

G. DINGENDAHL.
BRAIDING MACHINE.
APPLICATION FILED MAR. 20, 1909.

979,446.

Patented Dec. 27, 1910.

Fig. 2.

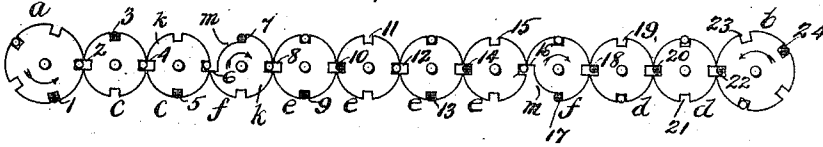


Fig. 3.

Fig. 4.

Fig. 1.

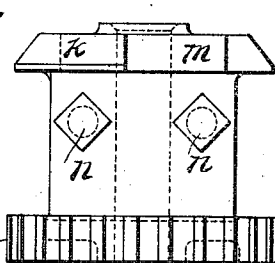
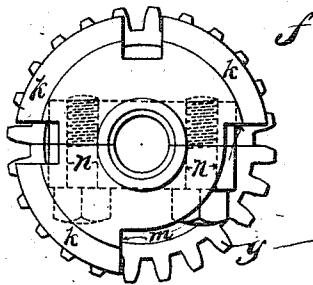
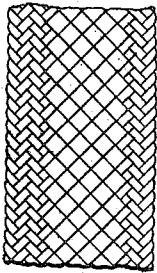


Fig. 5.

Fig. 6.

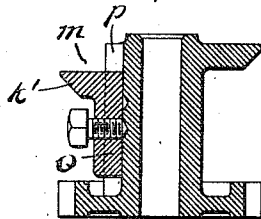
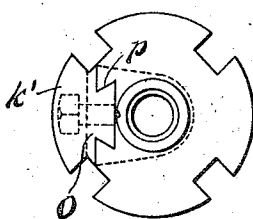
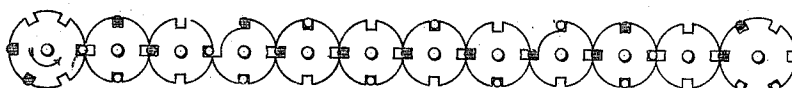


Fig. 7.



Gustav Dingendahl,

Inventor

Witnesses

D. M. Knecht
Wm. W. Eason

By

H. H. Knecht

Attorney

UNITED STATES PATENT OFFICE.

GUSTAV DINGENDAHL, OF WYOMISSING, PENNSYLVANIA, ASSIGNOR TO TEXTILE MACHINE WORKS, OF WYOMISSING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BRAIDING-MACHINE.

979,446.

Specification of Letters Patent.

Patented Dec. 27, 1910.

Application filed March 20, 1909. Serial No. 484,610.

To all whom it may concern:

Be it known that I, GUSTAV DINGENDAHL, a citizen of the United States, and a resident 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 to braiding machines, and my object is to provide for producing braids having alternate "plain-braided" and "diamond-braided" stripes in a more simple and economical manner than heretofore.

To this end my invention consists in providing a special carrier drive-gear for connecting series of ordinary drive gears in a carrier course, which special gear is adapted to automatically change the grouping of the carriers in passing them from one series to an adjoining series for producing alternately the "plain" and "diamond" weaves; as fully described in connection with the accompanying drawing and specifically pointed out in the claims.

In plain braiding, as is well understood, the threads are passed "over two under two", while in diamond braiding they are passed "over one under one"; the required grouping of the carriers upon the horns of the drive-gears for plain braiding being "one full and one empty", while for diamond braiding it is "two full and two empty". Heretofore braids having alternately arranged plain and diamond stripes have been commonly produced upon so-called "Hercules" machines in which drive-gears having six carrier-engaging horns each are employed; such a machine, when suitably arranged, permitting of the proper grouping for the purpose, of a reduced number of carriers employed. The main object of my invention is to enable an ordinary plain braiding machine having four-horn drive-gears to be so used, and with a full set of carriers; thereby greatly increasing the speed and economy of production as well as utilizing for the purpose a simpler and cheaper machine.

Figure 1 indicates a simple form of plain-and-diamond stripe-braid such as my invention provides for producing. Fig. 2 is a diagrammatic view of a carrier course embodying my invention, the changed grouping of the carriers upon the specially con-

nected adjoining series of gears being indicated. Figs. 3 and 4 are detail views of one form of my connecting drive gear; and Figs. 5 and 6 are similar views of another and generally preferable form. Fig. 7 is a similar view to Fig. 2 indicating a slightly modified arrangement of the course.

Fig. 2 indicates a carrier course comprising five-horn terminal drive-gears *a* and *b* at the respective ends, and intervening series of drive-gears *c c* and *d d* adjoining the respective terminals *a* and *b*, a central series *e e e e* connected with the adjoining series *c c* and *d d* by my specially formed drive-gears *f f* hereafter particularly described. All of the drive-gears *c d e* and *f* have like meshing gears, as indicated at *g* Figs. 3 and 4, and like carrier-engaging rims divided, as shown, into quarter-sections provided with carrier-engaging horns; the special drive-gears *f* however differing from the ordinary gears *c d e*, in having one of the four horns *k* with which the latter are provided, removed so as to form a carrier clearance-way *m* adapted to permit a free quarter movement of each of said drive-gears *f* without engaging the carrier just previously delivered to such clearance-way. In order that said special gears *f* may be conveniently substituted on an ordinary plain braider, for the usual four-horn gears as *c d e*, it may be formed as shown in Figs. 3 and 4, in separate parts fastened together by bolts *n*; the four-horn gear which is to be employed for all plain braiding being in such case similarly made so that the required change either way can be readily effected by substituting one gear for the other. A preferable form of this connecting gear however, usable for all-plain braiding when desired, as well as for regrouping the carriers to automatically change the weave as described, is indicated in Figs. 5 and 6; the horn-section which is removed to provide the clearance-way *m*, being in this construction formed, as indicated at *k'*, on a separate part *o* of the drive-gear, which part as shown is arranged to slide vertically in a suitable guide-way *p* therefor, so as to be readily adjusted into operative or inoperative position on the gear.

By referring to the carrier arrangement indicated in Fig. 2 the effect produced by employing my special drive-gears *f* will be readily understood. The successive carrier-

engaging horns,—or normal horn positions—moving from left to right being indicated by reference numerals 1, 2, 3, &c., and the carrier-filled ones being distinguished by filled or solid circles therein, it will be seen that, starting on terminal *a* and continuing on the adjacent series of ordinary gears *c c* and special gear *f* we have the required arrangement for plain braiding,—namely 1 full, 2 empty, 3 full, 4 empty, 5 full, 6 empty, 7 full, 8 empty. It will be noticed however that the carrier at 7 full, which has moved to this position on the clearance-way *m* of the special gear *f* by its own momentum, will remain at rest in this clearance-way while the gear *f* makes a further quarter-turn to get into engagement with it; and that during such further quarter-turn 5 full will be moved into position 6 so as to place two fulls in succession; while at the same time the point 7 of gear *f* will be moved on empty after 8 empty; which action upon successive carriers passing gear *f* results in the required arrangement for diamond braiding upon the series of gears *c*,—namely 9 and 10 full, 11 and 12 empty, 13 and 14 full, 15 and 16 empty, 17 and 18 full. In like manner the carriers are automatically regrouped in passing the second special gear *f* so as to again effect plain braiding upon the series of gears *d*; while in the reverse travel, from right to left, the same changes are similarly effected in passing the gears *f*, with the desired result of producing a plain-and-diamond braid having plain edges and a diamond center stripe as indicated in Fig. 1.

Obviously any desired number, arrangement, and width of the stripe effects may be produced by varying the number and arrangement of the gears in well known manner. In the slightly modified arrangement indicated in Fig. 5 for instance, provision is made for weaving a diamond-edge on the braid product in connection with an adjoining plain stripe.

By means of my improvement it will be seen that an ordinary plain braider can be readily adapted to produce plain-and-diamond stripe braids with the same speed and

economy as plain braids are produced, the full number of carriers which the gears are capable of carrying being employed in either case and with the same speed of travel.

What I claim is:—

1. A braiding machine having a carrier course comprising separated series of like drive-gears having equally spaced carrier-engaging horns, and a similar connecting drive-gear having one of its horns removed to form a carrier clearance-way whereby the grouping of the carriers is varied in passing them from one series to the other to change the weave.

2. A braiding machine having a carrier course comprising separated series of like drive-gears having four equally spaced carrier-engaging horns, and a similar connecting drive-gear having one of its horns removed to form a carrier clearance-way whereby the grouping of the carriers is varied in passing them from one series to the other to change the weave.

3. A braiding machine drive-gear having a carrier-engaging rim equally divided into horn sections one of which is shaped to form a carrier-clearance-way adapted to disengage and set back certain of the passing carriers.

4. A braiding machine drive-gear having a carrier-engaging rim provided with carrier-engaging horns on each of three quarter-sections thereof and with a carrier clearance-way on the remaining quarter-section adapted to correspondingly set-back a passing carrier at each rotation of the gear.

5. A braiding machine drive-gear having a carrier-engaging rim equally divided into horn sections one of which is shaped to form a carrier-clearance-way adapted to disengage and set back certain of the passing carriers, and a separate rim portion adapted to be removably-secured in said clearance-way.

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

GUSTAV DINGENDAHL.

Witnesses:

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