2 Sheets—Sheet 1.

# A. WIETLISBACH.

## BRAIDING-MACHINES.

No. 193,791. Patented July 31, 1877.

Fig. 1.

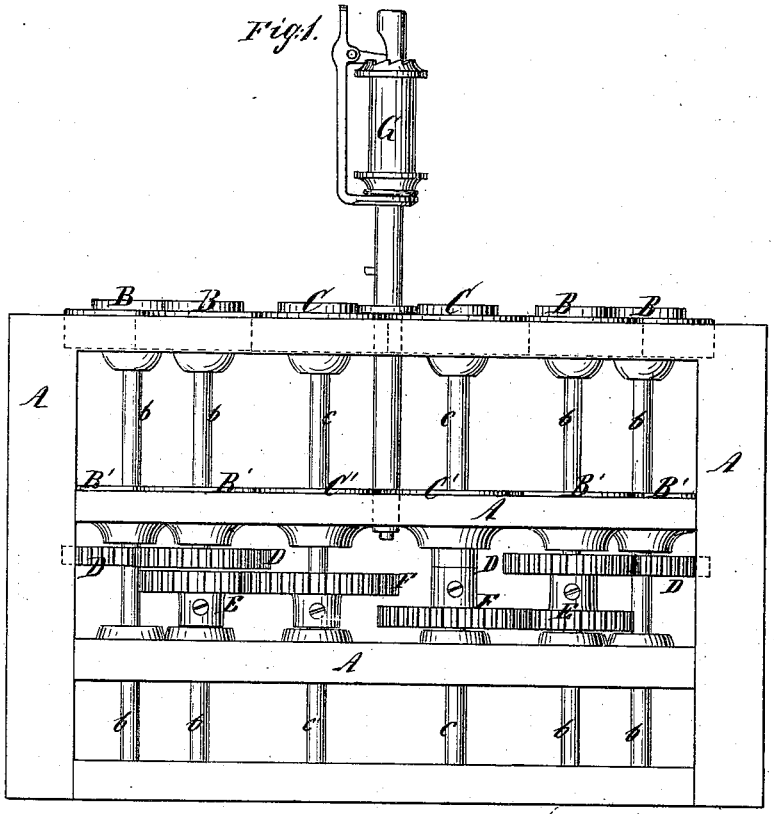
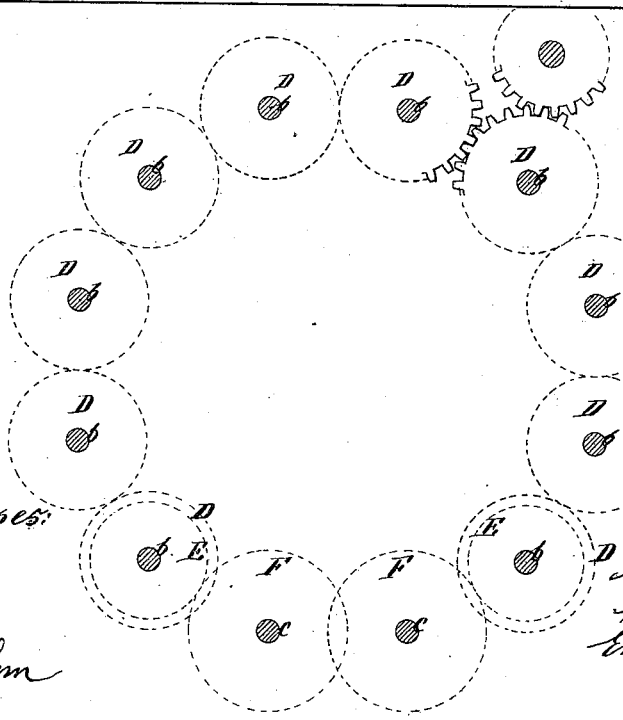



Fig. 2.

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2 Sheets—Sheet 2.

# A. WIETLISBACH.

## BRAIDING-MACHINES.

No. 193,791. Patented July 31, 1877.

Fig: 3.

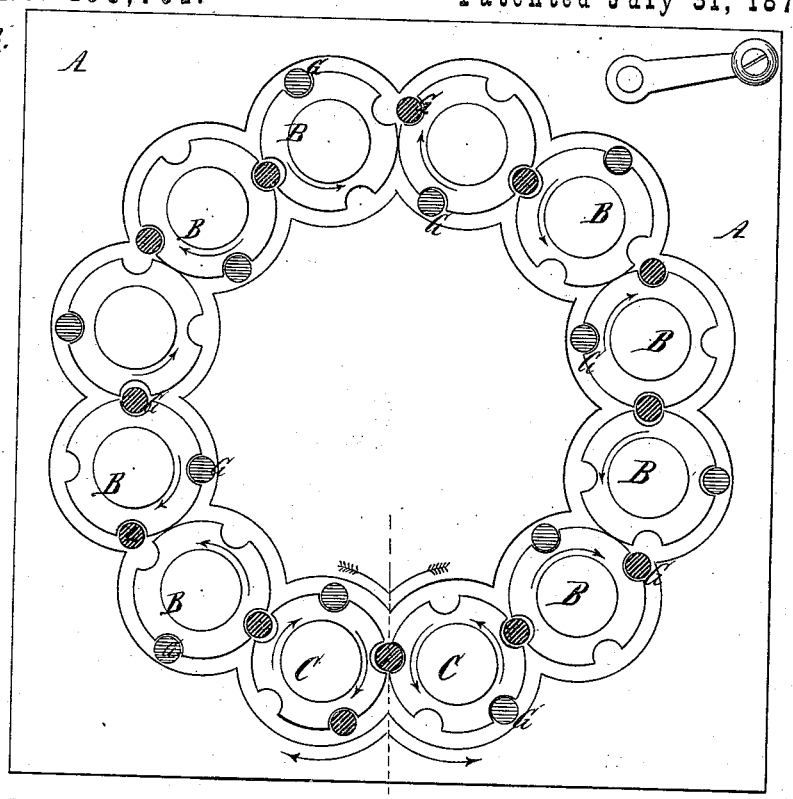
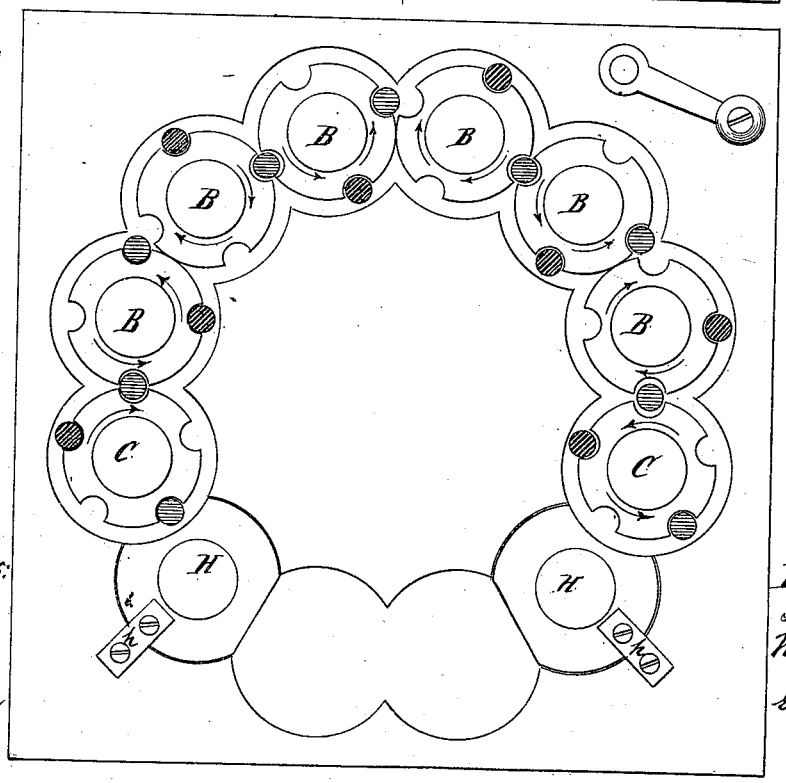



Fig: 4.

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# UNITED STATES PATENT OFFICE.

ALBIN WIETLISBACH, OF PATERSON, NEW JERSEY.

## IMPROVEMENT IN BRAIDING-MACHINES.

Specification forming part of Letters Patent No. **193,791**, dated July 31, 1877; application filed April 7, 1877.

*To all whom it may concern:*

Be it known that I, ALBIN WIETLISBACH, of Paterson, county of Passaic and State of New Jersey, have invented a new and useful Improvement in Braiding-Machines, which improvement is fully set forth in the following specification and accompanying drawing.

This invention relates to certain improvements in that class of braiding-machines in which a series of notched spindle-carriers are employed for giving motion to the spindles for properly crossing the threads to form the braids.

The object of my invention is to produce a machine by means of which flat braids, or a tubular braid or hose, may be formed; and to this end it consists in the combination, in a braiding-machine, of a series of interchangeable notched carriers and blanks, with suitable gearing by which said carriers may be operated to carry the spindles in proper direction to cross the threads or strands, as more fully hereinafter set forth.

In the drawings, Figure 1 represents a front elevation of my improved machine; Fig. 2, a plan view of the gear-wheels and pinions for operating the carriers; Fig. 3, a view of the top of the machine and a section through the spindle-shanks, showing a full number of spindle-carriers in position, and Fig. 4 a similar view, showing a smaller number of carriers and the substituted blanks in position.

The letter A represents the frame of the machine, and B B′ an upper and lower series of spindle-carriers provided with four notches each.

The letters C C′ represent two similar carriers provided with five notches each, which form the ends of the series. These carriers are all of the same diameter, and the shafts *b* and *c* of the same are provided with gear-wheels D E F below, and which mesh with each other relatively in such manner as to rotate the carriers in the direction shown by the arrows in the drawing, the teeth of the said wheels being so proportioned that while the carriers B B′ make five revolutions the carriers C C′ make but four.

The letter G represents a series of removable spindles, constructed as usual, adapted to travel in the notches in the carriers, being supported at their upper ends in the notches of the carriers B and C, and at their lower ends in the notches in the carriers B′ C′.

The letter H represents a series of blanks similar in construction to the carriers, but without the notches, which are removable and interchangeable with the carriers, which serve as guides for retaining the spindles, when the apparatus is set for the formation of larger or smaller braids.

The ends or some other portions of the spindles are arranged to travel in a suitable race, as usual, which forms no part of the present invention, and is not shown.

The operation of my invention is as follows:

For producing a full-sized flat braid the carriers are arranged as shown in Fig. 3, with the carriers C C′ forming the ends of the series and adjoining each other, the number of spindles employed being one more than twice the number of carriers—in the present instance, twenty-five—and upon putting the apparatus in motion the spindles are carried back and forth throughout the series, properly passing each other to cross the threads, as usual, and when a smaller braid or a number of braids are to be formed, two or more of the blanks H H are substituted for the carriers at suitable intervals in the series.

For forming tubular articles or hose the carriers B B′ alone are employed, and all arranged to travel at the same velocity, and in this instance they travel continuously around the series of spindles, instead of back and forth as in the case of a flat braid.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination, in a braiding-machine, of the series of interchangeable notched spindle-carriers and blanks with actuating gearing, substantially as herein shown and described, whereby flat braids of various sizes, or tubular braided goods or hose may be formed, substantially as set forth.

ALBIN WIETLISBACH.

Witnesses:

ERNST BILHUBER,

A. FABER DU FAUR.