May 14, 1935. V. J. DIEFENDERFER ET AL 2,001,486

WARP BEAMING MACHINE

Filed Feb. 26, 1934 3 Sheets-Sheet 1

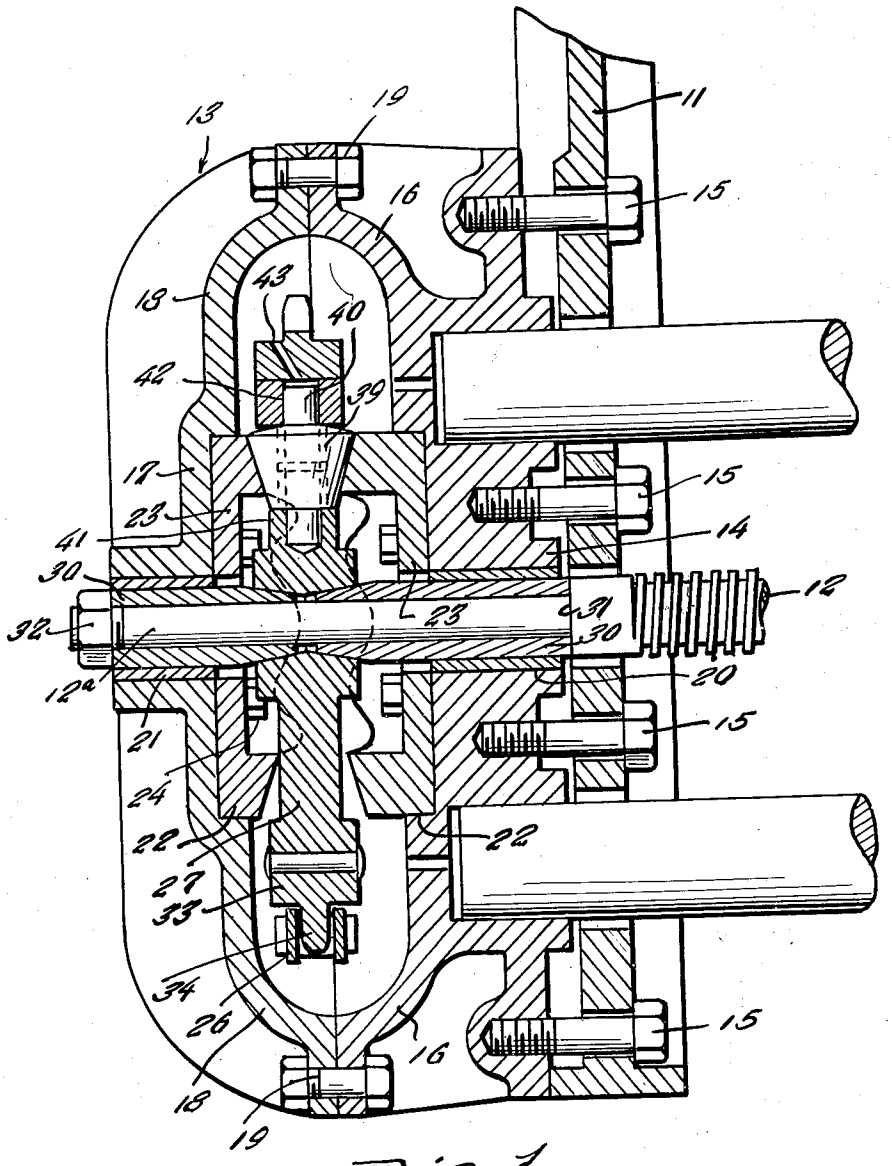

Fig. 1.

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Fig. 2.

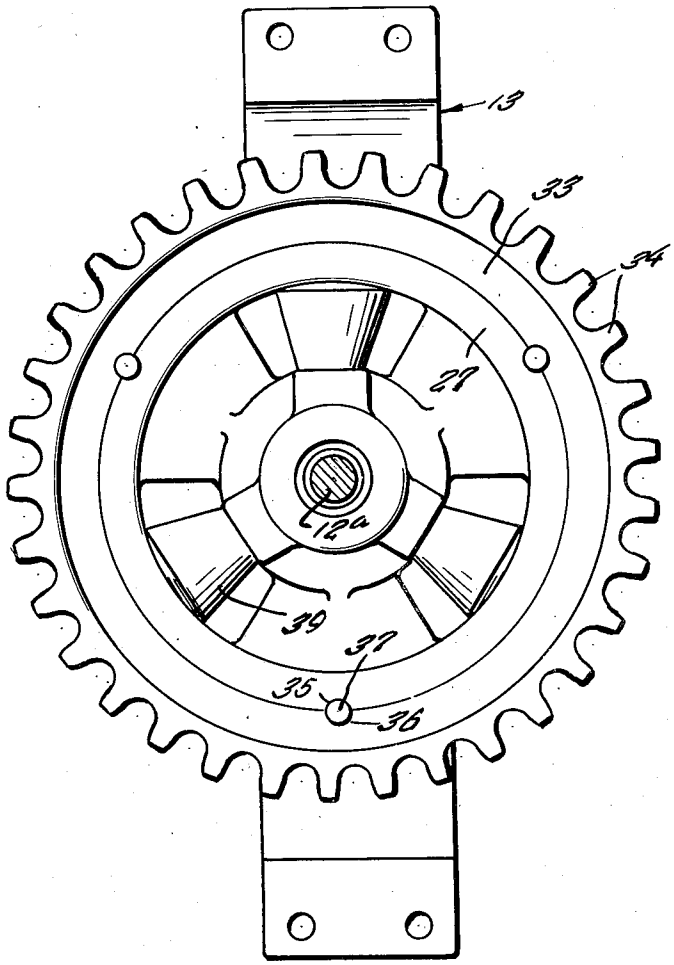
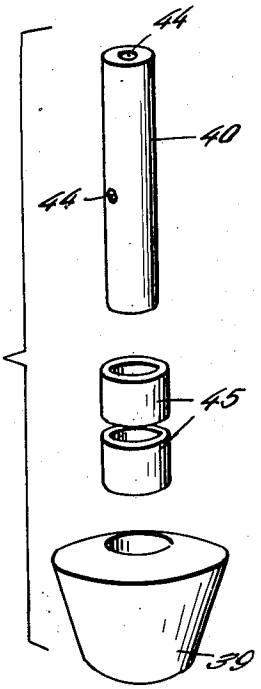


Fig. 7.



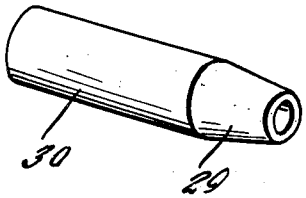


Fig. 8.

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Fig. 3.

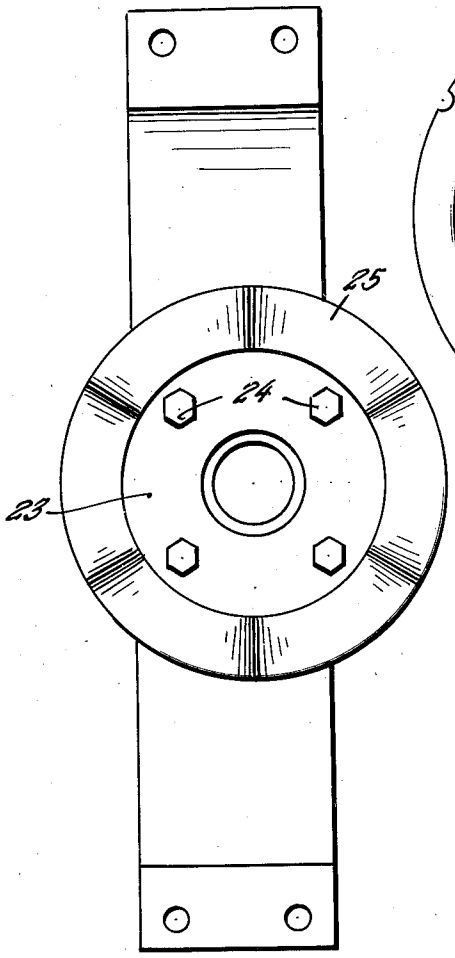
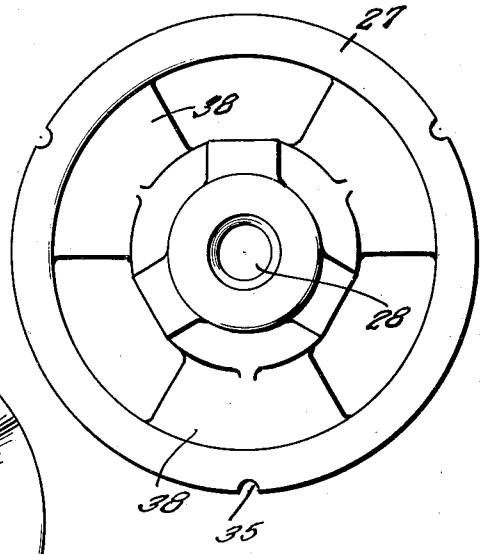


Fig. 4.



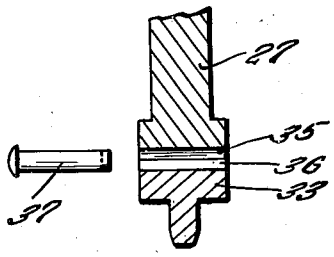
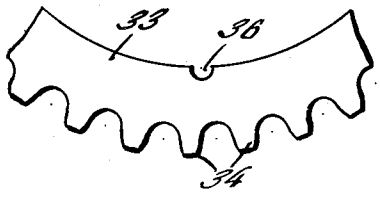


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE

2,001,486

WARP-BEAMING MACHINE

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Application February 26, 1934, Serial No. 713,038

2 Claims. (Cl. 28—37)

This invention relates to warp-beaming machines and has as its object the provision of means for ready application to the machine and adapted to impart a longitudinal reciprocatory motion to the beam of the machine during the winding of the threads thereon so that the threads will lay on top of each other at an angle instead of parallel to each other, to the end that warp streaks will be eliminated.

As is well known in weaving the present tendency is for the warp sections to leave streaks in the cloth due to not being evenly distributed on the beam. In accordance with the present invention an even distribution of the warp sections and the winding thereof on the beam will be accomplished so that the streaking above referred to will be lessened if not entirely obviated.

A further object of the invention is to eliminate the present practice of rolling stiff cardboard every few revolutions of the beam in order to keep the warp ends straight and allow a uniform tension on all ends in weaving as is now required in the beaming of finer yarn. The objection to the use of such cardboard is that the same increases the diameter of the warp beam for a given length warp to such a proportion that difficulty is encountered in the use of the warp in a loom.

The invention together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is an enlarged sectional view illustrating the application of the attachment to the warp beaming machine.

Figure 2 is a view partly in section and partly in elevation showing the manner in which the thrust wheel or gear is mounted in accordance with the present invention.

Figure 3 is an elevational view of a cam disk and a supporting plate therefor.

Figure 4 is a plan view of the body of the thrust wheel.

Figure 5 is a fragmentary sectional view through the rim of the thrust wheel, a retaining rivet being also shown separate from the wheel.

Figure 6 is an elevational view of a portion of the rim of the thrust wheel.

Figure 7 is an elevational view of a frustro-conical roller, pin and bearing sleeve therefor, and

Figure 8 is a perspective view of a bushing to be hereinafter more fully referred to.

Referring to the drawings by reference numerals it will be seen that 11 indicates generally a portion of the warp beaming machine while the reference numeral 12 indicates a portion of the beam core.

In accordance with the present invention the beam core 12 is mounted for free longitudinal play in its bearings and at one end is provided with a reduced portion 12*a*.

The attachment is indicated generally by the reference numeral 13 and in the present instance comprises a plate 14 that is secured to the frame of the warp beaming machine through the medium of bolts or other fastening elements 15. The plate is provided with upper and lower flanges 16, and confronting the plate 14 is a second plate 17 which is also provided with upper and lower flanges 18 which are secured to the flanges 16 of the plate 14 by a bolt and nut means 19.

Intermediate their ends the plates 14, 17 are provided with bearings 20, 21. These bearings accommodate the end 12*a* of the beam core as shown in Figure 1. On the inner or confronting faces thereof the plates 14, 15 are provided with centre recesses 22 in which are fitted cam plates 23 that are secured in fixed position through the medium of bolts or other fastening elements 24. On their opposing or confronting faces the cam plates 23, which plates are identical in construction, are provided with cam humps 25. The cam plates 23 are so angularly adjusted that the humps 25 on one plate confront the spaces on the other plate between the cam humps of the second plate, or in other words the cam humps are arranged in alternation.

Mounted on the end 12*a* of the beam core to rotate the beam core, and arranged between the cam equipped faces of the plates 23 is a sprocket or thrust wheel over which is trained a driving chain 26 for driving the sprocket and consequently the beam core 12.

The aforementioned thrust wheel or sprocket comprises a body 27 of spider form provided with a hub 28 the bore of which has its ends oppositely tapered for accommodating the tapered ends 29 of bushings 30 that snugly fit about the end 12*a* of the beam core and extend into the bearings 20, 21. The bushings 30 are held in position on the end 12*a* of the beam core between the shoulder 31 formed on the beam core and a nut 32 threaded on the free end of the part 12*a* of the beam core. A binding of the elements just referred to will be such that drive will be transmitted from the thrust wheel or sprocket to the beam core 12.

In addition to the body 27 just referred to the thrust wheel or sprocket includes a removable rim 33 that is provided with suitable sprocket

teeth 34. For securing the rim 33 on the body 27 of the wheel against relative rotative movement the body 27 on its periphery is provided at intervals with transverse notches 35 while the rim 33 on its inner edge is provided with notches 36 that mate with the notches 35 so as to accommodate rivets 37, which rivets have their ends upset so as to be positively secured in place and to hold the parts 27 and 33 of the sprocket wheel assembled.

Arranged in the spaces of the body 27 between the webs 38 of said body are substantially frustro-conical rollers 39, and for these rollers there are provided suitable pins or stub-shafts 40 the respective opposite ends of which are fitted into sockets 41 and apertures 42 provided in the body 27 of the sprocket and as will be clear from a study of Figure 1.

As also will be clear from a study of Figure 1 opposite each of the openings 42 the rim 33 of the sprocket is provided with an oil hole 43 whereby lubricant may be introduced into an oil passage 44 provided in the pin 40 and opening at one end and at one side of the pin.

The pin 40 for each roller 39 extends through spaced bushings or sleeves 45 arranged within the bore of the roller 39. The sleeves 45 are spaced above and below the lateral outlet for the oil passage 44 so as to provide between the confronting ends of the bushings or sleeves 45 an oil well to accommodate the lubricant.

From the above it will be apparent that as the thrust wheel or sprocket rotates the core beam 12 will also be caused to rotate or revolve. As the sprocket wheel rotates the rollers 39 successively engage the cam humps 25 on the plates 23 in alternation with the result that during rotative movement thereof the core beam 12 is also caused to reciprocate longitudinally.

It will be understood that as the yarn is being wound on to the beam of the machine the said beam as just explained will be rotating and reciprocating with the result that the threads will be caused to lay on the beam in such a manner that the threads will lay on top of each other at an angle instead of parallel to each other.

It will also be apparent that this invention will not interfere with the usual method of beam warping in textile establishments. As is well known present methods consist in first winding a certain number of threads on a reel to form a section, and when enough sections have been formed on the reel, these sections are then wound on to the beam. With this invention all the sections may be wound at the same time on to the beam, and with this invention in use there will be an even distribution of the yarn over the beam with the result that the tendency of these warp sections to leave streaks in the cloth will be eliminated as will also the practice, as hereinbefore mentioned, when finer yarn is used, of rolling stiff cardboard every few revolutions of the beam in order to keep the warped ends straight and allow a uniform tension on all ends in weaving.

Having thus described our invention, what we claim as new is:

1. In a warp-beaming machine, a beam core, a driving member mounted on one end of the beam core, said beam core being mounted for rotation and for longitudinal reciprocatory movement in its bearings, relatively fixed cam plates at opposite sides of the driving member, and roller means carried by the driving member on axes disposed at right angles to the beam core and engaging in alternations successive cams for causing the beam core to reciprocate a number of times during each rotation thereof.

2. In a warp-beaming machine, the combination with a driving member mounted on one end of the beam core, which latter is mounted for rotative movement and also for reciprocatory movement in its bearing, of relatively fixed cam plates at opposite sides of the driving member, said plates being provided on one face thereof with a circular series of cam humps, and the plates being angularly related so that the cam humps on one plate are out of alinement with the cam humps on the other of said plates, and tapered roller members carried by the driving member and engageable with the cam humps for causing the beam core to reciprocate a number of times during each rotation thereof.

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