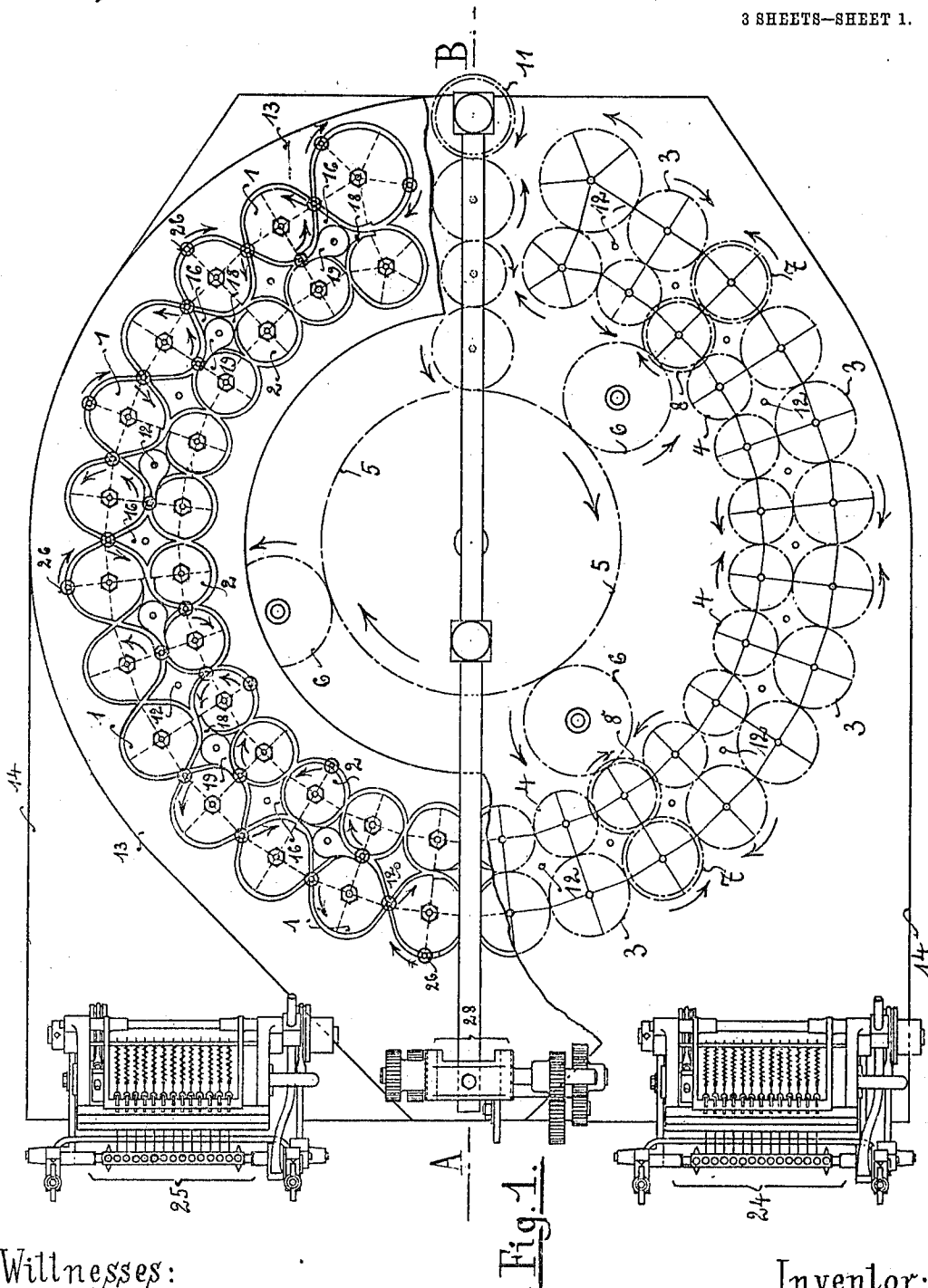


A. ORTHMANN.
BRAIDING MACHINE.
APPLICATION FILED OCT. 11, 1904

949,245.

Patented Feb. 15, 1910.

3 SHEETS—SHEET 1.



Witnesses:

Otto König
Leibertshausen

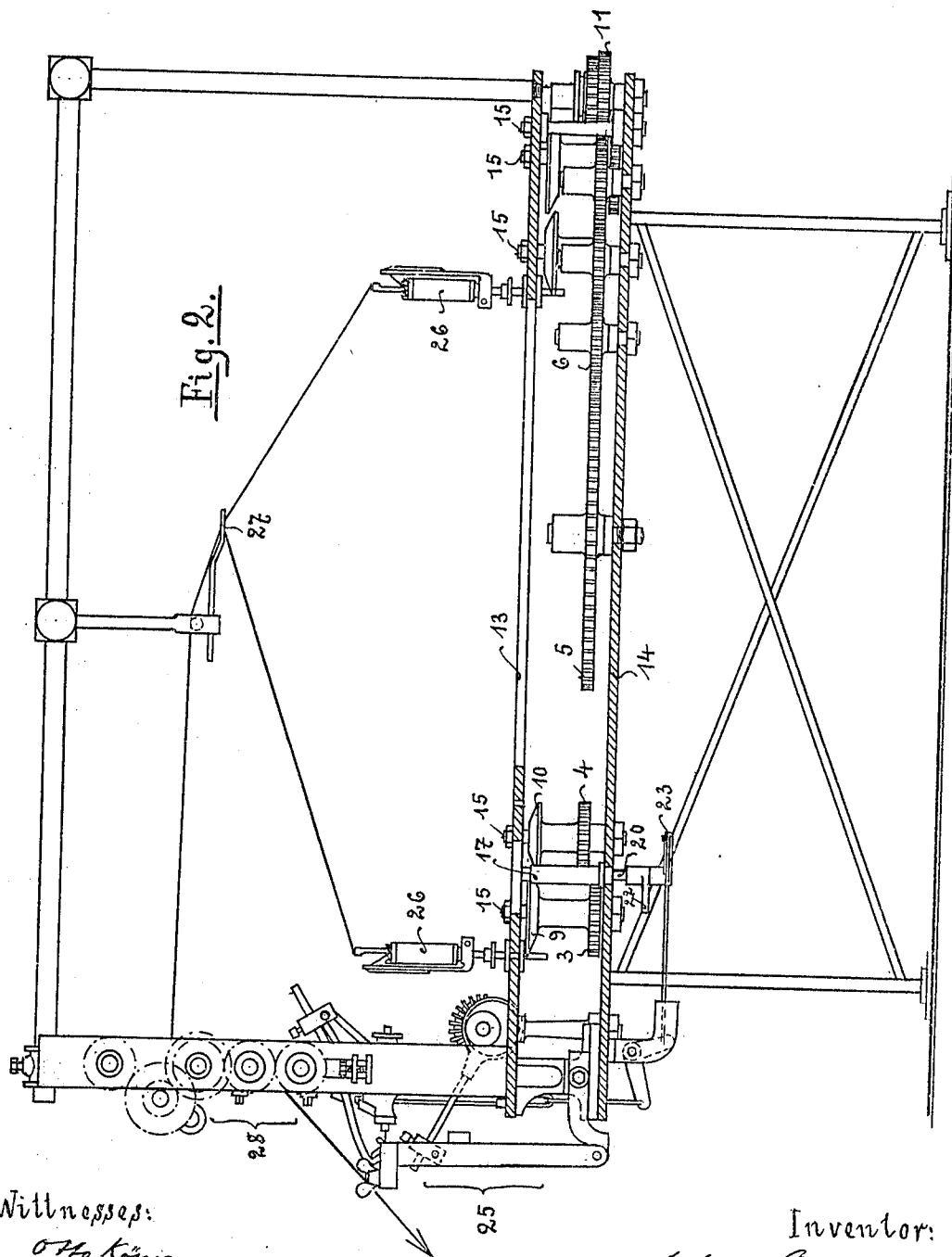
Inventor:

Alexander Orthmann

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3 SHEETS—SHEET 2.



Witnesses:
Otho König
La Rittershand.

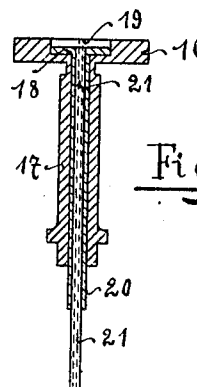
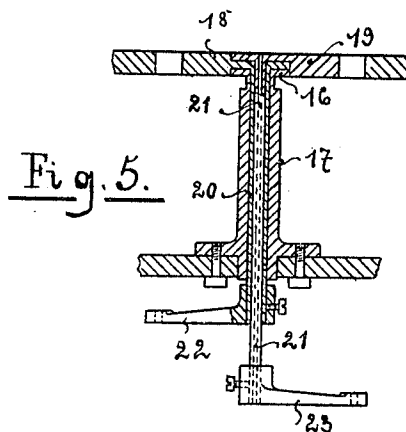
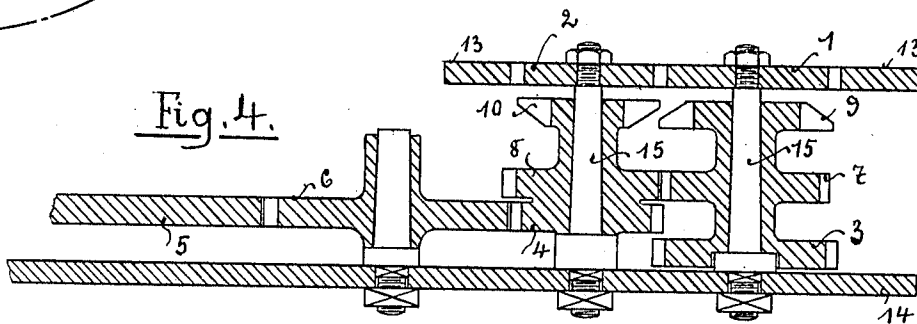
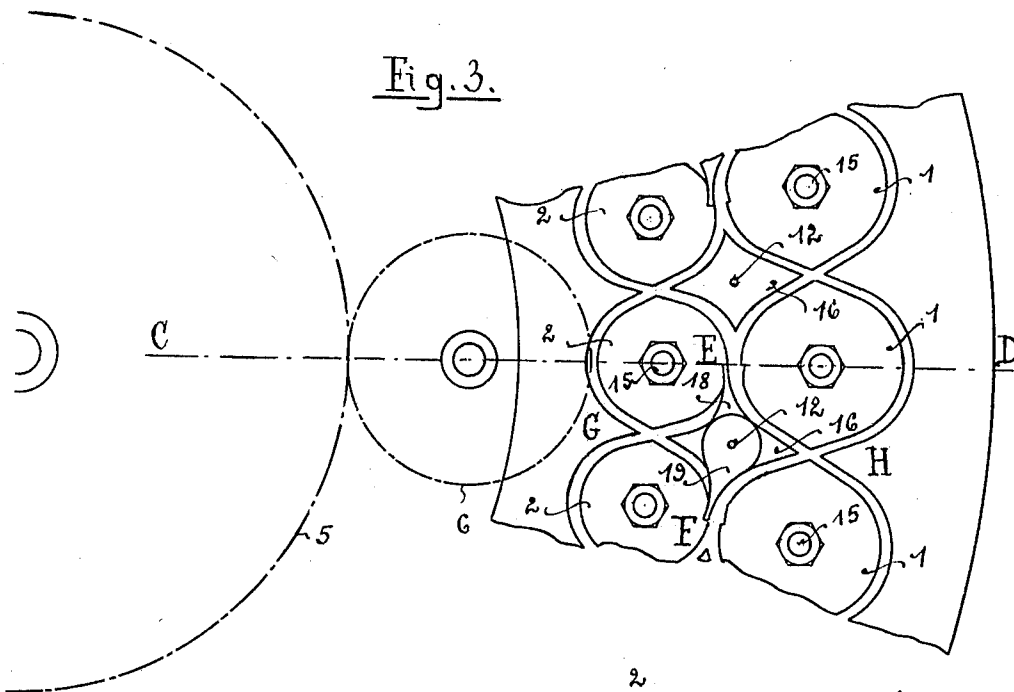
Inventor:
Alfred Orthmann

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3 SHEETS—SHEET 3.



Witnesses:
Otto König
L. A. Ritterhaus

Inventor:
Alfred Orthmann

UNITED STATES PATENT OFFICE.

ALFRED ORTHMANN, OF ELBERFELD, GERMANY.

BRAIDING-MACHINE.

949,245.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed October 11, 1904. Serial No. 228,085.

To all whom it may concern:

Be it known that I, ALFRED ORTHMANN, subject of the Emperor of Germany, residing at Elberfeld, Germany, have invented new and useful Improvements in Braiding-Machines, of which the following is a specification.

The object of this invention is to provide a machine for making braided fabrics with figures, producing embroidery effects. These figures are formed by pattern-threads running parallel to the borders of the fabric and lying sometimes on top and sometimes beneath the fabric, according to the pattern to be produced.

The essential characteristics of this invention consist in the fact that between the plate-rows, running parallel to each other and having raceways passing into one another, switches are arranged in such a manner that they allow the carriers to be transferred from one plate-row to another and that they cause these carriers thus to place their threads, according to the repetition of the pattern, on top or beneath the pattern threads passed between the plate-rows. The formation of the switch which effects the transfer, from one row of plates to the other forms likewise a part of the present invention.

In the drawings: Figure 1 is a top view of the machine with the upper plate partially removed; Fig. 2 is a vertical sectional view along line A—B of Fig. 1; Fig. 3 is a top plan view on a larger scale and showing only a portion of the machine; Fig. 4 is a vertical sectional view along line C—D of Fig. 3; Figs. 5 and 6 show the switch and details, all of which will be explained hereafter.

As stated above, the machine consists of two rows of plates 1 and 2 parallel to each other, the raceways of which pass into one another and the toothed wheels 3 and 4 of which are arranged so that only the wheels of one row gear into each other, as both groups of wheels revolve in different planes as in Fig. 2. Movement is imparted from the center-wheel 5 by means of the intermediate wheels 6 which drive wheels 4 of the inner row. Wheels 3 are driven by means of gears 7 located above the wheels 3 and integral therewith, said gears 7 meshing with gears 8 located above the wheels 4 and being integral therewith. The center-wheel 5 is driven by means of wheel 11 through in-

intermediate wheels. The wheels of each row are, actually, connected only with each other, that is to say, the outer wheels 3, 3 do not gear with the inner wheels 4, 4 as they have, of course, diameters of different size. Only the wheels 7, 8 provided in some parts of the machine and having the same diameter gear with each other and transmit the movement of the inner wheel-row to the outer row so that both turn around with the same number of revolutions. As the raceways of both rows connect, the spindles may be allowed to run and braid as may be desired, either on the outer or inner row of plates, provided the necessary mechanism has been fitted for regulating the course of the spindles according to the pattern to be produced. Besides the bobbins on the braiding spindles, fixed bobbins are also arranged beneath the machine, the threads of which are run within the spaces between each four plates through the apertures 12 upward to the braiding center. These threads, placed parallel to the borders of the fabric to be braided, have to appear on the one side of the fabric so as to produce the pattern and therefore the carriers of those outer plates on which the pattern-threads must appear on the top or face side, have to be turned aside from their former course and then transferred to the corresponding inner plates. Thereupon in those parts, where the pattern threads have to appear and where they lie parallel on the visible face of the braid, the braiding is transferred from the outer to the inner plates, said operation is carried out in the reversed order if the pattern threads have to be placed behind the braid so as to remain invisible. This interruption of the braiding operation on the outer plates, according to the repetition of the pattern has to be effected without any special space being required, that is to say without any transferring plate and without lengthening the course over which the carriers travel, by means of the described switch mechanism shown in Figs. 1, 2, 3, 5 and 6.

The top plate 13 and bottom plate 14 of the machine are connected, in the usual manner, by means of stays. Between the plates stars or washers 16 are provided the edges of which form in part the walls of the carrier raceway and formed preferably integral with the stays 17 which support them. Every other star carries two switch tongues 18 and 19 which can be moved independently

of each other and which can be actuated separately by an apparatus controlling the repeat of the pattern.

Figs. 5 and 6 represent vertical central sections through a switch on the lines of E—F and G—H of Fig. 3, showing the hollow stays 17 containing a hollow shaft 20 connected with the tongue 18. The shaft 20 contains a second shaft 21 which is likewise perforated for the pattern thread to pass through and which forms one piece with the tongue 19. The levers 22 and 23 secured to these shafts are connected by means of transmission wires to the jacquard machines 24 and 25, constructed in the usual manner. Two jacquard machines are provided, one for the switches 18 and the other for switches 19 so as to operate the switches of each group separately.

The position of the carriers in Fig. 2 serves to show the working mechanism of the machine. It shows how some carriers can pass from the outer row of plates or disks to the inner one. The threads coming from the carriers 26 as well as the pattern threads passed through the perforated stays or pillars, run toward the braiding center 27, and from there pass as finished fabric to the delivery cylinders 28 of known construction.

Besides in the braiding machine above described, the switch mechanism can, under certain conditions, also be used in connection with lace making machines.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a braiding machine of the class described, a pair of parallel plates having two concentrically arranged raceways communicating with each other, spindles for traveling in said raceways, switches pivotally mounted between the intersections of such raceways, each switch being arranged to control only one intersection, and guides for em-

broidery threads located between the outermost lines of race-ways.

2. In a braiding machine of the class described, a pair of parallel plates having two concentrically arranged raceways communicating with each other, spindles for traveling in said raceways a pair of switches pivotally mounted between the intersections of such raceways, each switch being arranged to control one intersection only, and guides for embroidery threads located between the outermost lines of race-ways.

3. In a braiding machine of the class described, a pair of parallel plates having two concentrically arranged raceways communicating with each other, spindles for traveling in said raceways and a pair of switches pivotally mounted between the intersections of such raceways, each switch being arranged to control one intersection only, means for controlling the operation of each switch independently of the other, and guides for embroidery threads located between the outermost lines of race-ways.

4. In a braiding machine of the class described, a pair of parallel plates having two concentrically arranged raceways communicating with each other, spindles for traveling in said raceways, and pairs of switches pivotally mounted between the intersections of such raceways, one member of each pair of switches being mounted upon a vertically extending rod, and the other upon a sleeve surrounding said rod, said sleeve and said rod being separately operable by controlling mechanism.

In testimony whereof I have signed my name of this specification in the presence of two subscribing witnesses.

ALFRED ORTHMANN.

Witnesses:

OTTO KÖNIG,

J. A. RITTERSHAUS.