

R. C. RAHM.
SECTIONAL BRAIDING MACHINE.
APPLICATION FILED JAN. 14, 1907.

933,340.

Patented Sept. 7, 1909.
2 SHEETS—SHEET 1

Fig. 1.

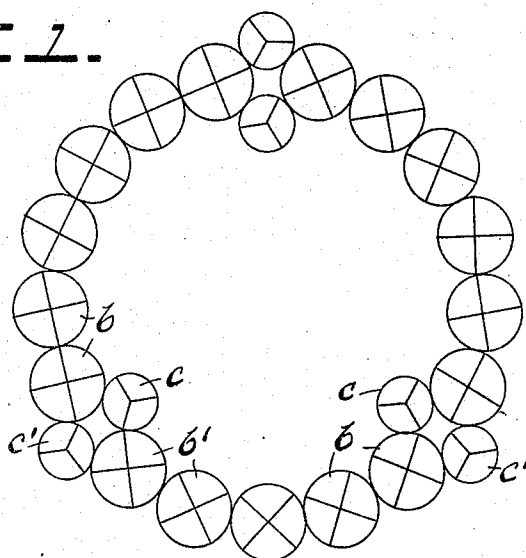
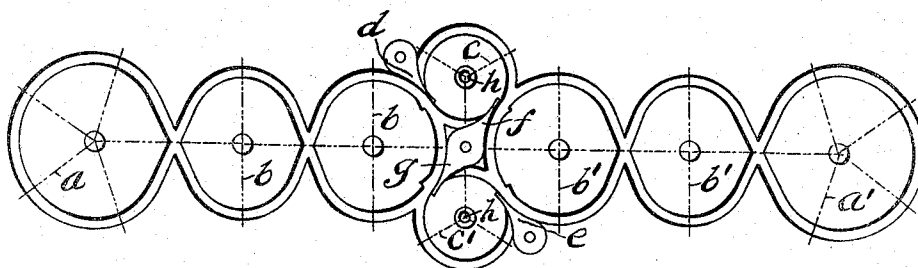


Fig. 2.



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Fig. 3

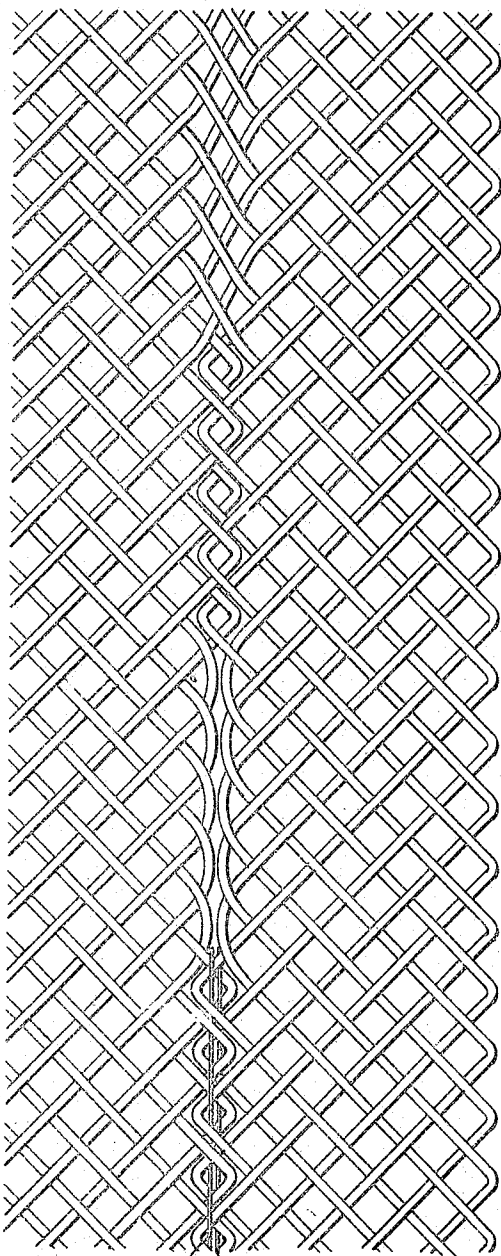


Fig. 4.

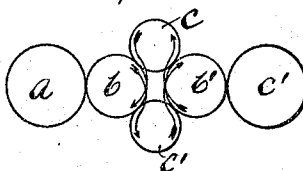


Fig. 5.

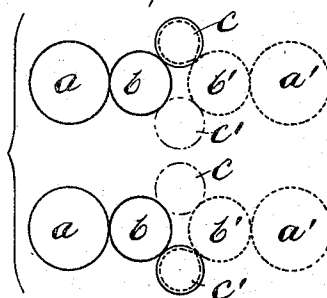


Fig. 6.

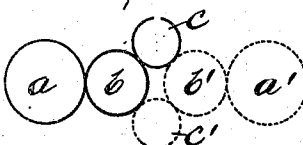
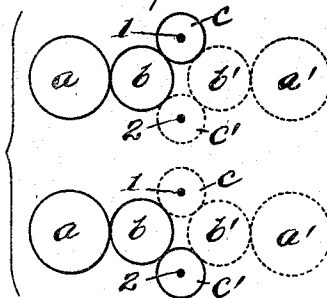


Fig. 7.



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UNITED STATES PATENT OFFICE.

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SECTIONAL BRAIDING-MACHINE.

933,340.

Specification of Letters Patent.

Patented Sept. 7, 1909.

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To all whom it may concern:

Be it known that I, ROBERT C. RAHM, a citizen of the United States, and a resident of Wyomissing, in the county of Berks, State of Pennsylvania, have invented certain new and useful Improvements in Sectional Braiding-Machines, of which the following is a specification.

The main object of my invention is to provide for producing improved braid products, and embodying in a continuous fabric different braid formations.

The invention is fully described in connection with the accompanying drawings indicating the improved braid formations provided for, and the improved braiding machine construction whereby I am enabled to produce the same as hereafter fully described.

Figure 1 is a diagrammatic plan view of a circular braiding machine having a course divided into three sections which are linked together in accordance with my invention. Fig. 2 is a similar enlarged view indicating two short series of ordinary four-horn carrier-engaging gears, the separated ends of which series are linked together by an interposed pair of three-horn carrier-engaging gears with carrier-controlling switches therefor, whereby alternate carriers of each series are either reversed or passed through by said gears respectively as desired. Fig. 3 is an enlarged view of a portion of a continuous composite braid which may be produced on my improved machine, showing four different runs of the threads made at different points of its length; Figs. 4, 5, 6 and 7 being corresponding diagrammatic views indicating the different carrier movements effected therefor.

No showing or description of the ordinary and well known features of a braiding machine are necessary to a full understanding of my invention, the features of which are therefore illustrated diagrammatically in the drawing, the gears in each race-circle of the course being indicated by radial lines showing the number of carrier-engaging horns. In Fig. 2 a very short serpentine carrier course of two sections is indicated, each section comprising merely two four-horn gears (b , b or b' b') in a series, with a terminal gear a or a' , and the separated end gears of each series being connected or linked together by a pair of three-horn gears

c and c' interposed between the separated series b b and b' b' , so that the carriers of both sections may be divided between them. Each of the terminal gears a and a' , as indicated, is provided with five carrier-engaging recesses or "horns", while each of the interposed linking gears is provided with three horns, as stated; said linking gears c and c' being necessarily "uneven-horned" to avoid conflict of the carriers in their required runs, while the ordinary gears b b and b' b' in series are "even-horned". A series of switches d , e , f and g are arranged, as shown, at the several points of intersection of the linking race-circles c and c' with the adjoining race-circles b and b' of the respective course sections; said switches being readily operated as usual by a suitable jacquard mechanism, not shown, so as to provide for any desired movement of the carriers as hereafter described.

By means of my improved construction it will be seen that any carrier coming from either of the series toward the point of their separation, may be guided around either one of the interposed linking gears c or c' as desired without changing its relative arrangement with respect to the other carriers. Thus every alternate carrier from each series or section may be traversed around the gear c , and the others around the gear c' , as indicated in Fig. 5, so as to form a stripe braid by interlacing the braiding of the two sections; this being effected without thickening the braid at the point of junction inasmuch as two threads only link together in each case before returning to their respective sections; and without changing the speed of the carriers at the point of junction, which is of great advantage in practical operation as a change of speed causes objectionable hammering and a reduction of capacity. Instead of thus causing the carriers of the respective series or sections to pass alternately around the interposed linking gears c and c' as for stripe braiding (Fig. 5), all the carriers of one section may be passed around one of said gears, as c , and all the carriers of the other section around the other gear c' , so as to disconnect the abutted braid ends as indicated in Fig. 6. Or instead of reversing the direction of the carriers by passing them around said gears c and c' as indicated in Figs. 5 or 6, they may be caused to continue on without reversing and with prac-

tically the same effect as though the course were not broken by the linking terminals, as indicated in Fig. 4 and in the adjacent portion of braid product in Fig. 3; the stripe effect being in such case avoided, and ordinary braiding of uniform thickness produced. It will be readily understood that the course of the ordinary circular machine may be divided into sections as indicated in Fig. 1, by introducing any desired number of my paired linking gears and switches, or that a single pair may be employed instead of the usual reversing terminals employed for flat braiding; the machine in either case being capable of producing either a tubular or a flat braid, and with or without the stripe effect, as desired,—or of combining these different results in a single or continuous braid by varying the operation at different points of its length.

To accomplish a further purpose, I provide each of the pair of linking gears c c' with a central opening u for the passage of warp threads 1 and 2, around which respectively the carriers may be passed in reversing alternately upon said terminals as indicated in Fig. 6; the different effect produced by the introduction of these warps being indicated in Fig. 7 and the portion of braid product opposite the same. This method of operating (Fig. 7) connects the overlapped selvage edges of the braid and prevents their separation in the manner shown opposite Fig. 6, excepting by first forcibly withdrawing said warps endwise from the braid. In this way a tubular braid is formed which may be readily converted into a flat braid by merely withdrawing such warps, which feature is of special importance in the production of twisted braids.

It will be readily understood that my invention not only enables the carriers of linked course ends or sections, to be operated independently of each other as indi-

cated in Figs. 6 or 7, or coöperatively as indicated in Figs. 4 and 5, but that these several movements may be variously combined as determined by jacquard patterns, so as to produce a great variety of ornamental effects. Moreover these various operations are not only provided for on a single machine, and with a uniform speed of carrier travel and thickness of braid product, but both the construction and operation are very simple and advantageous.

What I claim is:—

1. A braiding machine comprising separated race-circles each provided with carrier drive-gears having an even number of carrier-engaging horns, a pair of connecting race-circles interposed between said separated race-circles and each provided with carrier drive-gears adapted to serve as terminals, and interior and exterior carrier-controlling switches whereby said interposed race-circles and their drive-gears are adapted either to pass through or reverse the carriers, substantially as described.

2. A braiding machine comprising separated race-circles each provided with carrier drive-gears having an even number of carrier-engaging horns, a pair of connecting race-circles interposed between said separated race-circles and each provided with carrier drive-gears adapted to serve as terminals and with a warp-thread opening, and interior and exterior carrier-controlling switches whereby said interposed race-circles and their drive-gears are adapted to either pass through or reverse the carriers, substantially as described.

In testimony whereof, I affix my signature, in the presence of two witnesses.

ROBERT C. RAHM.

Witnesses:

D. M. STEWART,
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