

R. C. RAHM.
BRAIDING MACHINE.
APPLICATION FILED AUG. 31, 1907.

936,356.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

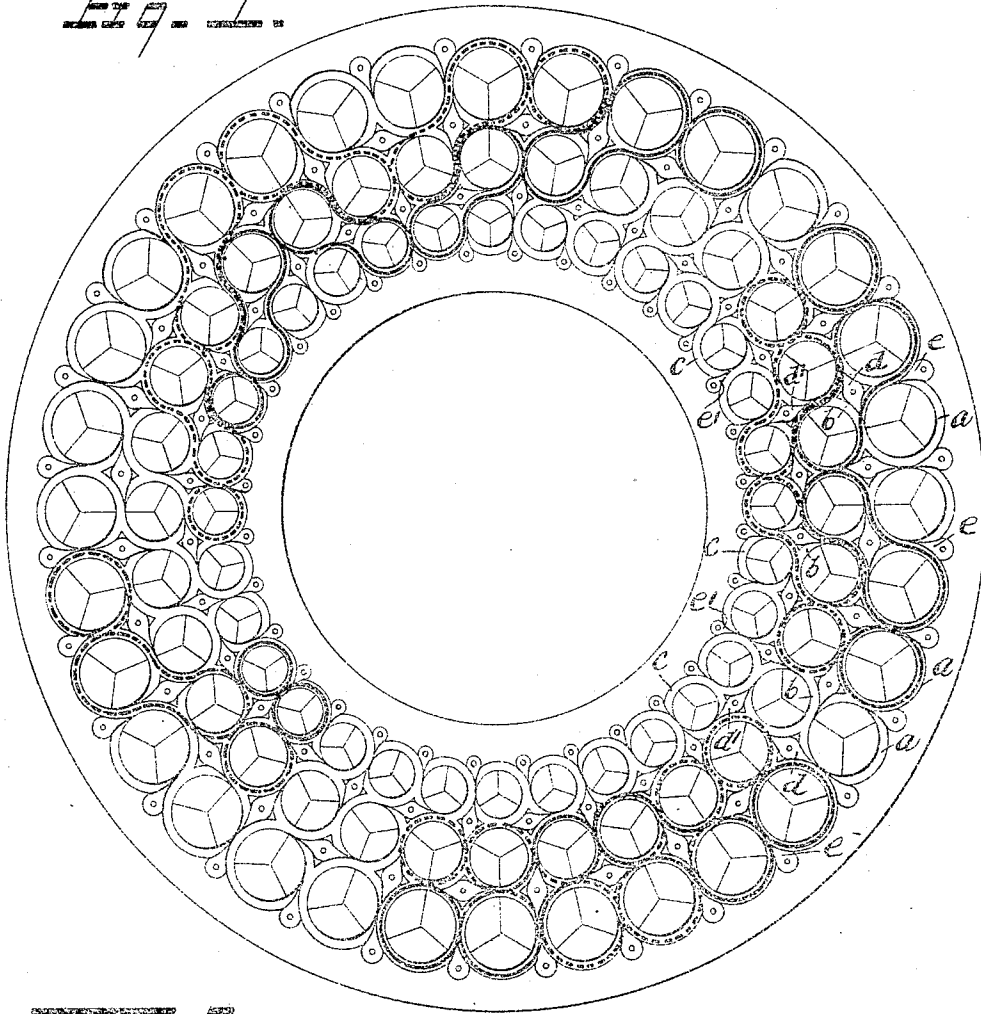
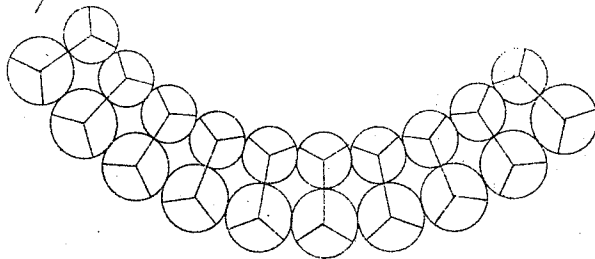


Fig. 2.



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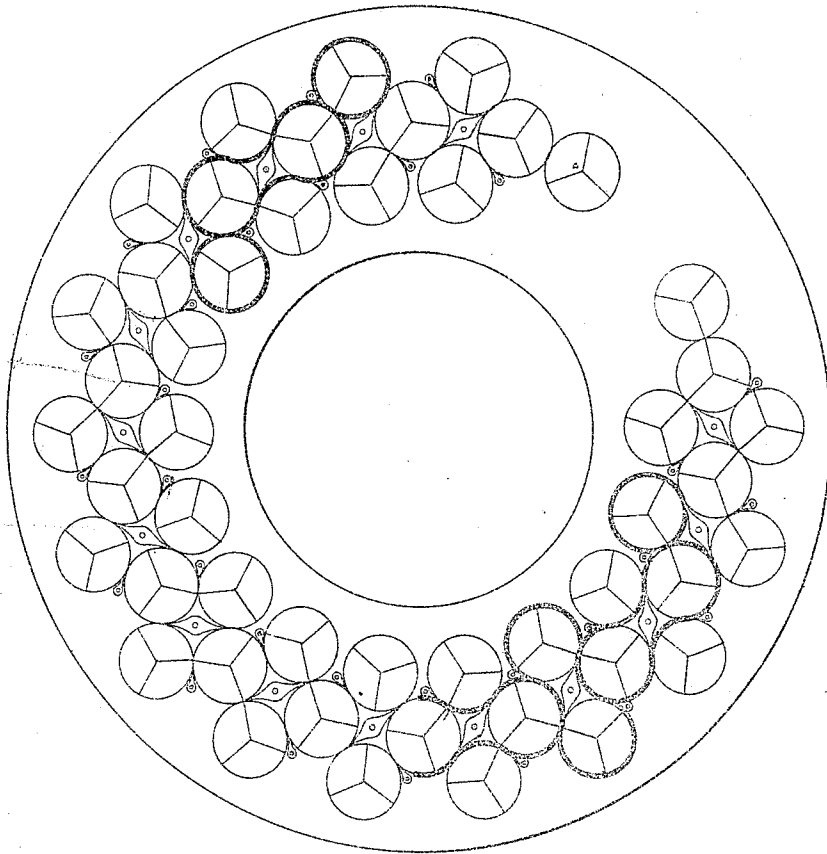
Attorneys

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Fig. 3.



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UNITED STATES PATENT OFFICE

ROBERT C. RAHM, OF WYOMISSING, PENNSYLVANIA, ASSIGNOR TO TEXTILE MACHINE WORKS, OF WYOMISSING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BRAIDING-MACHINE.

936,355.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed August 22, 1907. Serial No. 390,355.

To all whom it may concern:

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

My invention relates particularly to braiding machines adapted for producing a variable product as determined merely by the operation of switches which control the courses of the carriers through parallel interjoined series of race-circles; and it consists in an improved machine, as hereinafter fully described and claimed, in which uneven-horned drive gears are employed both for passing-through and reversing the carriers instead of providing even-horned passing-through gears in connection with uneven-horned reversing terminals as heretofore.

Figure 1 is a diagrammatic plan view of a machine embodying my invention, showing the joined race-circles in three concentric series, with interposed switches; several of the different sectional carrier courses which may be effected by a corresponding setting of the switches being indicated. Figs. 2 and 3 indicate modified constructions embodying the main features of my invention.

The general construction and operation of braiding machines being well known my invention will be readily understood without detailed illustration. The ordinary braiding machine employs a single serpentine race-course made up of connected race-circles, though two parallel courses have heretofore been employed with their race-circles interjoined so as to permit the carriers to be passed from one course to the other by means of switches, as in my prior patent No. 856, 985, issued June 11th, 1907. In either case however even-horned gears have been provided so as to pass the carriers through without collision. In my present machine I employ parallel courses all the interjoined race-circles of which are provided with uneven-horned carrier drive-gears, and arranged in such manner that the carriers may by means of interposed switches, be transferred from one course to another and passed through or reversed as desired, by employing the race-circles either singly, as terminals, or jointly as two-part even-horned gears adapted to pass the carriers through without collision;

thereby producing a simple compact machine capable of employing a large number of carriers and of producing a great variety of braid structures by merely varying the operation of the switches so as to interchange the carriers and vary their travel as required upon the parallel interjoined courses.

As shown in Fig. 1 each of the three concentric courses comprises a series of connected race-circles of uniform size as in an ordinary tubular braiding machine; the carrier drive-gears provided therefor however being all three-horn gears as indicated by the three radial lines in each circle. The race-circles of the outer course are marked *a a a*, of the middle course *b b b*, and of the inner course *c c c*; and each middle circle *b* has its center on a radial line passing through the centers of a joining circle *a* of the outer course and a joining circle *c* of the inner course. The race-circles and gears of each concentric course are necessarily of different diameters, but as already stated all of the gears are three-horn gears, and all are geared together so as to be driven at a uniform speed of rotation. In the spaces between the circles of the middle course and of the outer and inner courses, or in such of them as desired if the full possibilities of the machine are not required; are located two-point switches *d d'* the oppositely-extending points of each of which are simultaneously swung in reverse directions so as to control the carrier movements in the adjacent race-circles of both the middle course and one or other of the connecting courses as the case may be. In addition to these two-point switches *d d'* I preferably employ one-point switches *e e'* located outside the outer and inner courses respectively, to provide for further controlling the movement of the carriers upon the outer and inner race-circles as hereafter referred to. All of these switches are operatively connected to suitable pattern mechanism as usual.

In my improved machine with its connecting courses of three-horn-gear race-circles, the movement of the carriers without collision requires the joint use of two contiguous courses; the passing of oppositely moving carriers being effected, as shown, by pairing-together separated three-horn gears of the middle course and of one or other of the adjoining courses so that they may oper-

ate jointly in substantially the same manner as an ordinary six-horn gear. Each three-horn gear is also adapted however to act singly as a reversing terminal; so that any two adjoining gears in the same course may be used to produce a three-carrier soutache or one line braid; or any number of paired three-horn gears may be used between single such pairings being between the middle course and either of the adjacent courses as desired; or two separate tubular braids or a double tubular braid may be made without employing any of them as terminals. Moreover by means of the outside switches *e e'* a carrier may be merely carried around any race-circle *a* or *c* so as to leave its thread free of the braiding action for any desired period. A few of the various paths of carrier travel which may thus be provided for are indicated in different portions of the diagrammatic drawing.

It will be readily seen that a more simple machine embodying the essential features of my invention may be produced by employing only two parallel courses or series of interjoined race-circles instead of three, as is indicated in Fig. 2; the range of variation in the product being of course reduced but the operation of the three-horn gears either single, as terminals, or jointly as two-part even-horned gears, being the same. Fig. 3 indicates another obvious modification in which the joined race-circles of the three parallel series are arranged in staggered relation instead of having three circles arranged in the same transverse line as shown in Fig. 1.

Instead of employing three-horn gears

throughout, as in the preferred construction described, five-horn gears might of course be substituted and operated in like manner for passing-through and reversing the carriers.

Other modifications may be devised and I do not desire to unduly limit my invention to the particular constructions shown.

What I claim is:—

1. A braiding machine having parallel series of interjoined race-circles with interposed switches, and uneven-horned carrier drive-gears for all of said race-circles each arranged to operate both for passing-through and reversing the carriers, substantially as set forth.

2. A braiding machine having parallel series of interjoined race-circles with interposed switches, and uneven-horned carrier drive-gears for all of said race-circles, adjacent separated gears being adapted to operate jointly for passing-through the carriers, and connected gears to operate singly as terminals substantially as set forth.

3. A braiding machine having three parallel series of interjoined race-circles, uneven-horned carrier drive-gears for all of said race-circles, and interposed switches, whereby adjacent separated gears are adapted to be operated jointly for passing-through the carriers, in connection with single gears operating as terminals, substantially as set forth.

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

ROBERT C. RAHM.

Witnesses:

D. M. STEWART,
W. G. STEWART.