

J. BRONDEL.
MACHINE FOR THE PRODUCTION OF TUBULAR PLAITS.
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1,059,523.

Patented Apr. 22, 1913.

FIG. 1

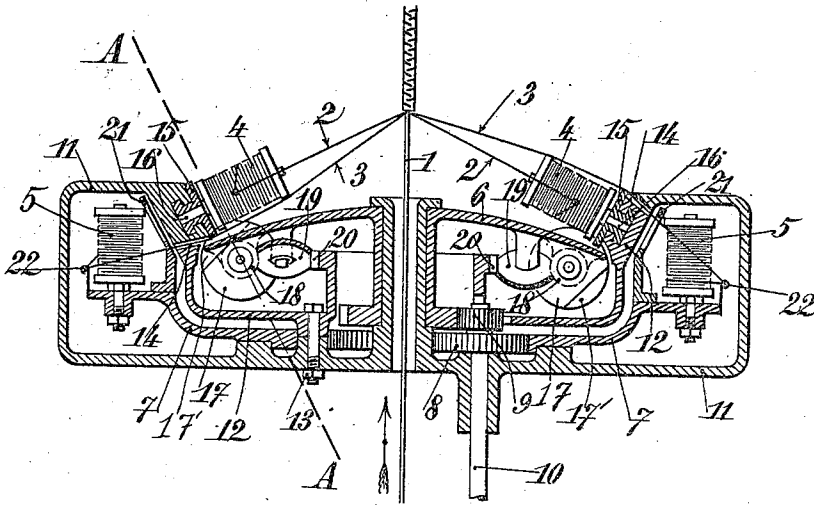
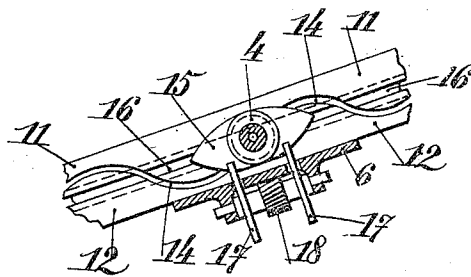


FIG. 2



WITNESSES:

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UNITED STATES PATENT OFFICE.

JEAN BRONDEL, OF LYON, FRANCE.

MACHINE FOR THE PRODUCTION OF TUBULAR PLAITS.

1,059,523.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed May 5, 1911. Serial No. 625,366.

To all whom it may concern:

Be it known that I, JEAN BRONDEL, a citizen of the French Republic, residing at Lyon, in France, have invented a certain new and useful Improvement in Machines for the Production of Tubular Plaits, of which the following is a specification.

The object of the present invention is a machine for the production of tubular plaits either without a core for example for use as lacing cords or inclosing a tubular or any other form of core, for instance an electric conductor.

A plaiting machine includes essentially two series of bobbins rotating in opposite directions concentrically about a core, and in such a manner that the threads of one series of bobbins pass alternately above and below the threads of the other series.

The machines employed hitherto manipulate the threads composing the plaits by means of members having alternating or sinuous movements which construction necessitates extreme complexity in the mechanism and limits the speed to a low rate.

In the improved plaiting machine forming the object of the present invention only one inner series of bobbins has continuous movements, any mechanically moving parts for effecting the operation or movement of the bobbins of the other or outer series being dispensed with. This construction permits of obtaining a high increase of speed and of increasing the output while reducing the complexity of the machine and its cost of construction and maintenance.

The accompanying drawings show diagrammatically sufficient of the improved machine for comprehension of the invention,—Figure 1 being a vertical section through the axis of the machine, and Fig. 2 a section on the line A—A of Fig. 1.

The core 1 of the plait passes vertically through the center of the apparatus at a uniform speed. The single or multiple threads 2 2 and 3, 3, which form the plait are unwound from two series of bobbins 4 and 5 rotating in opposite directions around said core 1. The said bobbins may be of any suitable number such as eight, and are mounted at or adjacent the circumference of two circular plates 6 and 7 given movement in opposite directions and at the same

speed by the two toothed pinions 8 and 9 respectively keyed on the driving shaft 10.

The threads 2, 2, from the inner bobbins 4 always retain the same direction, but the threads 3, 3 from the outer bobbins 5 are compelled to pass first below the bobbin 4 as shown at the left of Fig. 1 and then above said bobbin as indicated at the right of said figure. The threads may be caused to change their direction each time they encounter one of the bobbins 4, or when they encounter the second or third bobbin, etc., according to the nature of the plait. The threads 2 act as the weft threads and the threads 3 as the warp threads. It will be understood that the plait can thus be regularly formed around the core 1 as it moves upward.

An essential feature of the present invention is the method of guiding the outer threads 3 without mechanically moving parts.

The drawings show by way of example a device suitable for effecting this guidance. The outer bobbins 5 mounted on the plate 7 rotate in a kind of annular box formed by the outer casing 11 and an interior cup 12, these two members being secured together by bolts 13, and having between them an undulating slot 14 (Figs. 1 and 2), forming a passage for the threads 3 from the bobbins 5. By following and being guided in said slot 14 the threads 3 are caused to pass alternately below and above the bobbins 4. To prevent obstruction or hindrance to said threads they may be caused to traverse vertical guides 21 secured to the rotary plate 7. A compensating spring is provided to insure constant tension on the threads 3.

A further essential feature of the invention is the use of disks having continuous rotary movements for operating the central bobbins 4. The said bobbins 4 are carried by small slides 15 which run in a circular undercut groove or guide 16 formed in the cup 12 and intersecting the undulating slot 14 so as to pass alternately above and below said slot.

Each slide 15 carrying one of the bobbins 4 is carried around by the plate 6 by means of two disks 17 the peripheries of which extend into two grooves in the slide, said disks being continuously rotated by means of a

toothed pinion 18, intermediate gear 19 and stationary crown gear wheel 20. The disks are notched at points of their circumference as indicated at 17', to permit passage of the threads 3 when they come below the slide 15 one of said disks continuing the movement of the bobbins 4 during the passage of a thread 3 through the notch of the other disk.

10 Instead of mounting the two disks 17 on the same axle below the bobbin 4, it may be desirable in certain cases to mount them one below and the other above said bobbin, the slide 15 being modified accordingly. This
15 arrangement will increase the security of the guidance by separating to a greater extent the successive periods of release of the disks. The path for the slides 15 could also be located on a frame inside or between the
20 bobbins 4 which arrangement would decrease the length of path traveled by said slides without changing the relative movements of the other members.

It will be understood that the actuation of
25 the rotary disks and plates may be produced by any other suitable mechanism than that shown and described.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

In a plaiting machine, in combination, a
30 guideway, a bobbin carrying slide movably mounted therein, said slide being provided with grooves, notched disks adapted to extend within said grooves, a support for said
35 disks, means for moving said support whereby said slide will be moved along said guideway and means for rotating said disks, during the movement of said support, the notches in said disks being out of registry
40 with one another whereby when the notch in either disk registers with the associated groove in said slide the other disk will be in operative engagement with its associated
45 groove, thereby providing for a continuous movement of the slide.

In witness whereof I have signed this specification in the presence of two witnesses.

JEAN BRONDEL.

Witnesses:

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JNO. N. BROWNE.