

BRAIDING MACHINE.

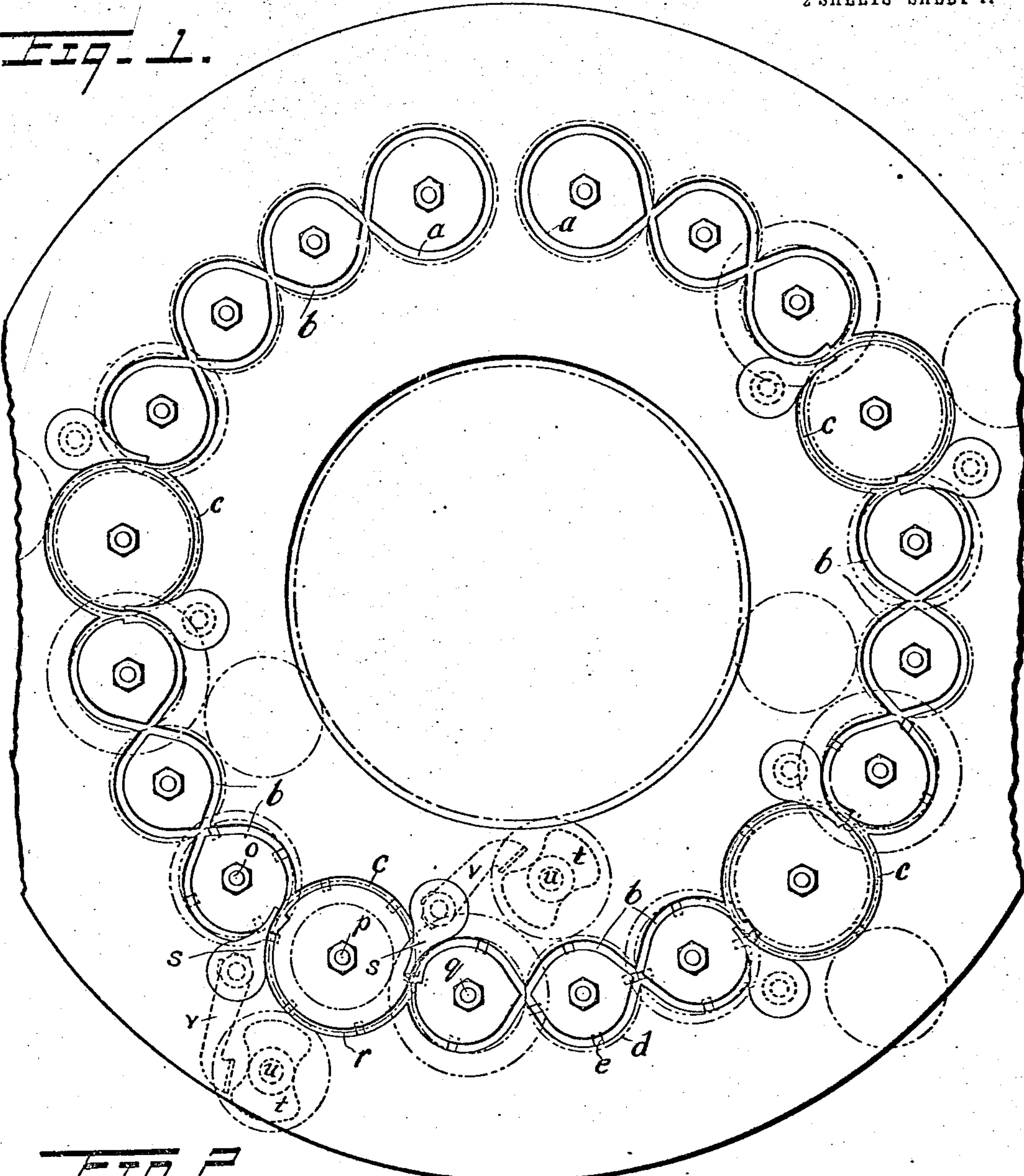
APPLICATION FILED AUG. 4, 1906.

Patented Sept. 15, 1908.

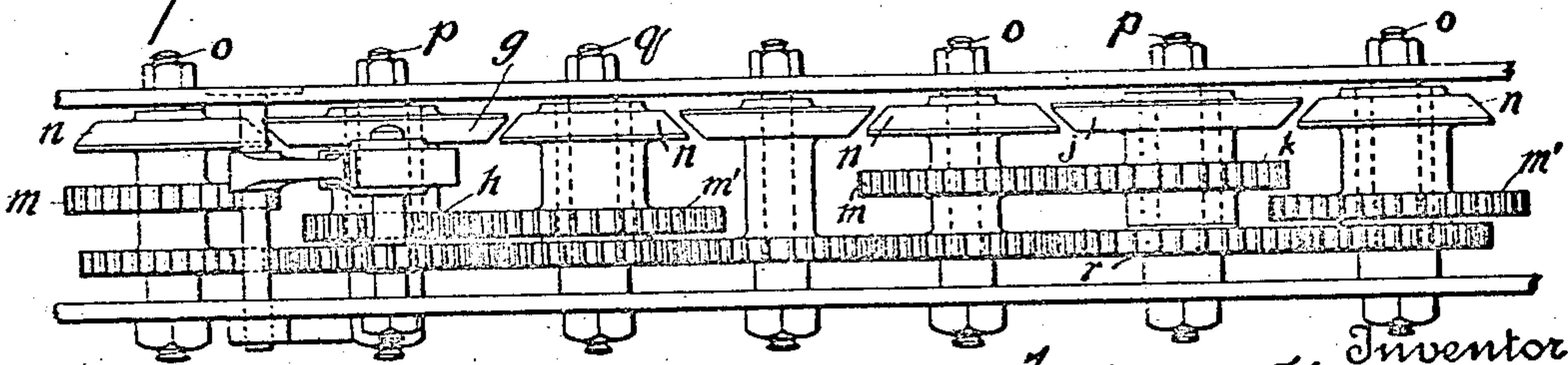
2 SHEETS—SHEET 1.

898,939.

Fig. 1.



III.2.



Witnesses

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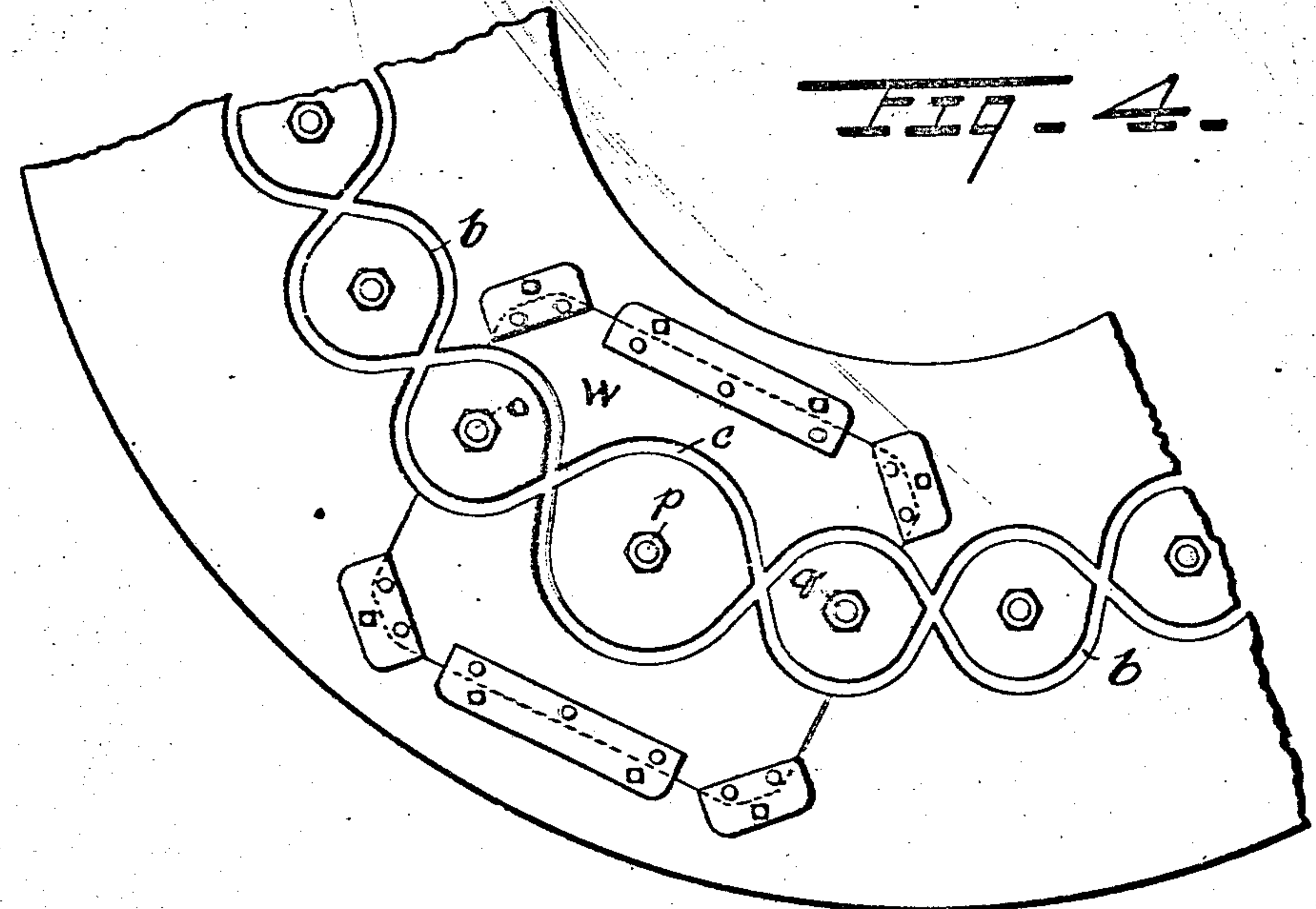
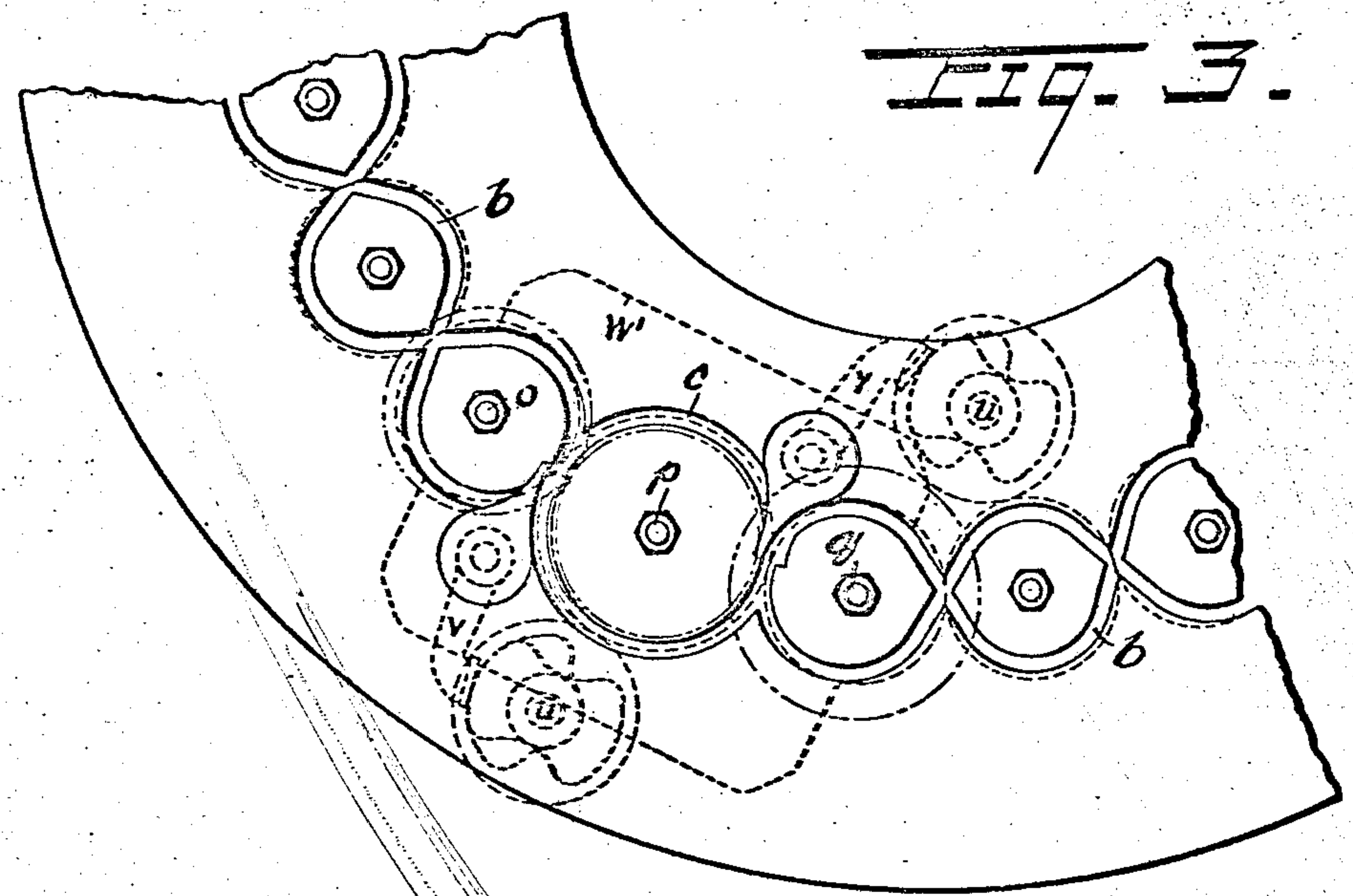
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F. THUN.
BRAIDING MACHINE.
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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BRAIDING-MACHINE.

No. 898,939.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed August 4, 1906. Serial No. 329,161.

To all whom it may concern:

Be it known that I, FERDINAND THUN, 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 Braiding-Machines, of which the following is a specification.

My invention relates to braiding machines having a race-course comprising separate series of race-circles and carrier engaging gears connected by a common-terminal race-circle and gear whereby the separate series of carriers are traversed in interlocking passes through said common terminal to form stripe braids, as fully described in U. S. Patent No. 810,056, issued January 16th, 1906 to Henry Janssen.

The main object of my invention is to provide an improved machine of the class referred to upon which may be produced a varied product including braiding with a differing number and location of stripes as desired.

The invention is fully described in connection with the accompanying drawing and the novel features are specifically pointed out in the claims.

Figure 1 is a diagrammatic plan view of a braiding machine embodying my invention. Fig. 2 is a sectional elevation showing two of the intermediate gear studs provided with different interchangeable carrier drive-gears, and the coöperating drive gears upon the studs adjacent to each. Fig. 3 indicates a slightly modified switch-operating means from that indicated in Fig. 1. Fig. 4 indicates a modified construction involving the use of interchangeable top plate sections for use in plain braiding.

In my improved construction I provide for utilizing a single machine either as a plain braider or as a variable stripe braider, by dividing the race-circle course into multiple sections successively connected by single race circles each of which is adapted to serve either as an ordinary race circle for the regular passing of the carriers in plain braiding or as a common terminal for the race circle sections thus connected, whereby the respective series of carriers are returned around such connecting race circle instead of passing through it, to produce stripe braiding.

Referring to Fig. 1, *a* and *a* represent the

usual terminal race circles of a flat braider, *b b b* represent ordinary race circles of the course, and *c c c c* represent single intermediate race circles connecting different series of race circles *b*, whereby the course is divided, as shown, into five different sections. The different race circles *b b b* are each ordinarily provided with gears *d* having driving heads *e* with four horns or carrier engaging recesses, and the gears of the usual terminal race circles *a* and *a* have five carrier engaging horns. The single connecting race circles *c c c c* of my improved machine will require in the first place, for the plain braiding operation, to be provided with gears having four horns and operating similarly to the carrier engaging gears *d e*; and in the second place, for the stripe braiding operation, to be provided with common terminal or double drive gears *g h* having six horns in the head portion *h*,—three for each of the connected series. To enable these different sections, or any number of them, to be either operated in a single series as usual for production of plain braid, or to be operated sectionally as desired, I provide for interchangeably using upon each intermediate gear stud *p*, the special four horn drive gear *j k* shown to the right of Fig. 2, or the common terminal six horn drive gear *g h* indicated to the left of the same figure; said drive gear *j k* having a four horn head *j* and a gear wheel *k* arranged to mesh with the gear wheel *m* of the drive gear *m n* on the gear stud *o* to one side thereof so as to be rotated in the same time as the gear *m n*; and said drive gear *g h* having a double three horn head *g* and a gear wheel *h* arranged to mesh with the gear wheel *m'* of the drive gear *m' n* on the gear stud *q* to one side thereof, so as to be operated as a three horn terminal for each connected series of four horn gears. The drive gears *m n* and *m' n* are located on opposite sides of each gear stud *p* and have their gear wheels *m* and *m'* arranged in different horizontal planes so that one will mesh only with a four horn gear *j k* mounted on the stud *p*, while the other will mesh with the six horn gear *g h* when it is substituted for *j k*, so that either of said interchangeable gears *j k* and *g h* will be properly driven when placed in position. To provide for readily interchanging these gears the stud *p* is adapted to be withdrawn through the gears mounted upon it as in-

indicated, so that the latter may be removed and replaced laterally. The lower gear *r* upon said stud turns idly upon it and serves merely to connect the intermeshing series of drive gears. The switches *s s* for controlling the movement of the carriers around or through the race-circles *c*, may each be automatically operated by a double cam *t* fixed to a shaft *u* rotated by the carrier drive gears, as indicated in Fig. 1, the switch movements in such case being unnecessarily frequent in plain braiding; or a single and double cam may be provided on each shaft *u*, in connection with a switch arm *v* adjustable to engage one or other as indicated in Fig. 3.

In the modified construction shown in Fig. 4, switches are entirely dispensed with in the plain braiding arrangement, the change plate *w* providing the required run without them; but they are employed as before explained in connection with the change plate *w'* for stripe braiding.

The drawing shows a race-course having four intermediate connecting race-circles *c* forming five course sections, the carriers in each of which may be made to return around its connecting race circle *c* or to traverse the connecting course section; thus providing for producing on the same machine a full width plain braid, or one of two, three, four or five stripes variable as desired according as one or other of the interchangeable gears are employed on the respective gear studs *p*. When but one intermediate race circle *c* is provided, only a plain braid or a two stripe braid of fixed stripe widths can be produced, the respective interchangeable gears for the two stripes of braiding however being arranged in mesh with one or other of the gear wheels *m* and *m'* as already described. For each double terminal gear *g h* employed, one additional carrier is used as will be readily understood.

Having thus fully described my invention I do not desire to limit myself to the particular embodiment thereof particularly shown and described, but:

What I claim is:—

1. A braiding machine having carriers, drive mechanism therefor, and a top plate provided with a continuous race-way comprising series of uniform sized race-circles and a connecting enlarged circle upon which the carriers may be either passed through or reversed for plain or stripe braiding respectively, substantially as set forth.

2. A braiding machine having carriers, drive mechanism therefor, a top plate provided with a continuous race-way comprising series of uniform sized race-circles and a connecting enlarged circle, and carrier controlling switches for said enlarged race-circle, whereby the carriers may be either passed through or reversed for plain or stripe braiding respectively, substantially as set forth.

3. A braiding machine having a top plate provided with a continuous race-way comprising series of uniform sized race-circles and a connecting enlarged circle, carriers traversing said race-way, means for controlling the movement of the carriers at said enlarged race-circle, and four horn drive gears for all of the race-circles one of which is of enlarged size and removably mounted for said connecting race-circle, substantially as set forth.

4. A braiding machine having a top plate provided with a continuous race-way comprising three or more series of uniform sized race-circles and single enlarged race-circles connecting adjacent series, means for controlling the movement of the carriers at each enlarged race-circle, and four horn drive gears for all of the race-circles certain of which are of enlarged size and removably mounted for said connecting race-circles, substantially as set forth.

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

FERDINAND THUN.

Witnesses:

D. M. STEWART,
CALEB J. BIEBER

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