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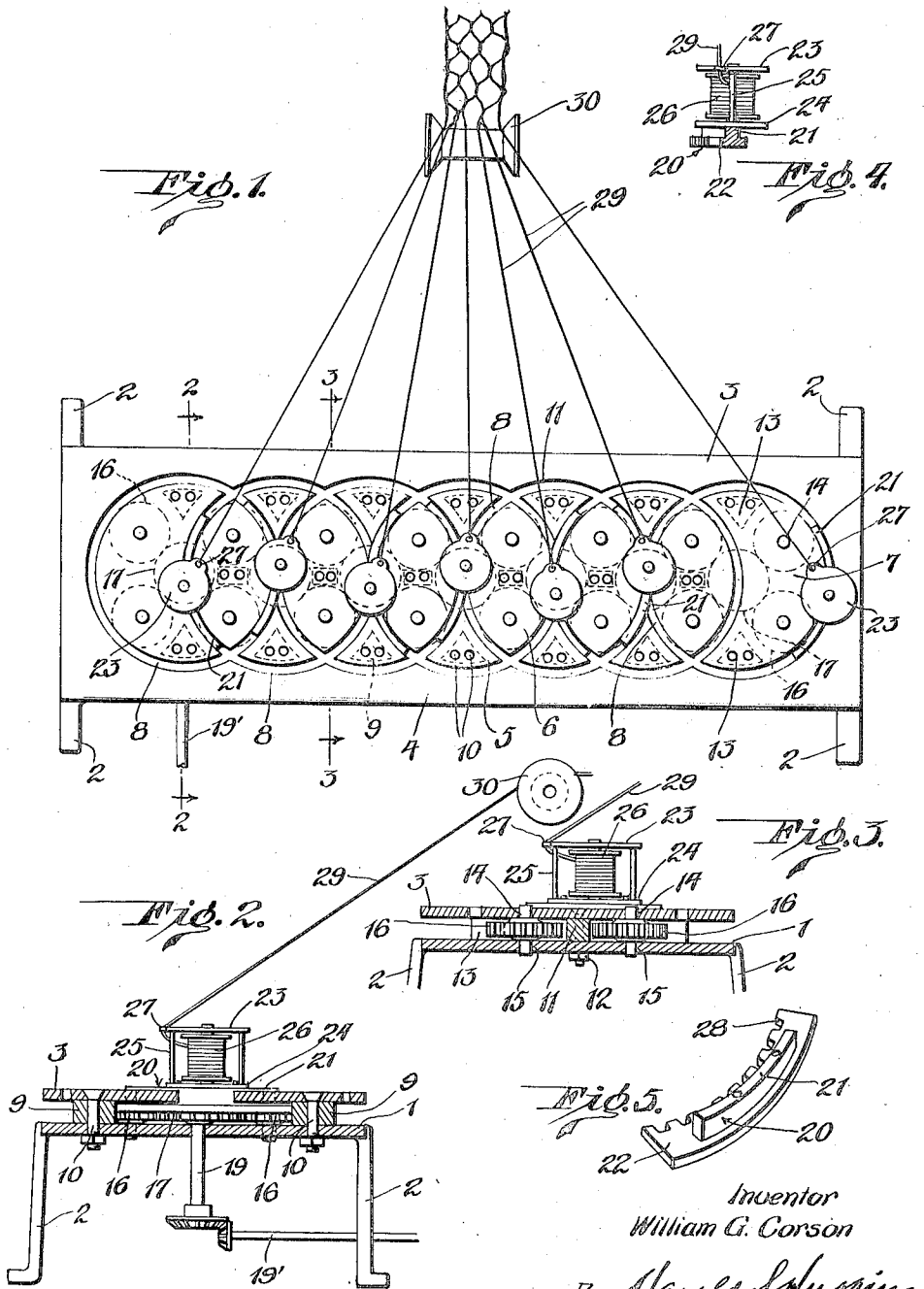
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TAPE OR BRAID MAKING MACHINE

Filed May 26, 1925

2 Sheets-Sheet 1



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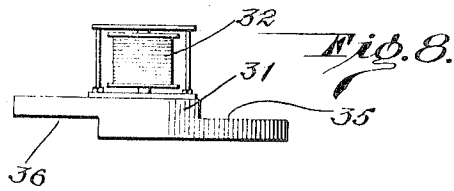
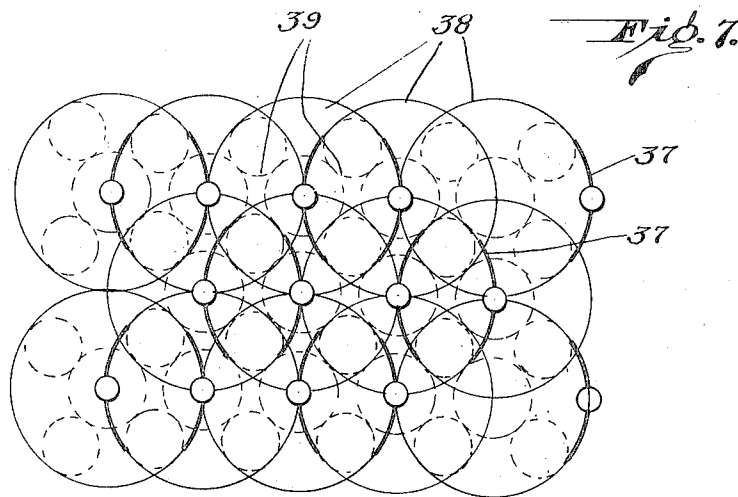
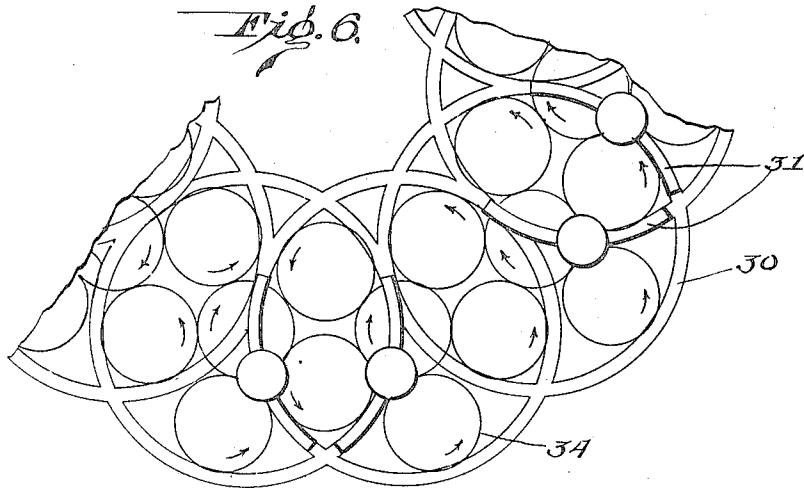
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TAPE OR BRAID MAKING MACHINE

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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TAPE OR BRAID MAKING MACHINE.

Application filed May 26, 1925. Serial No. 32,982.

This invention relates to a tape or braid making machine particularly adapted for the making of various sizes of tape or braid wherein the strands extend longitudinally and are intertwisted with adjacent strands.

An object of the invention resides in providing a simple but efficient machine for intertwisting a plurality of strands to form a braid wherein the strands extend throughout the braid in substantially parallel relation and are intertwisted alternately with the strands at opposite sides thereof.

A further object of the invention resides in providing a tape or braid weaving machine including means mounting the supply of independent strands adapted to operate the means carrying the strands in circumferential movement so that the strands are intertwisted with one another to form the braid and for making either a solid, tubular or flat braid in which each strand extends longitudinally through the tape or braid in substantially the same position and which is intertwisted with only the adjacent strands.

Another object of the invention resides in providing a machine of the character above mentioned having a plurality of spools carrying strands to be formed into a braid mounted on independent relatively movable elements and means for mounting and operating said movable elements during the withdrawing of strands from said spools for alternately intertwisting the strands from each spool with the strands from the adjacent spools at opposite sides.

The invention comprehends other objects residing in the details of construction of the machine and the arrangement of the parts which are more particularly pointed out in the following detailed description directed to a preferred form of the invention, it being understood, however, that various ways and means may be provided for operating said spools to intertwist the strands which are in the scope of the present description and the following claims.

In the drawings forming a part of this application,

Fig. 1 is a plan view of the improved tape or braid making machine forming the subject of the present invention;

Fig. 2 is a vertical sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 1;

Fig. 4 is a detail sectional view showing the relation of the mounting of the spool on the spool supports taken at right angles to the showing of Fig. 2;

Fig. 5 is a detail perspective view of one of the movable spool supports;

Fig. 6 is a diagrammatic view illustrating the arrangement of the parts embodying a construction similar to that shown in Fig. 1 wherein it is desired to produce a tubular braid;

Fig. 7 is a diagrammatic view illustrating the arrangement of parts of a machine for forming a solid braid of rectangular cross section; and

Fig. 8 is a detail enlarged elevational view of the spool and support showing a slightly different construction of support from that shown in Fig. 5 which is more particularly adapted for use in the construction of machines in accordance with the showing of Figs. 6 and 7.

1 indicates a main supporting table adapted to be mounted and supported in spaced horizontal relation above a floor or the like on the legs 2, or may be suitably mounted in a vertical position. In spaced parallel relation above the main supporting table is mounted a plate member 3 which is coextensive with the table member 1. This plate member is formed of a main outer section 4 and a plurality of sections indicated by the numerals 5, 6 and 7 which are formed so as to provide a plurality of overlapping and intersecting circumferential slots indicated by the numeral 8. The plate member 3 and its slots constitute the raceway of the machine. The sections 5 of the plate member are supported on spacing blocks 9 and secured rigidly in position by bolts 10 passing therethrough. The sections 6 of the plate member are mounted in spaced parallel relation to the main supporting table on the blocks 10 by the bolt members 12, or if desired, may be secured to the pinions of the spool operating means, while pairs of blocks 13 mount the plate sections 7 on the supporting table, or may be secured to the pinions of the spool operating means. The sections 6 and 7 are provided with a plurality of bearing openings 14 in alined relation throughout the length of the plate member and with which are alined bearing openings 15 in the main supporting table arranged in axial alinement with the bearing openings 14. A plurality of spur gears 16 are mount-

ed in the bearing openings 14 and 15 between the plate member 3 and the main supporting table as clearly shown in Fig. 3 of the drawing. A plurality of gears 17 of substantially reduced thickness as compared with the spur gears 16 are positioned in alined relation between the plate member and the supporting table and intermesh with all of the spur gears 16 so that the rotation of one of the gears 17 will rotate all of the gears 18. For the purposes of driving this plurality of gears which are intermeshed, a suitable shaft is provided at 19 which is connected with one of the gears 17 and driven from a suitable power shaft 19' by a suitable connection.

Movable spool supports which constitute the bases of braid carriers indicated generally at 20 and comprise arcuate sections 21 which are adapted to slidably fit in the circumferential slots 8 and have the bottom portions formed with a flange 22 which is adapted to have bearing contact with the undersurface of the plate 3 in providing a suitable bearing for the spool support in its movement in one of the circumferential slots. This movable spool support in its circumferential operation in the slot 8 rides over the top portion of the gears 17 and is freely movable throughout the entire circumference of one of the slots 8. There are as many spool supports as there are slots in the plate member as clearly illustrated in Fig. 1. In the central portion of these spool supports is securely mounted a frame having a pair of plate members 23 and 24 secured in spaced parallel relation by the bars 25 for rotatably mounting the strand carrying spool 26. The plate members 23 and 24 and the bars 25 complete the braid carriers of which the bases or movable supports 20 are parts as hereinabove indicated. At 27 the plate member 23 is provided with a perforated projection to form a strand guide for the strands being unwound from the spool 26.

The length of the arcuate spool supports 21 is such that they will overlap the peripheries of two of the spur gears 16 arranged within the circumference of the slot 8 in which the support moves so that the teeth 28 will intermesh with the spur gears 16. In the rotation of these spur gears, it will be seen that each of the spool supports will be moved around the circumferential slot by said gears 16. The operation of the gears 17 will also provide a means for transmitting the motion throughout all of the gears of a single machine in the winding operation thereof.

The strands from the spools indicated at 29 are adapted to pass over the pulley 30 and are suitably and rotatably mounted above or slightly to one side of the supporting table and its associated parts. These strands pass over this pulley 30 after they

are intertwined to form the tape or braid through the movement of the spools with the supports.

It will be seen from an inspection of Fig. 1 of the drawing that one spool 26 and one spool support are provided in connection with each strand to be formed into the said tape or braid. The circumferences of movement of each spool support overlap as indicated in Fig. 1 and the positioning of the spool supports is such that in their movement as strands are drawn from the spools each adjacent spool will be rotated about the next adjacent spools alternately to alternately intertwist one strand with the adjacent strands. In this way it will be seen that each of the strands extend substantially parallel throughout the tape or braid in this alternately intertwined relation so that the size, that is the width of the braid can be readily regulated according to the capacity of the machine by the regulation of the number of strands being drawn off the spools for alternately intertwined movement.

It is to be understood that a machine operating on the principle embodied in Fig. 1 above described can be readily constructed for the making of either tubular tape or braid or where it is desired to produce a solid braid of square, rectangular, triangular or of any other desired section. Upon referring to Fig. 6 the diagrammatic illustration shows the spool supports at 31 on which the spools 32 are mounted in the same manner as shown in Figs. 3 and 4. These spool supports are movable in the circumferential guide slots 30 the centers of the circumferences of which are arranged in circumferential relation so that a tubular braid will be formed in which all of the strands intertwist alternately with adjacent strands. In this embodiment of the invention it will be noted that five idler gears 34 are used for operating the spool supports in the manner as above described in connection with the construction shown in Fig. 1.

The spool support 31 for this embodiment of the invention has the opposite end portions cut away at the lower edges as indicated at 35 and 36, respectively, to compensate for the overlapping of the ends of these spool supports in movement around their respective circumferential guideways.

The same principle is carried forward in Fig. 7 as above described for the formation of a solid cross sectional tape and in which the spool supports are indicated at 37 and the guideways therefor by the circumferences 38. The operating gears for the several spool supports are illustrated in dotted lines at 39 and are all in intermeshed relation, the same as the construction shown in Fig. 1. It will be seen that the construction and operation

of the machine for the formation of a solid cross sectional tape would be the same as in the construction shown in Fig. 1 with the addition of the extra strands and the corresponding controlling operating structure multiplied in accordance with the number of strands desired and following the arrangement of Fig. 7 for the production of a solid tape. It will thus be seen that this method of intertwisting strands to form braid and tape can be embodied into a structure to form any desired size and shape of tape containing any desired number of strands by the arrangement of the parts as heretofore suggested for the desired form of braid or tape.

What is claimed is:

1. A machine of the class described comprising a plurality of braid carriers, a plurality of rotatable gear wheels for each braid carrier interconnected to be simultaneously driven at the same rate of speed, each braid carrier having a driven gear element connected therewith and meshed with two of the gear wheels associated with its braid

carrier during certain phases of the operation and always intermeshing with one gear before leaving the mesh of another.

2. A machine of the class described comprising a raceway having slots, braid carriers, each braid carrier having a base provided with a curved guide snugly fitted in a slot of the raceway, a curved gear element connected to each guide and a plurality of rotatable gears cooperable with each curved gear element for continuously and constantly driving the same.

3. A machine of the class described comprising a raceway having a plurality of overlapping circular slots, braid carriers, each braid carrier having a base provided with an arcuate guide snugly fitted in a circular slot of the raceway and an arcuate gear element below the guide and connected thereto and a plurality of rotatable gears for each braid carrier.

In testimony whereof I hereunto affix my signature.

WILLIAM G. CORSON.