

(No Model.)

2 Sheets—Sheet 1.

J. McCahey.
BRAIDING MACHINE.

No. 494,379.

Patented Mar. 28, 1893

Fig. 1.

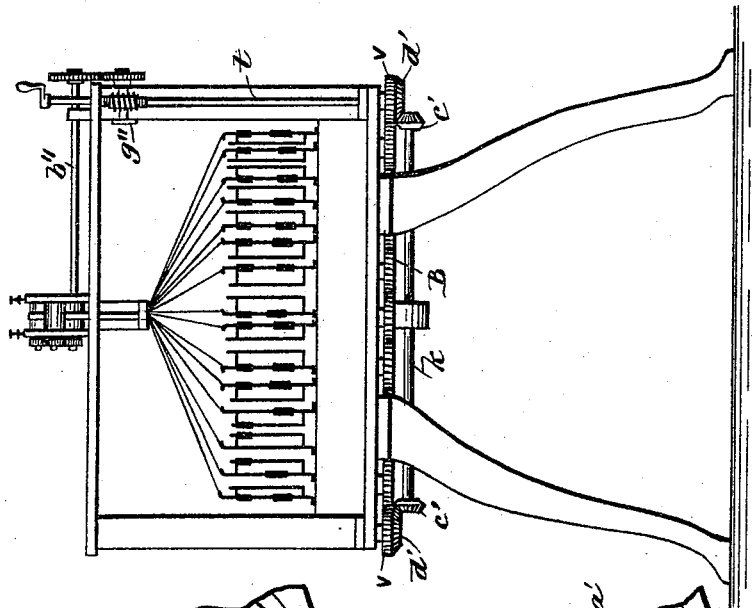


Fig. 3.

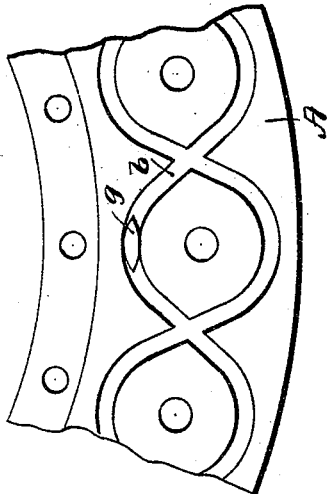


Fig. 2.

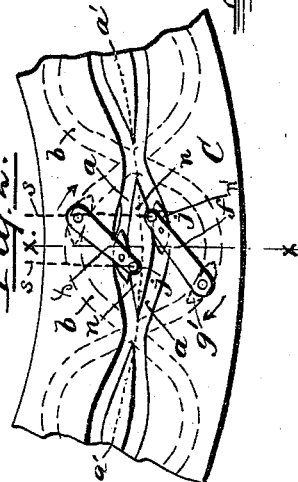
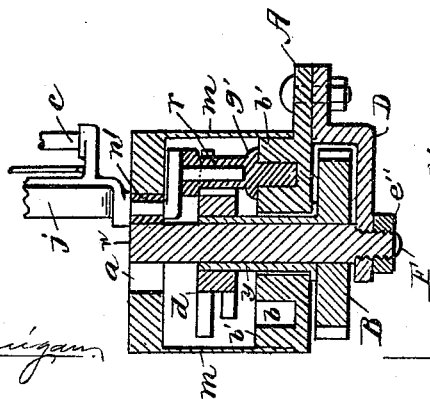


Fig. 4.



Witnesses.

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2 Sheets—Sheet 2.

No. 494,379.

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Fig. 7.

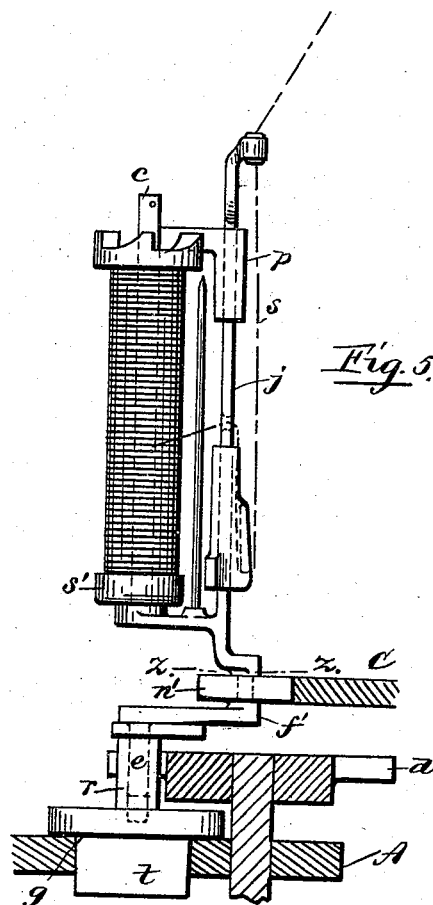
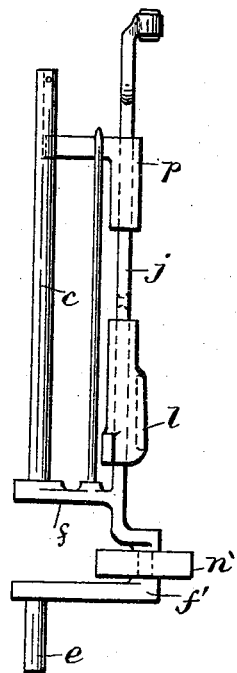


Fig. 5.

Fig. 8.

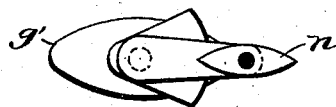
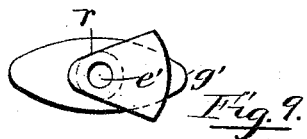
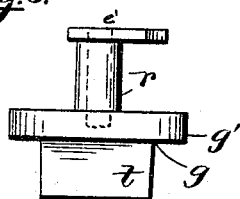


Fig. 6.

Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN MCCAHEY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE NEW ENGLAND BUTT COMPANY, OF SAME PLACE.

BRAIDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,379, dated March 28, 1893.

Application filed May 31, 1892. Serial No. 434,929. (No model.)

To all whom it may concern:

Be it known that I, JOHN MCCAHEY, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Braiding-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This improvement is intended to overcome a difficulty met with in operating braiders of the usual construction, which obliges the thread to pass back and forth through the top guide and under the tension weight a great many times before it is finally braided into the fabric. This is caused by the carriers with the guides and spools passing so far in toward the center of the machine when on the inner sides of the raceways, and so far out when on the outer sides, the distance between these two points making that amount of slack thread for the weight to take up and give out again every time the carriers passed in and out. The friction on the thread passing back and forth so many times frets it and produces a fuzzy surface on it that has to be removed by afterward singeing the fabric which injures its appearance and imparts a disagreeable scent to it especially if it be of wool or silk. Then when the carrier is passing out and the weight is being raised by taking up the slack, the tension on the thread is greater than when the same carrier is passing in and letting the weight down to take up the slack, and this difference in tension produces an uneven appearance in the web when finished. These objections can be obviated to some extent in the ordinary braider by running it very slowly, but that increases the cost of the product by lessening the amount produced. This difficulty I obviate by using what may be called a two fold carrier, or a combination of a motor carrier, and a thread guide carrier. The motor carrier has the same shaped raceway to run in and nearly the same mechanism to drive it as in the ordinary braider, but the thread guide carrier is pivoted to the motor carrier by a pivot on the end of an arm on the former which allows the

guide of the carrier to follow another raceway which varies from a true circle only a little more than enough to let the guides pass each other. In this way the amount of slack to be taken up by the weight can be reduced to a small part of the usual length, which greatly improves the appearance of the braid, while at the same time the speed of the machine can be doubled.

In the drawings, Figure 1, is a front elevation of the braider. Fig. 2, is a top view of the upper raceway for the thread guide, showing the lower raceway below for the motor carrier, in dotted lines. Fig. 3, is a top view of the plate with the raceway for the lower or motor carrier. Fig. 4, shows a vertical cross section taken on line $x-x$ Fig. 2. Fig. 5, shows an elevation of one of the carriers with spool &c. Fig. 6, is a top view of same on line $z-z$ Fig. 5. Fig. 7, is an elevation of the upper carrier separate. Fig. 8, represents the lower carrier separate. Fig. 9, is a top view of the carrier shown in Fig. 8.

In this plan the usual carrier is divided into two carriers each having its own raceway to run in, the lower carrier having a raceway b shaped as shown in Fig. 3, which is like that now used in braiders. This is the carrier that receives motion from the horns on the wheel d , that causes it to move in the raceway. The upper carrier has a raceway a , as shown in full lines in Fig. 2, in which figure the lower raceway b , is shown in dotted lines and parts of the two upper carriers $f f$, are also shown to explain their relative positions in their raceways. The upper carrier f , which has the spool spindle c , and guide bar j , is shown in Fig. 7. It is pivoted to the lower carrier g , by the pivot e , on the end of an arm, which pivot e , fits into a hole e' in the lower carrier shown by the dotted lines, in Fig. 8, which is a side elevation of the lower carrier g . The pivot e , is free to turn in the hole e' , which leaves the guide n' , of the upper carrier which is also loose on its center bar, at liberty to follow the upper raceway a , while the lower carrier g , is running in the lower raceway b . This is shown by the position of the two carriers in Fig. 2 in which it will be seen that the thread guide bars j , of the two carriers in passing each other go but little

ways out or inside of a circle a' drawn through the centers of the raceways with the middle of the machine for its center, and the distance between the two thread guides in passing the center plate n , is the length of the slack made in the thread s , to be taken up by the weight l . g' represents the position of the carrier g , in the lower raceway at the same time.

10 The construction of the carriers is shown in Figs. 5 to 9. Fig. 7 is a side elevation of the upper carrier consisting of the double arm f' , with the raceway guide n' that is held free to turn on the bar between the two arms.

15 The spool spindle c , the thread guide bar j , and the tension weight I sliding thereon, and the drop pawl p , are also shown in this figure. Fig. 8 is a side elevation of the lower carrier g , consisting of the usual foot g' , and guide

20 t , made solid with it, and the stem r , by which the horns on the wheel drive it. The hole in the lower carrier that receives the pivot e , of the upper carrier is shown in dotted lines e' in Fig. 8. Fig. 9 is a top view of carrier shown in Fig. 8. Fig. 5 shows an elevation of the upper and lower carriers together in running order with some parts of the raceways and driving wheels which are more fully represented in Fig. 4. Fig. 6 is a top view of the

30 parts of the carrier below the line $z-z$, Fig. 5. The construction of the raceways and adjacent parts is shown in section in Fig. 4. A base plate A which supports these parts has a raceway b , for the lower carrier cast on it,

35 and has a hole made vertically through it to receive the hub y , of the gear wheel B , to the upper end of which the horn wheel d which drives the carriers is made fast. A bracket D is attached to the inner flange of the

40 plate A and extends down under it to receive the stud F which extends from the upper face of the top raceway down through the bracket and is made fast to it by a nut e'' beneath the bracket. The head of the stud F ,

45 is properly shaped to form the center piece n , of the upper raceways a . The inner and outer circles m , of the casing are fastened to the sides of the raceway projections b' , and the upper raceway plate C , is attached to the

50 sides m . The gear wheel B , is one of the series that engage with each other on the under side of the machine in the usual way, and

are driven by two gears v , one on each side (see Fig. 1), which receive motion from the horizontal driving shaft k through the bevel 55 gears c' , at each end of the shaft which engage with the bevel gears d' , fast to the gears v . The mechanism for taking up the braid as fast as it is produced is one that is used on braiders. It consists of three rolls placed 60 one above the other in bearings on the cross bar over the middle of the machine. These rolls between which the braid passes are geared together at one end and receive motion from a horizontal shaft b'' , which is connected by gear wheels with a short horizontal 65 shaft held in an adjustable clamp bolted to one of the side uprights. This latter shaft is driven by a worm fast on an upright shaft t , which engages with a worm gear secured to the short horizontal shaft. The upright shaft receives motion from the horizontal driving shaft k , beneath the machine by means of a pair of bevel gears $d' c'$, before 70 mentioned.

Having thus described my improvements, I claim as my invention—

1. In a braiding machine a carrier made in two parts and pivoted together, one of said parts carrying the thread guide and the other 80 part receiving the driving power, each part having its own separate line of motion in passing between the other carriers, substantially as herein set forth.

2. In a braiding machine a motor carrier to 85 receive the driving power in combination with a supplementary carrier with a spool spindle and thread guide bar thereon pivoted to said motor carrier, and a separate raceway for each carrier substantially as set forth.

3. The combination of the base plate holding the lower raceway, said raceway, a carrier in said raceway, the bracket supporting the gear, the gear, the horn wheel attached to its hub, the stub on which the gear wheel 95 and horn wheel revolve, an upper raceway, and a carrier guide movably pivoted to said lower carrier, fitted to run therein, substantially as described.

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Witnesses:

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