O. R. VAN VECHTEN.

BRAIDING MACHINE.

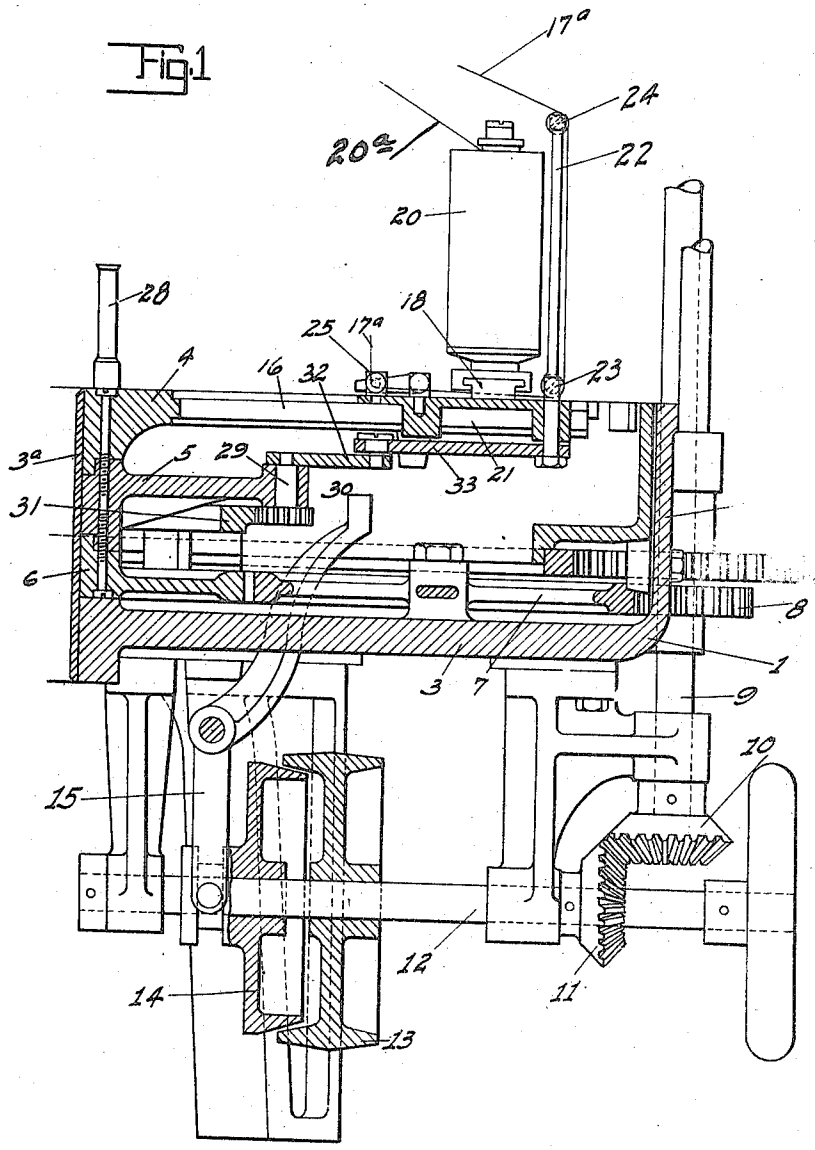
APPLICATION FILED JULY 11, 1917.

1,264,458.

Patented Apr. 30, 1918.

3 SHEETS—SHEET 1.

Fig. 1



Inventor

Orville R. Van Vechten

By his Attorneys

Cromwell & Davis

O. R. VAN VECHTEN.

BRAIDING MACHINE.

APPLICATION FILED JULY 11, 1917.

1,264,458.

Patented Apr. 30, 1918.

3 SHEETS—SHEET 2.

Fig. 3

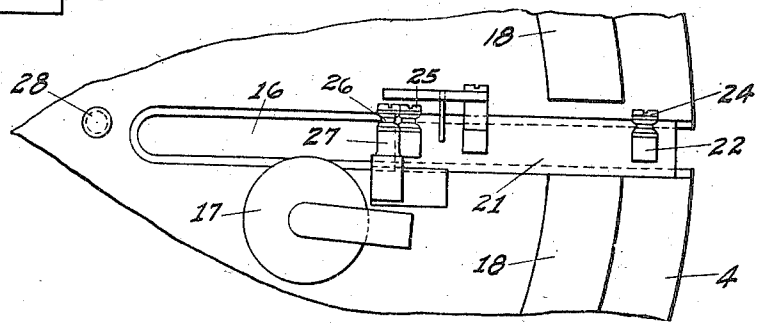
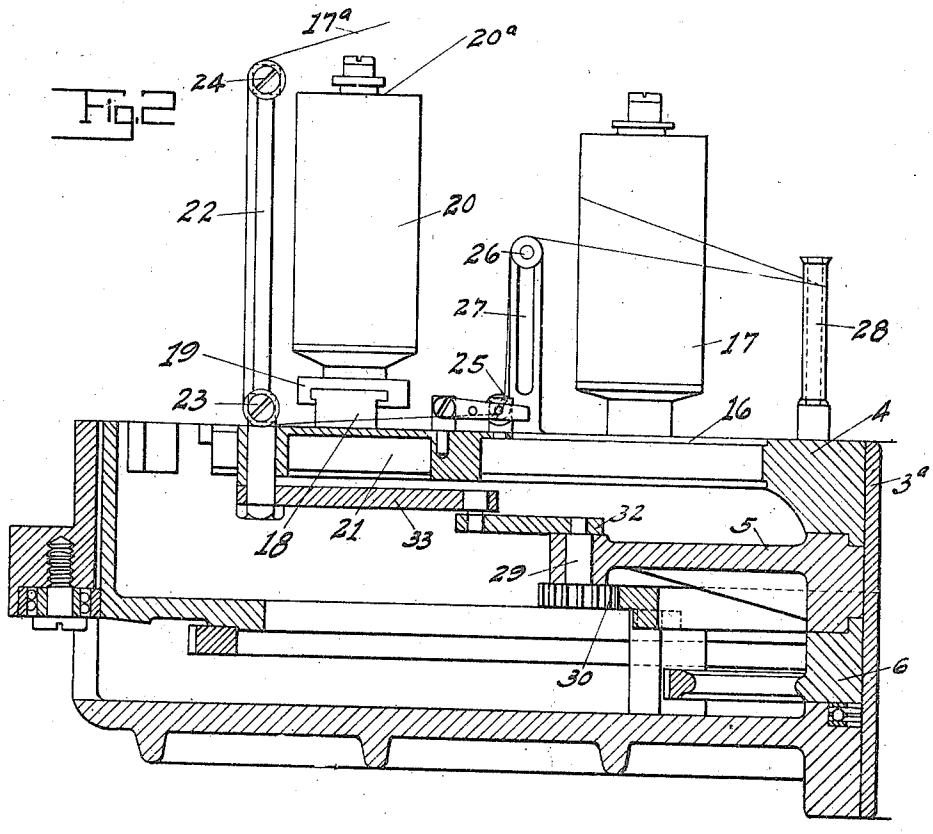


Fig. 2



Inventor

Orville R. Van Vechten

By his Attorneys

Cromwell & Davis

O. R. VAN VECHTEN.

BRAIDING MACHINE.

APPLICATION FILED JULY 11, 1917.

1,264,458.

Patented Apr. 30, 1918.

3 SHEETS—SHEET 3.

Fig. 7

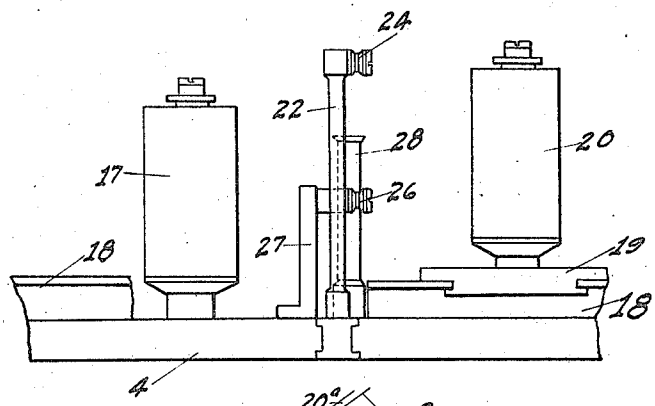


Fig. 4

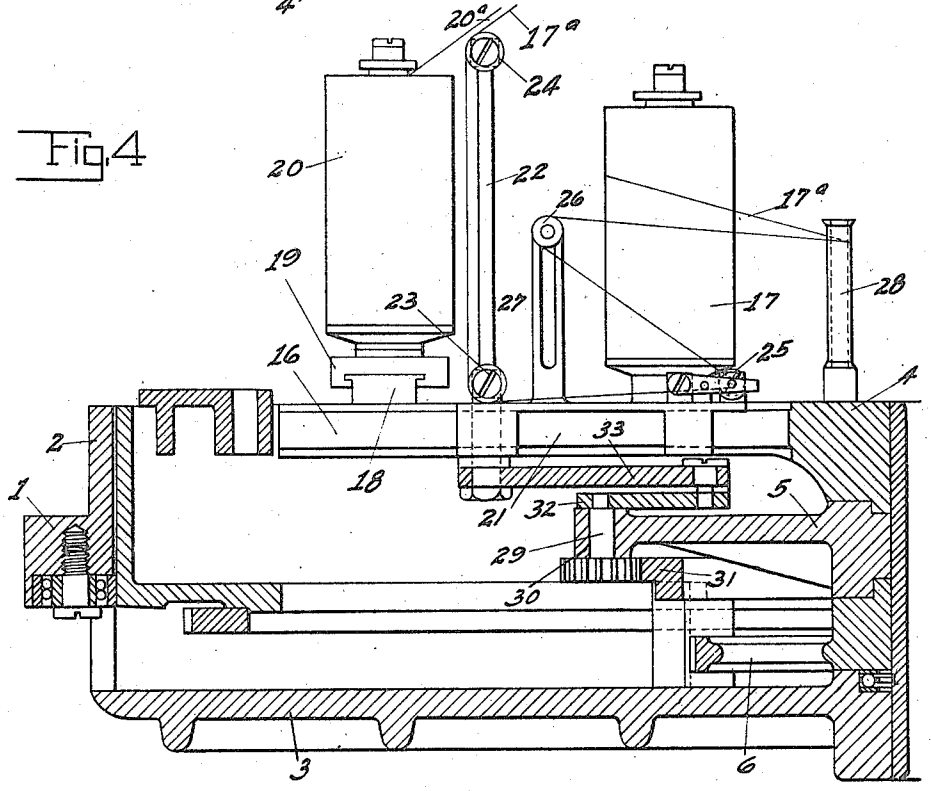


Fig. 5

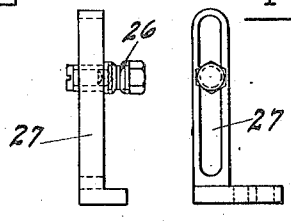


Fig 6

Inventor

Orville R. Van Vechten

By his Attorneys

Cromwell & Davis

UNITED STATES PATENT OFFICE.

ORVILLE R. VAN VECHTEN, OF NEW BRIGHTON, NEW YORK, ASSIGNOR TO NATIONAL INDICATOR COMPANY, OF LONG ISLAND CITY, NEW YORK, A CORPORATION OF NEW YORK.

BRAIDING-MACHINE.

1,264,458. Specification of Letters Patent. Patented Apr. 30, 1918.

Application filed July 11, 1917. Serial No. 179,829.

To all whom it may concern:

Be it known that I, ORVILLE R. VAN VECHTEN, a citizen of the United States, and a resident of New Brighton, borough of Richmond, county of Richmond, and State of New York, have invented certain new and useful Improvements in Braiding-Machines, of which the following is a full, clear, and exact description.

This invention relates to a thread take-up for tubular braiding machines of that type in which two circular series of thread bobbins are employed, one series moving around the machine in one direction and the other moving around in the opposite direction, and wherein it is desirable to have radially reciprocating thread guides in order to secure the proper interweaving or braiding of the threads. A machine of this type, and to which this take-up is particularly adapted, is shown in the application filed by Ralph W. Lotz on the 11th day of June, 1917, Serial No. 173,982.

One of the objects of this invention is to provide a simple, positive and efficient thread take-up which may be adjusted to vary the amount of the take-up to correspond with the variations in the diameter of the tubular fabric being braided.

Another object of the invention is to provide a radially reciprocable thread guide and carrier, and a relatively stationary thread guide, the reciprocating guide and the relatively stationary guide being so arranged with respect to each other than there will be the desired amount of take-up and let-off in the thread during the operation of the machine.

There are other objects and advantages of the invention which will appear more fully hereinafter.

In the drawings, Figure 1 is a vertical sectional view of a part of a tubular braiding machine, showing the invention applied thereto;

Fig. 2 a similar view on an enlarged scale, showing the reciprocable thread guide in its outermost position;

Fig. 3 a detail plan view of a portion of the braiding machine, showing the thread take-up;

Fig. 4 a view similar to Fig. 2, the reciprocating thread guide being shown in its innermost position;

Figs. 5 and 6 detail views of the vertically adjustable relatively stationary thread guide.

Fig. 7 a detail edge view of the rotatable table carrying the take-up devices.

Referring to the various parts by numerals, 1 designates the main frame of the machine, which is suitably supported on standards. The main frame is circular and consists of the base plate 3 and the upwardly extending annular side flange 2, said frame forming a circular receptacle to receive most of the operating parts. In the main frame, and substantially flush with the upper edge of the side flange thereof is mounted a circular rotatable table 4. Connected to the under side of this table, and concentric therewith is a circular plate 5, said plate being formed with a central depending hub. Connected to the lower end of the hub of this plate 5 is a gear wheel 6, said wheel being concentric with the table and bearing on a central hub formed on the base plate 3 of the main frame. A tubular spindle 3^a is rigidly secured in the base plate 3 and extends upwardly through central apertures in the gear 6, connecting plate 5, and the table 4, the said parts rotating about said spindle. The gear 6 is rigidly connected to the plate 5, and said plate is rigidly connected to the table 4 so that all of said parts rotate together. Meshing with the gear 6 is an intermediate drive gear 7, which in turn meshes with the main driving gear 8 mounted upon a vertical shaft 9, journaled in suitable bearings on the side of the main frame. To the lower end of this vertical shaft is secured a beveled pinion 10, which meshes with a similar pinion 11 secured to a horizontal shaft 12, which carries the driving belt wheel 13. Engaging this belt wheel is the movable member 14 of a friction clutch, said clutch being operated by means of a lever 15, one arm of which extends up into the machine and is operated by suitable devices.

The table 4 is formed with radial slots 16 which extend from a point near the center of the table to the periphery thereof, the outer ends of said slots being open. Mounted on the table between said slots is a series of spools 17, said spools being located between the slots and at a suitable distance from the center of the table. Formed on the table near the periphery thereof is an annular flanged track 18, said track being

interrupted by the radial slots, and extending only between said slots. Mounted to slide on this track are carriers 19, each of said carriers carrying a vertical bobbin 20. The carriers are free to slide on the track 18, and are of sufficient length to bridge the breaks in the track due to the radial slots 16.

In each slot 16 is mounted a radially movable slide 21 and each slide carries at its outer end a vertical post 22, which carries near its lower end a thread guide 23, a similar thread guide 24 being mounted on the upper end thereof. On the inner end of each slide is mounted a thread guide 25. In front of this guide 25 is mounted a pawl which is held out of engagement with an automatic stop by the thread. Should the thread break, the pawl will drop and engage the automatic stop. As the automatic stop forms no part of this invention it need not be fully described herein. From the guide 25 the thread passes upwardly to a guide 26, mounted on a rigid post 27 carried by the table. From this latter guide the thread passes inwardly to a guide 28 secured rotatably on the upper end of a rigid post carried by the table 4.

In the plate 5 near the periphery thereof is mounted a vertical shaft 29, on the lower end of which is secured a pinion 30 which meshes with a fixed annular rack 31, said rack being supported by lugs on the base plate 3 of the machine. On the upper end of the shaft 29 is mounted a crank 32, the outer end of which is connected by a link 33 to the slide 21. It is manifest that as the table 4 and plate 5 are rotated the gear 30 will be rotated on its axis and the connected slide 21 reciprocated in its slot by means of the crank 32 and the link 33. As shown in the drawings, when the slide 21 is at the limit of its outward movement the thread guide post 22 has been carried outwardly beyond the track 18 and the carrier mounted thereon, and the thread 17^a from the spool 17 is carried outwardly beyond the thread 20^a of the bobbin 20, and is in a position to be passed over the thread 20^a. When the slide 21 is at the inner limit of its movement, the thread guide post 22 is carried inwardly through the slots in the track 18, and the thread 17^a is in a position to be passed under the thread 20^a. As the slide 21 is moved outwardly, the post 22 may be engaged by a suitable escapement mechanism and passed around the carriers.

It is manifest that the thread guide 25 as it passes inwardly beyond the thread guide 26 serves as a take-up device to take up the slack in the thread 17^a due to the movement of the slide inwardly beyond the thread guide 26. This provides a positive and accurate take-up, and obviates the necessity of using springs or weights to take up the slack in the thread, which slack is due to the reciprocation of the thread guides and slides. The thread guide 26 is vertically adjustable in the slotted post 27 in order to vary the amount of take-up. This adjustment is made necessary whenever the diameter of the tubular fabric is changed. It is clear that when covering a core of large diameter there will be less slack to be taken up upon the inward movement of the thread guide post 22. By adjusting the thread guide 26 upwardly in the post 27 the amount of thread taken up upon the inward movement of the slide will be reduced; and by lowering the thread guide 26 the amount of slack taken up upon the inward movement of the slide 21 will be increased. It is obvious, therefore, that when braiding over a core of large diameter the thread guide 26 will be in an elevated position, whereas when braiding over a core of small diameter, the said thread guide will be in a lowered position.

The drawings illustrate only one-half of a braiding machine, but it will of course, be understood that the two halves are precisely alike. Only one slot is shown in the rotatable table, and only one slide and its operating mechanism is illustrated. There may be as many slides as desired, each slide, of course, operating in a radial slot.

What I claim is:

1. A braiding machine, comprising a rotatable table, a spool arranged on said table, a thread guide slide mounted on said table, means for radially reciprocating said slide, a thread guide for the spool mounted on the table, a thread guide carried by the slide, this latter guide moving inwardly beyond the coöperating guide carried by the table and serving to take up the slack in the thread during the inward movement of the slide.

2. A braiding machine, comprising a rotatable table, a spool arranged on said table, a thread guide slide mounted on said table, means for radially reciprocating said slide, a thread guide for the spool mounted on the table, a pair of thread guides carried by said slide, one of these latter guides moving inwardly beyond the guide carried by the table and serving to take up the slack in the thread during the inward movement of the slide.

3. A braiding machine, comprising a rotatable table, a spool arranged on said table, a thread guide slide mounted on said table, means for radially reciprocating said slide, a thread guide for the spool mounted on the table, a thread guide carried by said slide, this latter guide moving inwardly beyond the coöperating guide carried by the table and serving to take up the slack in the thread during the inward movement of the slide, and means for relatively adjusting

said thread guides to vary the amount of take-up.

4. A braiding machine, comprising a rotatable table, a spool arranged on said table, a thread guide slide mounted on said table, means for radially reciprocating said slide, a thread guide for the spool mounted on the table, a thread guide carried by the slide, this latter guide moving inwardly beyond the coöperating guide carried by the table and serving to take up the slack in the thread during the inward movement of the slide, and means for vertically adjusting one of said thread guides to vary the amount of the take-up.

5. A braiding machine, comprising a rotatable table, a spool arranged on said table, a thread guide slide mounted on said table, means for radially reciprocating said slide, a thread guide for the spool mounted on the table, a thread guide carried by said slide, this latter guide moving inwardly beyond the coöperating guide carried by the table and serving to take up the slack in the thread during the inward movement of the slide, and means for adjusting the thread guide mounted on the table to vary the amount of the take-up.

6. A braiding machine, comprising a rotatable table, a spool arranged on said table, a thread guide slide mounted on said table, means for radially reciprocating said slide, a thread guide for the spool mounted on the table, a thread guide carried by said slide, this latter guide moving inwardly beyond the coöperating guide carried by the table and serving to take up the slack in the thread during the inward movement of the slide, and means for vertically adjusting the thread guide carried by the table to vary the amount of the take-up.

7. A braiding machine, comprising a rotatable table, a spool arranged on said table, a thread guide slide mounted in a radial slot in said table, a stationary annular rack, a pinion connected to the rotatable table and operating in said rack, a crank carried by said pinion and a link connecting the end of said crank with the said slide, a thread guide for the spool mounted on the table, a thread guide carried by said slide, this latter guide moving inwardly beyond the coöperating guide carried by the table and serving to take up the slack in the thread during the inward movement of the slide, and means for relatively adjusting said thread guides to vary the amount of the take-up.

8. A braiding machine, comprising a rotatable table, a spool arranged on said table, a thread guide slide mounted in a radial slot in said table, a stationary annular rack, a pinion connected to the rotatable table and operating in said rack, a crank carried by said pinion and a link connecting the end of said crank with the said slide, a thread guide for the spool mounted on the table, a thread guide carried by said slide, this latter guide moving inwardly beyond the coöperating guide carried by the table and serving to take up the slack in the thread during the inward movement of the slide, and means for vertically adjusting the thread guide carried by the table to vary the amount of the take-up.

This specification signed this tenth day of July, A. D. 1917.

ORVILLE R. VAN VECHTEN.