(No Model.)

G. E. FREEMAN.

BRAIDING MACHINE.

No. 551,184. Patented Dec. 10, 1895.

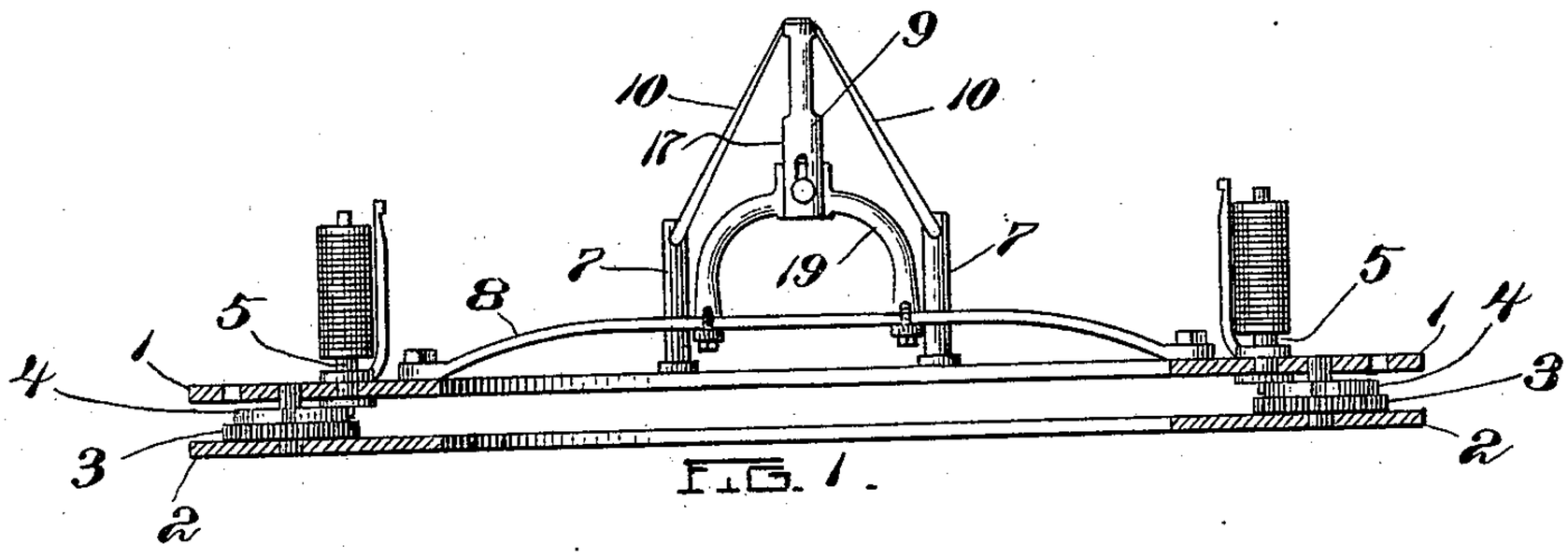

FIG. 1.

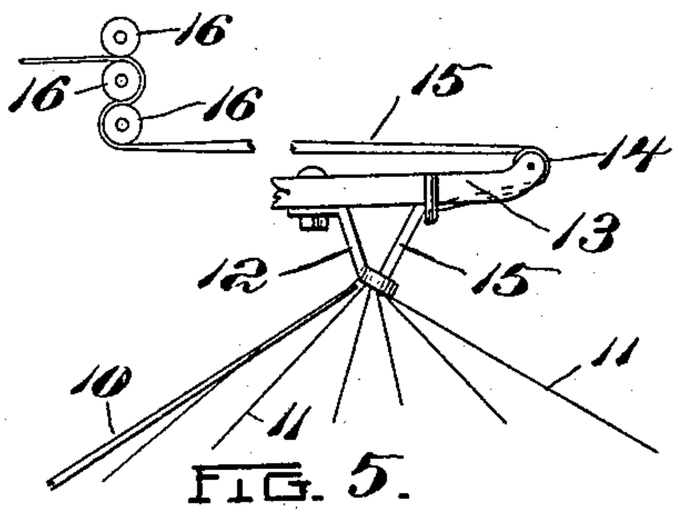

FIG. 5.

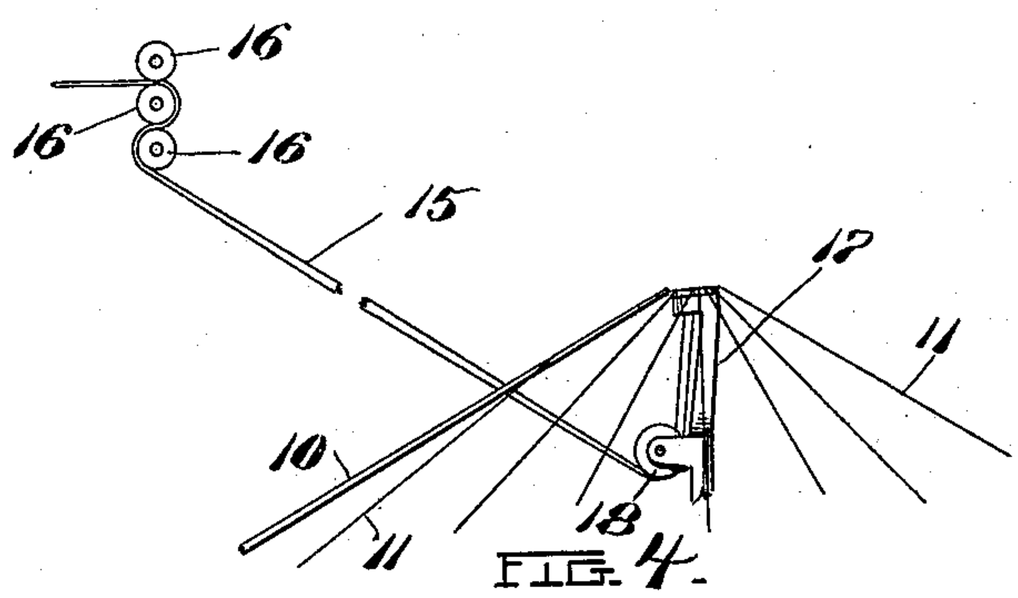

FIG. 4.

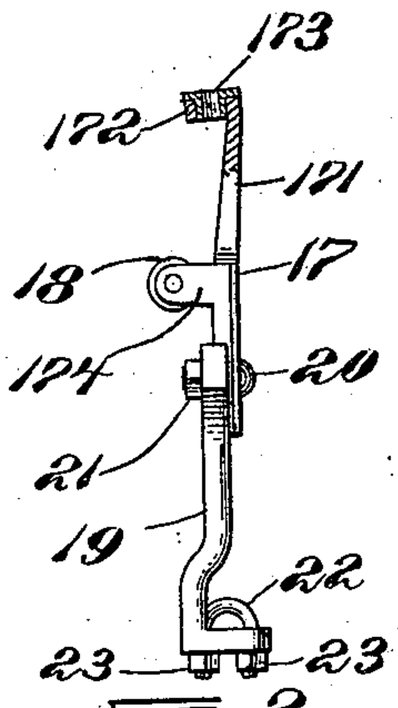

FIG. 2.

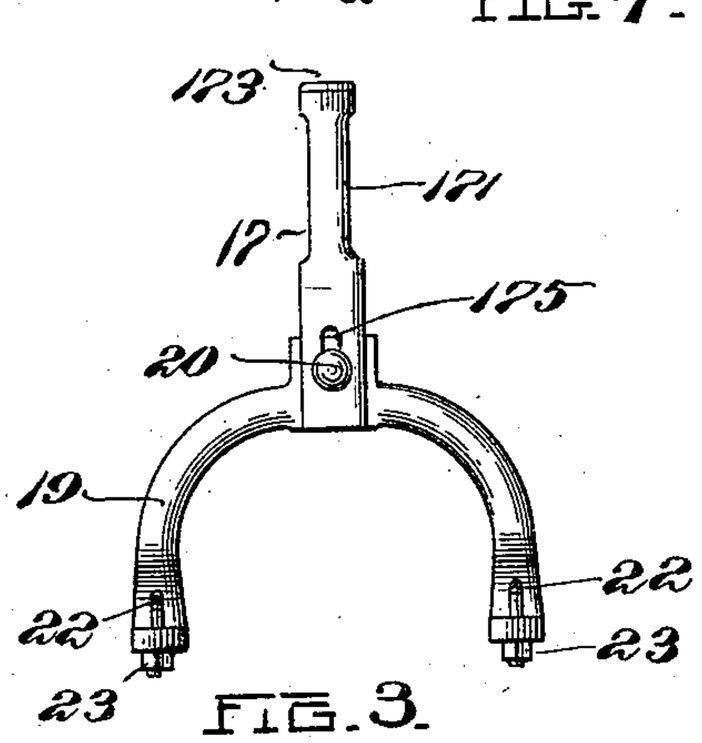

FIG. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE E. FREEMAN, OF NORTHAMPTON, MASSACHUSETTS.

BRAIDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 551,184, dated December 10, 1895.

Application filed January 17, 1895. Serial No. 535,253. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. FREEMAN, a citizen of the United States, residing at Northampton, in the county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Braiding-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a view showing part of a braiding-machine with the preferred embodiment of my invention applied thereto, enough of the parts of the machine being shown to render clear the application of the invention, certain parts being represented in section on a vertical plane. Fig. 2 is a view showing detached, in edge view, the former which is represented in Fig. 1, the upper part thereof being in section. Fig. 3 is a view of the former from the right-hand side in Fig. 2. Figs. 4 and 5 are views on the order of diagrams contrasting my invention with the old style of former.

Reference will be had first to Fig. 1. In said figure 1 is the top plate of a braiding-machine of common type. 2 is a second or under plate mounted in the machine a short distance below the top plate 1. 3 3 are part of the train of gears for traversing the bobbin-carriers. 4 4 are propelling-disks engaging with the bobbin-carriers. These disks are connected with the gears 3 3 and rotate in unison with the latter. 5 5 are bobbin-carriers. 7 7 are the posts by which the selvage bars or needles are supported. 10 10 are the selvage bars or needles.

The parts so far described are or may be of any usual or preferred construction and are supported and operated in any desired manner.

8 is a cross-bar having its ends united or connected to opposite portions of the top plate 1. In carrying my invention into effect, I utilize this cross-bar as a support for the former for the braid.

17 is a former constructed in accordance with my invention. As usual in braiding-machines, the yarns or threads from the bobbin-carriers center at this former, the braid being drawn therethrough as fast as it is formed by the action of feed-rolls, and then being delivered out of the machine.

Before proceeding further with the description of former 17, I will describe the parts and arrangement which are shown in Fig. 5. This figure shows the position of the selvage bars or needles 10 10 of a braiding-machine, the yarns or threads 11 11 coming from the series of bobbin-carriers in such machine (the bobbin-carriers themselves being omitted), the former 12 which commonly is used in braiding-machines, the goose-neck 13 by which said former 12 is supported, and the guide-roller 14 around which the braid 15 is passed before it is led to the feed-rolls 16 16 16. The arrangement, &c., in this figure are essentially as common heretofore. The upper ends of the selvage bars or needles, it will be noticed, occupy positions underneath the former. The usual practice, as indicated in Fig. 5, has been to lead the yarns or threads from the bobbin-carriers up through the former 12 from underneath, and to carry the braid thence as formed around the guide-roller 14 and to the feed-rolls. As results of thus carrying the yarns or threads under the former, with nothing to support them, the yarns or threads are easily broken, making waste and consuming the time and attention of the person who attends the machine. Furthermore, as a result of the position of the inner ends of the selvage bars or needles beneath the former, the manner in which the yarns or threads pass from said selvage bars or needles, and the inclined position of the former which permits the selvage-threads to pass therethrough with less frictional resistance than those of the other portions of the braid, the edges of the braid are as loose as the middle. In the finishing of braid having such loose edges it draws down and tightens across its whole width, thereby narrowing it somewhat.

The general idea of my present invention is that of constructing and applying the former in a manner to cause the yarns or threads to enter the same from above, the braid being directed downwardly and thence conducted away. By way of making this clear, reference may be had to Fig. 4, in which are represented a former 17, the selvage bars or needles 10 10, and the yarns or threads 11 in the relative positions occupied by them during the working of the braiding-machine to which my invention is applied. As shown in such

figure the upper ends of the selvage bars or needles occupy positions above the former, and the yarns or threads as braided together draw down through the former, the braid passing thence down to and around the roll 18, located beneath the eye of the former, and then being drawn off to the rolls 16 16 16. By causing the yarns or threads to rest on the top of the former, they are supported and breakage is avoided. This saves the waste of material and loss of time above mentioned. The position of the inner ends of the selvage bars or needles above the former, and the increased frictional resistance which is offered to the travel of the selvage-threads through the former, causes the yarns or threads to draw into tight selvages.

In the processes by which the braid is finished the edges of the braid are pulled down or stretched while the middle portion remains as braided, which results in making a wider braid. I have found by practical experience with the invention that the braid produced on a machine having the invention applied thereto is more perfect than that produced on a machine having a former of the kind which is shown in Fig. 4, it having the lines thereof much straighter and more regular, and also having straighter and more uniform selvages.

The preferred manner of constructing and applying a former embodying my invention is illustrated in Figs. 1, 2, and 3. In the said figures the stem or bar 171 is provided at its upper end with a lateral lug 172, having a vertical hole therethrough. To the said hole is fitted a brass bushing or eye 173, the upper end of which preferably is flanged to support it in place in the hole, the upper surface of the said end and its flange constituting a support for the threads as they are braided together and drawn toward the hole at the center. Arms 174 on the lower part of the stem or bar 171 support the roller 18. The lower end of stem or bar 171 is slotted at 175 and is applied to a yoke 19, mounted on the cross-bar 8, the parts being united by a bolt 20 and nut 21, and slot 175 permitting the stem or bar to be adjusted vertically on the yoke. The lower ends or feet of the yoke are secured to the cross-bar 8 by U-shaped straps or securing devices 22, to the threaded ends of which nuts 23 23 are applied.

The braid passes from the roller 18 out between the selvage bars or needles on its way to the rolls 16 16 16.

What I claim is—

1. The combination with the braiding devices of a braiding machine, of a former above said devices, selvage bars or needles having their inner ends adjacent to and above the said former, and a roll or other guide for the braid below the passage or eye through the former, substantially as described.

2. The combination with the braiding devices of a braiding machine, of the former above said devices consisting of a stem or bar having applied to its upper end a bushing or eye, selvage bars or needles having their inner ends adjacent to and above the said former, and a roll mounted on said stem below the passage or eye through the former, substantially as described.

3. The combination with the braiding devices of a braiding machine, of the former above said devices consisting of a stem or bar having applied to its upper end a bushing or eye, a support for said stem or bar, means to connect said stem to said support with capacity for vertical adjustment, selvage bars or needles having their inner ends adjacent to and above the said former, and a roll mounted on said stem below the passage or eye through the former, substantially as described.

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

GEORGE E. FREEMAN.

Witnesses:
GEORGE H. RAY,
HOMER C. BLISS.