90°. The number of teeth at the periphery of the scanning wheel for each 90° of rotation of the wheel may be 12, for example, so that each time a signal is generated by the counter mechanism 52 that signal indicates 12 corrugations in the tubing have been counted. For the purpose of this example, the predetermined number of corrugations counted by the first counter mechanism equals 12 and a signal is generated each time this number is counted. Thus, a signal is generated for each group of 12 corrugations passing the scanning wheel.

A second counter mechanism 64 is associated with the first pair of pulling wheels 18. As shown best in FIG. 2, the second counter mechanism is driven by the transverse shaft 66 utilized to drive the first pair of pulling wheels. However, the second counter mechanism 64 is connected to the transverse shaft 66 through a variable transmission 68, for reasons discussed below. The function of the second counter is to count the number of corrugations in the tubing passing the first set of pulling wheels 18 and to generate a signal which is indicative of that count. This signal is generated when the signal from the first counter mechanism is generated, and depending upon the type of signal from the second counter mechanism, the speed of the pulling assembly is adjusted relative to the

rate the tubing is discharged from the molding unit 12. For example, the second counter 64 may comprise a plate connected for movement with the transverse shaft 66. The plate may have an arcuate band of conductive material with a short length of insulating material separating the open ends of the arcuate band. A pair of stationary spaced apart brushes contact the conductive band and the insulating material as the plate rotates. As explained below, when the first signal is generated, a null signal is generated by the second counter when both brushes contact the conductive band. Also, when one or the other of the brushes contacts the insulating material either an advance or retard signal is generated by the second counter, as explained more fully below.

Under ideal conditions the second counter mechanism 64 rotates four revolutions for each revolution of the scanning wheel 54. This relationship depends upon the number of signals generated by the first counter mechanism 52 for one revolution of the scanning wheel 54; in this case four. The proper speed of the second counter is obtained by adjusting the variable transmission 68 associated therewith. For example, with a scanning wheel having 48 teeth and pulling wheels each having 24 teeth, under ideal conditions one revolution of the scanning wheel is accompanied by two revolutions of the pulling wheels. Thus, the variable transmission 68 associated with the second counter mechanism 64 is initially adjusted to cause a two to one increase so that the second counter mechanism rotates 4 times for each revolution of the scanning wheel or in other words one revolution for each quarter revolution of the scanning wheel.

At the start of a run, after the predetermined amount of stretch is determined for the tubing between the molding unit 12 and the first pair of pulling wheels 18, the second counter mechanism 64 is adjusted so that a null signal is generated when the tubing between the molding unit and the first set of pulling wheels is stretched the predetermined amount. This is accomplished by advancing or moving back the brushes of the second counter mechanism described above relative to the transverse drive shaft 66 for the first pulling wheels 18. Thus, when the predetermined amount of stretch is imparted to the tubing between the molding unit 12 and the first pair of pulling wheels 18 each 90° of rotation of the scanning wheel 54 of the first counter mechanism is accompanied by one complete revolution of the second counter mechanism 64. When this relationship occurs the second counter mechanism generates a null signal and nothing happens. On the other hand, when the stretch in the tubing between the molding unit 12 and the first pair of pulling wheels 18 is less than the predetermined amount, 90° rotation of the scanning wheel 54 of the first counter mechanism is accompanied by substantially less than 360° rotation of the second counter mechanism. In other words, the first counter mechanism has counted a predetermined number of corrugations while the second counter mechanism has in effect counted a number of corrugations less than the predetermined number. This particular relationship between the first and second counter mechanisms is caused by a decrease in stretch in the tubing between the molding unit and the first pair of pulling wheels which decrease in stretch is caused by a decrease in the pulling rate relative to the molding rate. Under these conditions the

second counter mechanism 64 generates an advance signal which is delivered to an amplifier 70 and ultimately to the motor driven differential transmission 38. The advance signal causes an incremental increase in output from the differential transmission which in turn causes an incremental increase in the speed of each pair of pulling wheels relative to the speed of the molding unit 12 or in other words relative to the discharge rate from the molding unit.

When the stretch in the tubing between the molding unit 12 and the first pair of pulling wheels 18 is substantially above the predetermined amount a condition exists which in effect causes more corrugations to pass the first pair of pulling wheels 18 than counted by the first counter mechanism 52 between the interval of signals from the first counter mechanism. Thus, 90° rotation of the scanning wheel 54 of the first counter mechanism is accompanied by substantially more than 360° rotation of the second counter mechanism 64. In other words, the first counter mechanism has counted the predetermined number of corrugations between its signals while the second counter mechanism has counted substantially more corrugations than the predetermined number. The increase in stretch is caused by an increase in the pulling rate relative to the molding rate. The second counter mechanism then generates a retard signal which is delivered to the amplifier 70 and ultimately to the motor driven differential transmission 38. The retard signal causes an incremental decrease from the output of the differential transmission which incrementally decreases the speed of the pulling wheel pairs relative to the discharge rate of tubing from the molding unit.

The number of corrugations in the tubing between the first pair of pulling wheels 18 and the second pair of pulling wheels 20 is such that when the tubing is cooled and shrinks the only stretch remaining therein is the additional stretch put into the predetermined amount as computed above. Since each set of pulling wheels is rotating at the same speed this added amount of stretch remains in the tubing until it is discharged from the third pair of pulling wheels 22.

The number of corrugations in the tubing between the second pair of pulling wheels 20 and the third pair of pulling wheels 22 is such that the cutting blades of the cutting arrangement 30 accurately enter the valleys of the corrugations in the tubing. The differential transmission 42 is utilized at the start of the run to obtain this number of corrugations between the second and third pairs of pulling wheels. Since the stretch in the tubing is controlled along the entire line from the molding unit 12 to the third pair of pulling wheels 22 there is no tendency to disturb the number of corrugations between the second and third pairs of pulling wheels. Thus, throughout the entire run the number of corrugations between the second and third pulling wheel pairs remains unchanged. If the stretch in the tubing is not controlled in the manner described above the number of corrugations in the tubing between the second and third pairs of pulling wheels varies making it impossible to accurately cut slots only in the valleys of the corrugations. Without controlling the dimensions of the tubing by properly stretching the tubing between the molding unit and the first pair of pulling wheels, conditions arise whereby the tubing between the first and second

pulling wheel pairs 18, 20 may have corrugations which are too closely spaced. This causes corrugations to be pulled from between the second and third pulling wheel pairs which decreases the number of corrugations in the tubing between these pulling wheel pairs and adversely effects the accuracy of the cuts in the tubing. Also, without controlled stretching, the corrugations between the first and second pulling wheel pairs may be spaced too far apart, ultimately causing an increase in the number of corrugations between the second and third pulling wheel pairs and inaccurate cutting.

FIG. 8 of the drawing is an electrical schematic illustrating the relationship between the first counter mechanism 52, the second counter mechanism 64, the motor driven differential transmission 38, and the amplifier 70. Basically, signals from the first counter mechanism 52 are delivered to a bridge as are signals from the second counter mechanism 64. When an advance signal is delivered to the bridge from the second counter mechanism one of two tubes is fired which ultimately causes an incremental increase in the output from the motor driven differential transmission 38. Conversely, when a retard signal is delivered to the bridge from the second counter mechanism the other tube is fired which ultimately causes a decrease in the output from the motor driven differential transmission. Finally, when a null signal is generated by the second counter mechanism neither of the tubes is fired and the output from the motor driven differential transmission remains unchanged.

What is claimed is:

1. An apparatus for continuously producing corrugated tubing comprising a molding unit, an assembly downstream of the molding unit for pulling the tubing from the molding unit at substantially the same rate it is discharged from the molding unit, and a system for controlling the dimensions of the tubing by stretching the tubing a predetermined amount as it travels between the molding unit and the pulling assembly, and wherein the dimensional control system includes first counter means upstream of the pulling assembly adjacent the discharge end of the molding unit arranged to count a predetermined number of corrugations in the tubing and immediately thereafter generate a signal indicating that the predetermined number has been counted, second counter means associated with the pulling assembly arranged to count the number of corrugations in the tubing passing the pulling assembly and generate an advance signal, a retard signal or a null signal when the signal from the first counter means is generated, an advance signal indicating that substantially less than the predetermined number of corrugations has been counted by the second counter means, a retard signal indicating that substantially more than the predetermined number of corrugations has been

counted by the second counter means, and a null signal indicating that substantially the predetermined number of corrugations has been counted by the second counter means, speed changer means connected to the pulling assembly for incrementally altering the speed of that assembly in response to advance and retard signals, an advance signal causing an incremental increase and a retard signal causing an incremental decrease in the speed of the pulling assembly, and means for initially adjusting the second counter means so that the null signal is generated when the tubing between the molding unit and the pulling assembly is stretched the predetermined amount.

2. An apparatus as in claim 1 wherein the first counter means includes a rotatable scanning wheel with peripherally arranged teeth in driving arrangement with the corrugations in the tubing, and means associated with the rotatable scanning wheel that causes the first signal to be generated after a predetermined number of teeth on the wheel have been driven by the corrugated tubing.

3. An apparatus as in claim 2 wherein the means associated with the rotatable scanning wheel for causing generation of the first signal comprises a photoelectric cell on one side of the scanning wheel, a light source on the other side of the wheel in alignment with the photoelectric cell, and a plurality of openings in the scanning wheel equally spaced from each other and the periphery of the wheel, the openings rotating in a path of travel which causes the light source to strike the photoelectric cell and thereby generate a first signal after the predetermined number of teeth on the wheel have been driven by the corrugated tubing.

4. An apparatus as in claim 3 wherein the plurality of openings in the scanning wheel comprise four in number whereby four signals from the first counter means are generated for each revolution of the scanning wheel.

5. An apparatus as in claim 1 wherein the predetermined amount of stretch equals the shrinkage of the tubing upon cooling per unit length plus an additional amount per unit length.

6. An apparatus for continuously producing corrugated tubing comprising a molding unit, an assembly downstream of the molding unit for pulling the tubing from the molding unit at substantially the same rate it is discharged from the molding unit, and a system for controlling the dimensions of the tubing by stretching the tubing a predetermined amount as it travels between the molding unit and the pulling assembly, and wherein the dimensional control system is arranged to stretch the tubing in a linear direction a predetermined amount equal to the amount of shrinkage of the tubing upon cooling plus a slight additional amount for maintaining the tubing under tension during processing.

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