R. C. RAHM.

BRAIDING MACHINE ATTACHMENT.

APPLICATION FILED MAY 16, 1910.

967,670.

Patented Aug. 16, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

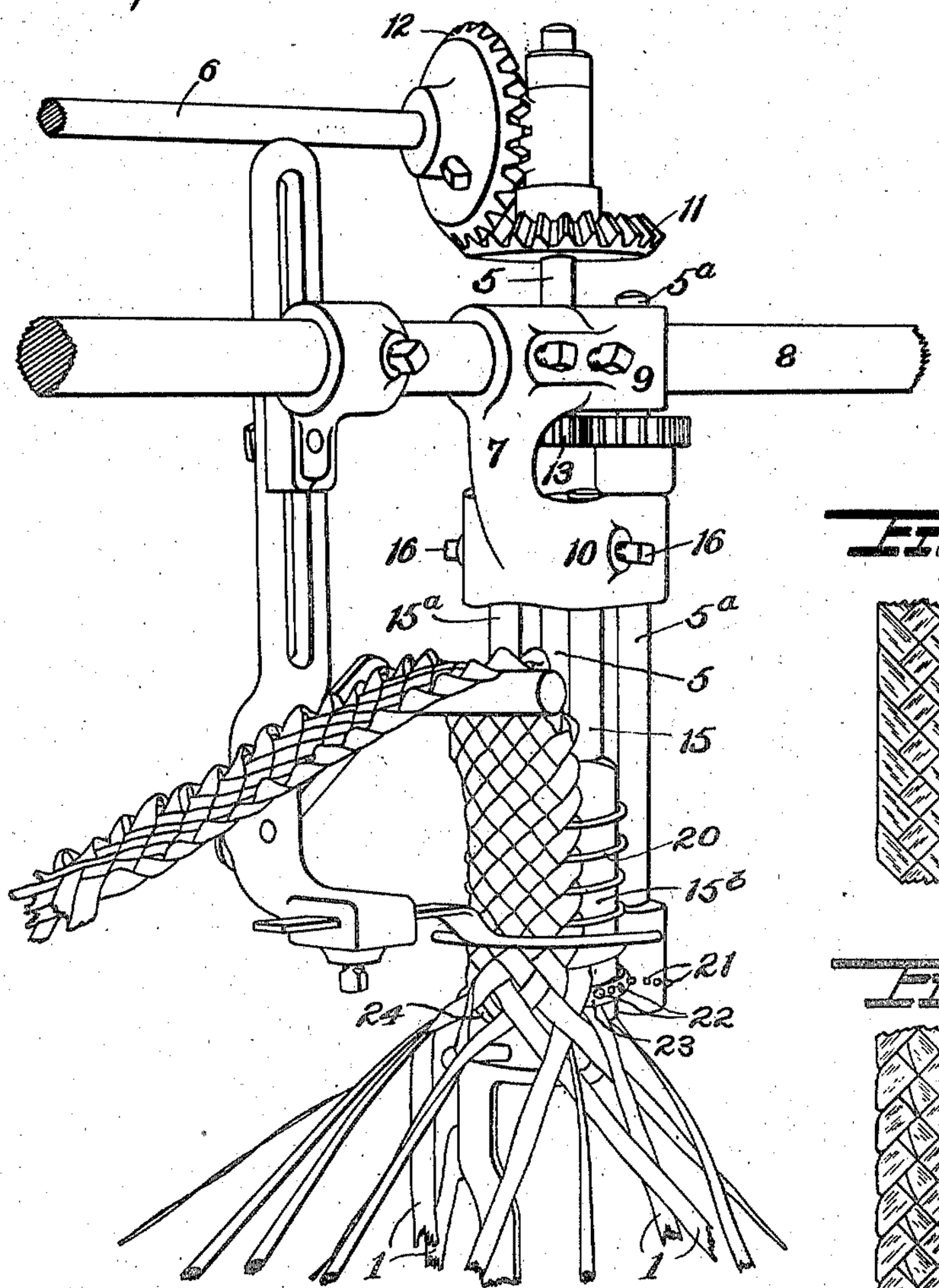


Fig. 6.

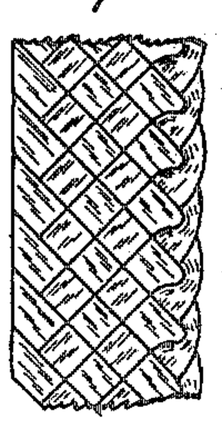
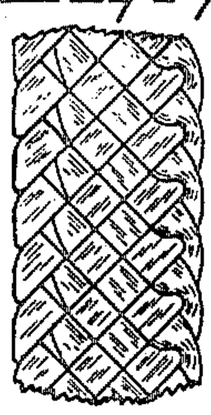


Fig. 7.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

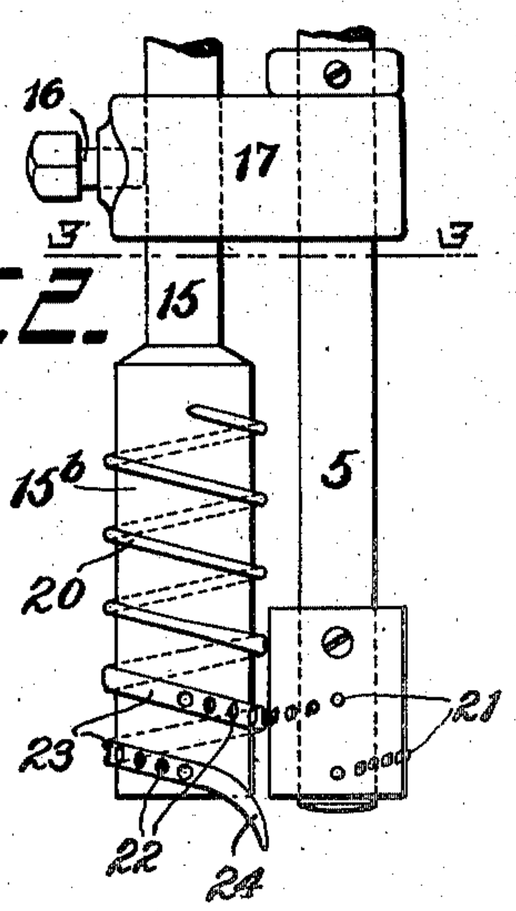


Fig. 3.

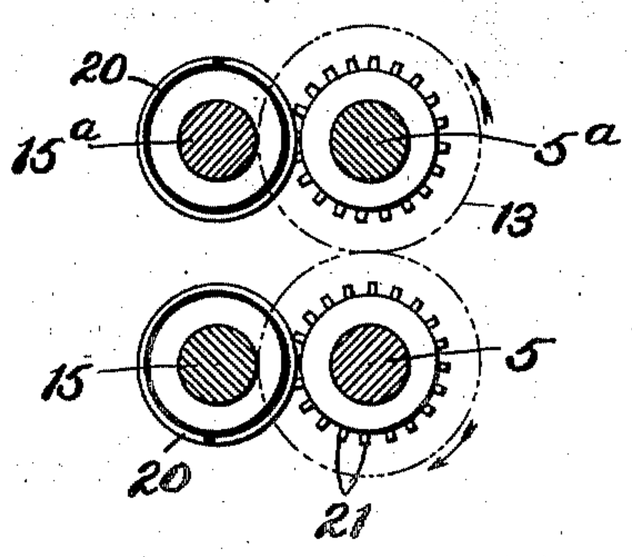


Fig. 5.

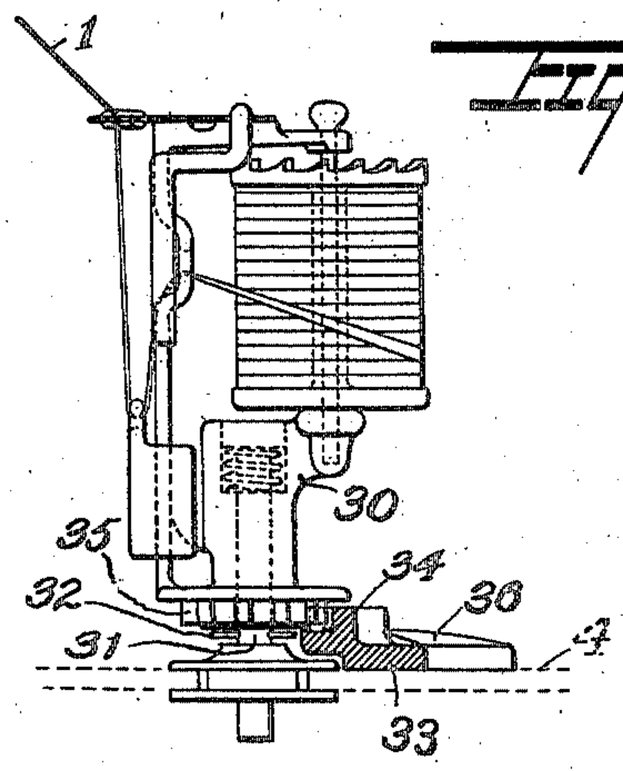
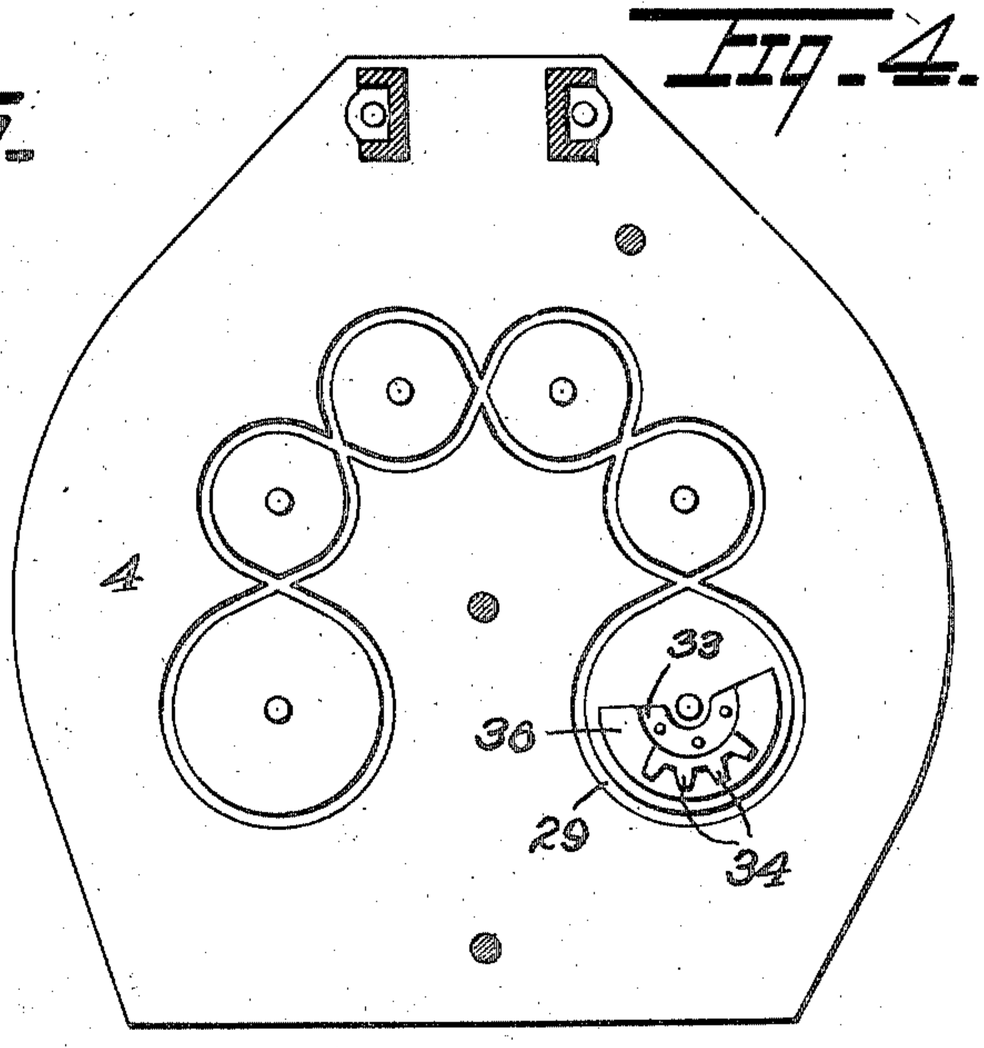


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BRAIDING-MACHINE ATTACHMENT.

967,670. Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed May 16, 1910. Serial No. 561,542.

To all whom it may concern:

Be it known that I, ROBERT C. RAHM, a citizen of the United States, and a resident of the borough of Wyomissing, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Braiding-Machine Attachments, of which the following is a specification.

My invention relates to braiding machines, and particularly to an edging mechanism therefor adapted for braiding flat strips automatically to produce a perfect braid with edgewise bending of the strips at either one or both edges of the fabric so as to form an ornamental rough edge or edges; and in the latter case for showing one side of the strips only upon each face of the braid.

The invention is fully described in connection with the accompanying drawings and is specifically pointed out in the claims.

Figure 1 is a perspective view showing my edging attachment as it appears above the braiding point of an ordinary machine and operating in the production of a braid having both edges thereof "rough-edged." Fig. 2 is an enlarged side view showing a mandrel with a coiled edging device thereon and the shaft for operating said device; and Fig. 3 is a cross-section on the line 3—3 of Fig. 2, showing the relative arrangement of the two shafts and mandrels. Fig. 4 is a plan view of the bed plate of the machine showing a carrier-twisting device applied thereto, and Fig. 5 illustrates a bobbin carrier employed in connection therewith. Fig. 6 shows the braid product as rough-edged on one edge only; and Fig. 7 shows an imperfect rough-edged braid.

The braids shown are in each case made up of flat braiding strips such as are employed for millinery braids, and the special bending of which at the edge of the fabric produces the ornamental "rough-edging" desired.

The general construction of braiding machines to which my invention is applicable is well known and need not be referred to further than to state that my edging attachment is adapted to operate at the so-called "braiding-point" of the machine, upon converging strips of material 1 extending from bobbins mounted in suitable carriers traversed as usual in the race-way of the machine bed-plate; and that the vertical shafts 5, 5ª, of my attached mechanism, derive their rotary motion from a suitable horizontal shaft 6 of the machine, and are mounted as indicated in a bearing head 7 carried on a fixed bar 8 thereof. This bearing head 7, which is rigidly fixed to the bar 8, is formed with upper bearings 9 and alined lower bearings 10, for the shafts 5, and 5ª, the upper end of the shaft 5 being provided with a bevel wheel 11 in gear with a wheel 12 on the drive shaft 6, while a spur-gear 13 is fixed thereto between the alined bearings 9 and 10 as shown, to reversely rotate the parallel vertical shaft 5ª. The head 7 is not only formed with bearings for the rotary shafts 5 and 5ª as described, but serves to carry depending vertical mandrel rods 15, 15ª, which are fixed thereto by set screws 16 so that their lower ends 15ᵇ are located at the determined braiding point of the machine. These parallel mandrel rods are spaced apart, as indicated in Figs. 1 and 3, to correspond with the width of braid to be produced, and the parallel rotary shafts 5, 5ª, are properly spaced from the respective mandrels by bearing arms 17 (Fig. 2) fixed to the latter; each of the mandrel ends being adapted to have loosely mounted thereon an edging device for one edge of the forming braid, to which device a rotary motion is imparted by the adjacent rotary shaft 5 or 5ª.

The edging device 20, as shown, is formed of coiled wire, and loosely fits upon the end portion of the mandrel upon which it is carried and rotated by means of radially projecting pins 21 on the adjacent rotary shaft end. These pins 21 are adapted to successively engage pin apertures 22 formed in a convolution 23 of the edging coil 20, which convolution has an enlarged cross-section. The series of pins 21 are arranged spirally to correspond with the pitch of the edging coil 20 thereby maintaining the point 24 of the coil device in a fixed plane of rotation; and this pitch approximately corresponds with that of the braid; so that each bend of the braiding strips at this edge of the braid will be formed upon the point 24 and the enlarged convolution 23 of the rotary coil device, with an edgewise bending of the strip as indicated. The effect of this enforced edgewise bending of the strips at one edge of the fabric, instead of the flat-bending of the ordinary turn-over as shown at the other

edge in Fig. 6, is to impart a twisting action to each strip as it extends across the face of the fabric, the result of which is a diagonal folding-over of the flat strip showing a defective construction, generally adjacent the opposite edge as indicated in Fig. 7. This twisting of the strips and the resulting defectiveness of braid structure, will be entirely neutralized by employing the second mandrel 15ª, in connection with the reversely coiled edging device thereon and the reversely rotated drive shaft 5ª therefor, to effect a similar but reversed edgewise bending of the strips at the other side of the braid as in the double rough-edged product shown in Fig. 1.

To avoid the defect indicated in the case of the single rough-edged product shown in Fig. 7, and to produce instead the perfect single rough-edged braid of Fig. 6, other means for neutralizing the described twisting effect of the single edging device 20 there employed, are provided. In such case the neutralizing twist of the strips is effected just before they reach the edge-braiding point, by imparting a proper rotary movement to each carrier, on its own axis, as it passes around the corresponding terminal circle of the race-way (Fig. 4). This is accomplished, as shown, by employing carriers having separately formed bobbin-holding portions 30, each of which is adapted to be moved vertically on the race-way portion 31 of the carrier so as to temporarily disengage it from a locking projection 32 on the portion 31, and permit of its being turned upon the latter; and by providing within the terminal race-circle 29 of the bed plate 4 of the machine, a removably fixed quadrant-plate 33 having a series of teeth 34 adapted to mesh with a gear wheel 35 provided on the bobbin-holding portion 30 of the carrier, when the latter is raised upon the race-way portion 31 of the carrier by contact with an inclined surface 36 on said quadrant plate. The latter is so formed and located in the path of each passing carrier, as to impart a rotary motion to the latter on its own axis sufficient to neutralize the twisting effect exerted by the coil device 20 at the rough-edged side of the braid, thus insuring the smooth turning-over of the strips to form the plain edge of the braid, as shown in Fig. 6. The quadrant plate 33 is removed from the bed plate of the machine when the double rough-edged braid is produced as the twisting effect of one edging device is neutralized by the reverse twisting effect of the other.

As will be readily seen the engagement of the opposite edges of the forming braid, by the spaced-apart devices 20, 20, definitely and uniformly fixes the width of the braid; and that it also serves as a positive and regular take-off for the fabric, the pitch of the rotated coils serving both to uniformly push forward the fabric and to space the strips or threads which are bent upon them.

What I claim is:—

1. An edging mechanism for braiding machines comprising a fixed mandrel having its lower end located adjacent to one edge-braiding point of the machine, a parallel rotary shaft, a coiled edging device upon said mandrel end rotatively engaged by said shaft and upon which the successive edging-bends of braiding strips are formed, and means for imparting a neutralizing twist to the strips at the other edge-braiding point of the machine.

2. An edging mechanism for braiding machines comprising a pair of fixed mandrels having their lower ends located adjacent to the respective edge-braiding points of the machine, a pair of parallel oppositely rotated shafts, and separate spiral edging devices upon said mandrel ends rotatively engaged by said shafts respectively and adapted to engage and form the opposite edging-bends of the strips.

In testimony whereof, I affix my signature, in the presence of two witnesses.

ROBERT C. RAHM.

Witnesses:
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W. G. STEWART.