

June 29, 1926.

1,590,179

A. BAEGE

BRAIDING OR PLAITING MACHINE

Filed Sept. 21, 1925

3 Sheets-Sheet 1

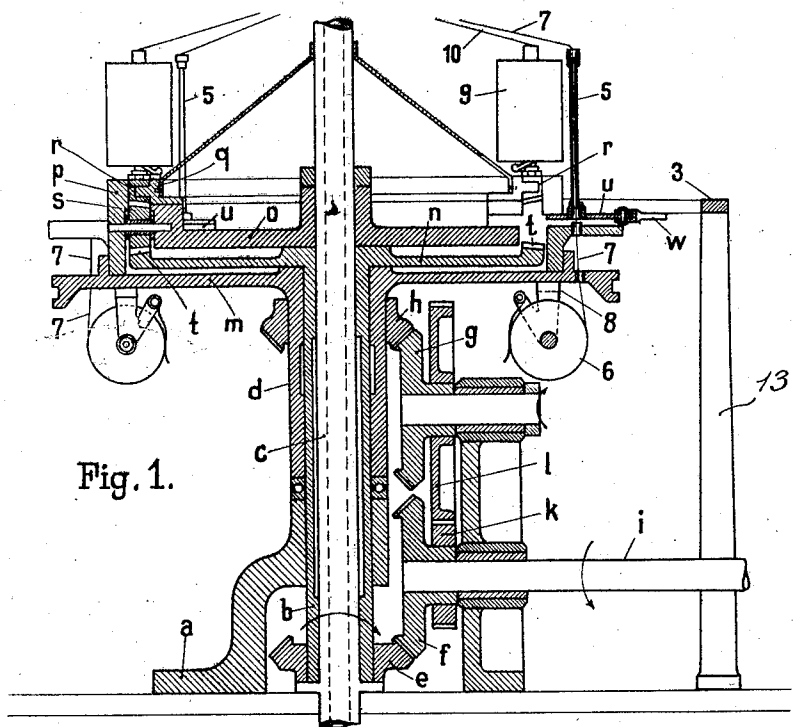


Fig. 1.

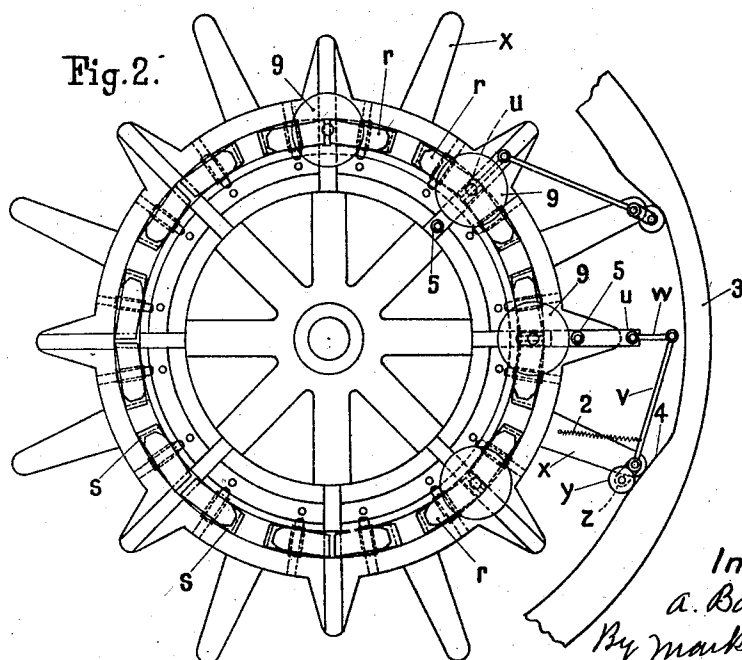


Fig. 2.

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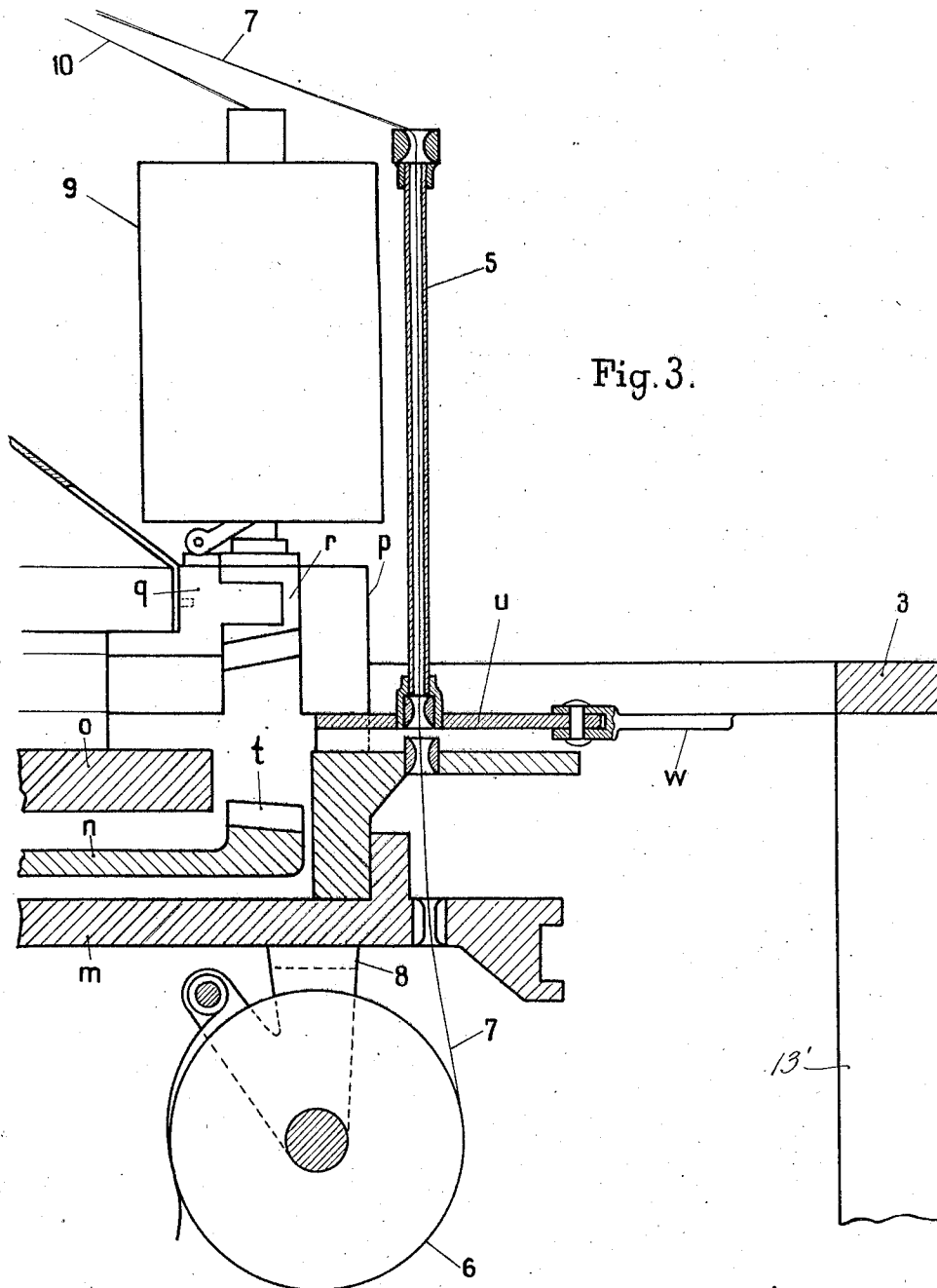
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Fig.4.

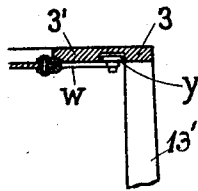
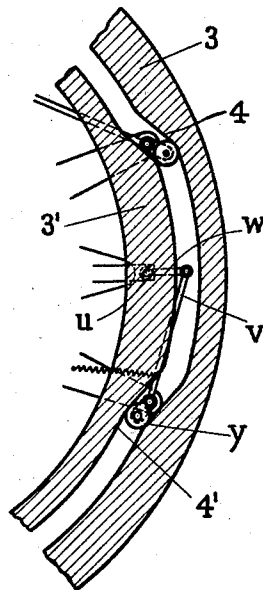


Fig.5.



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UNITED STATES PATENT OFFICE.

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BRAIDING OR PLAITING MACHINE.

Application filed September 21, 1925, Serial No. 57,787, and in Germany October 13, 1924.

This invention relates to braiding machines in which two groups of spools revolve with equal velocities but in opposite directions round the braiding centre, and the threads coming from one group of spools, are beaten by slides moved radially in relation to the axis of the machine, the said slides being provided with thread-guides, between the spools of the other group. The essential feature of the invention consists in the fact that each slide has a driving lever which is moved by means of a stationary ring provided with controlling surfaces.

With this construction of the machine it is possible to attain a high velocity in the motion of the slides without the angle of inclination of the controlling surfaces becoming too great, and in this way causing shocks to the gearing. The high slide velocity enables the angular velocity of the groups of spools to be increased thereby increasing the output. At the same time the thread is protected from damage because between the state of rest and the maximum velocity of the thread there is a graduated transition.

In the accompanying drawings the invention is illustrated by way of example.

Figure 1 is a partial sectional elevation of the machine.

Figure 2 is a partial plan.

Figure 3 shows a partial sectional elevation on an enlarged scale.

Fig. 4 is a vertical partial section through another form of the machine.

Fig. 5 is a horizontal section corresponding to Fig. 4.

The machine consists of a stationary foot *a* in which is journaled a hollow shaft *b* which encloses a stationary hollow axle *c*. On the hollow shaft *b* is mounted a second hollow shaft *d*. The two shafts *b* and *d* are driven in the same direction by means of bevel wheels *e*, *f* and *g*, *h* respectively from a driving shaft *i*.

The bevel wheel *g* receives its motion from the bevel wheel *f* through the medium of a pair of spur wheels *k*, *l* which are in the ratio of 1:3.

At the upper end of the hollow shaft *d* is arranged a disc *m* and at the upper end of the shaft *b* is arranged a disc *n*. The disc *m* is rigidly connected with a further disc *o*. The disc *o* is provided with guides *p* and *q* for segmental slides *r*. These slides *r* are

provided on the underside with teeth and in these teeth there engage radially arranged toothed wheels *s* which on the other side mesh with a toothed rim *t* constructed on the disc *n*. The disc *o* further comprises guides for radially directed slides *u*. These are in the shape of a channel open at the bottom and are driven by means of levers *v* and link rods *w*. The levers *v* are pivoted on blocks *x* which project radially outwards on the disc *o*. The levers carry a projection *z* provided with a roller *y*. The roller is pressed by the action of a spring 2 against a stationary ring 3 the inner edge of which is provided with cam surfaces 4. Said ring is removably arranged upon columns 13', so that it can be exchanged by a ring with other cam surfaces for the purpose of producing several designs.

Within the stationary ring 3 a second stationary ring 3' may be arranged. The ring 3' has cam surfaces 4' on its outer edge corresponding to the cam surfaces 4 of the ring 3, so that a groove is formed for the rollers *y* of the levers *v*. The spring 2 is omitted. Both the rings 3 and 3' may be formed in one piece as shown in Fig. 4.

The radial slides *u* carry tubes 5 which serve as guides for the threads 7 coming from the spools 6. The spools 6 are supported on the underside of the discs *m* by means of the blocks 8.

The segmental slides *r* carry upright spools 9. The threads 10 delivered by these spools and the threads 7 run towards the braiding centre, not shown, at the upper end of the stationary hollow axle *c*. The method of working of the machine is as follows:

By means of the driving shaft *i* the two discs *m* and *n* are set in rotation, the disc *n* having twice the angular velocity of the disc *m*. Consequently the toothed rim *t* on the disc *n* can set in rotation the toothed wheels *s* and hence the segmental slides move round the axis of the machine in their guides *p* and *q*, which revolve with the disc *m*, in the opposite direction to the discs *m* and *n*. Consequently the spools 6 and the spools 9 revolve round the axis of the machine with the same velocity but in opposite directions. The thread-guide 5 is displaced inwards by means of the cam surfaces 4 and of the lever *v* from the position shown in Figure 3 as soon as two spools 9 have traveled past it. It remains in this position (Figure 1 to the

left) until two spools 9 have again overtaken it whereupon it is moved back into the initial position (Figure 3).

The thread 7 is protected from being
5 splashed with oil throughout its whole path, by the channel-shaped slide with thread guide.

What I claim is:—

1. A braiding machine comprising two
10 groups of spools rotating round the braiding centre of the machine with the same velocity but in different directions, slides moved radially to the axis of the machine, thread guides on said slides, said radially moved
15 slides being adapted to beat the threads coming from one of said groups of spools between the spools of the other of said groups, a driving lever for moving each of said radially moved slides, a stationary ring, surrounding
20 the body of the machine, and cam surfaces on said ring for actuating said driving levers.

2. A braiding machine comprising two
25 groups of spools rotating round the braiding centre of the machine with the same velocity but in different directions, slides moved radially to the axis of the machine, thread guides on said slides, said radially moved slides, being adapted to beat the
30 threads coming from one of said groups of spools between the spools of the other of said groups, a driving lever for moving each of said radially moved slides, a stationary ring, surrounding the body of the machine, and cam surfaces on the inner edge of
35 said ring for actuating said driving levers, means for pressing the ends of said driving levers against said cam surfaces.

3. A braiding machine comprising two
40 groups of spools rotating round the braiding centre of the machine with the same velocity but in different directions, slides moved radially to the axis of the machine, thread guides on said slides, said radially
45 moved slides being adapted to beat the threads coming from one of said groups of

spools between the spools of the other of said groups, a driving lever for moving each of said radially moved slides, a stationary ring, surrounding the body of the machine, and
50 cam surfaces on the inner edges of said ring a second stationary ring surrounded by the first stationary ring and having cam surfaces on its outer edge, said cam surfaces of both the rings forming a groove for actuat-
55 ing said driving levers.

4. A braiding machine comprising two groups of spools rotating round the braiding centre of the machine with the same velocity but in different directions, slides having the
60 form of an inverted channel moved radially to the axis of the machine, vertical pipes on said slides for guiding the threads coming from one of said groups of spools, said pipes extending up to the upper end of the spools
65 of the other group said radially moved slides being adapted to beat the threads coming from the first of said groups of spools between the spools of the other of said groups, a driving lever for moving each of said radially moved slides, a stationary ring, surrounding the body of the machine, and cam surfaces on said ring for actuating said driving levers.
70

5. A braiding machine comprising two
75 groups of spools rotating round the braiding centre of the machine with the same velocity but in different directions, slides moved radially to the axis of the machine, thread guides on said slides, said radially
80 moved slides being adapted to beat the threads coming from one of said groups of spools between the spools of the other of said groups, a driving lever for moving each of said radially moved slides, an exchangeable
85 stationary ring surrounding the body of the machine, columns for supporting said ring, and cam surfaces on said ring for actuating said driving levers.

In testimony whereof I have signed my
90 name to this specification.

ADOLF BAEGE.