

1,940,476

Filed July 3, 1931

2 Sheets-Sheet 1

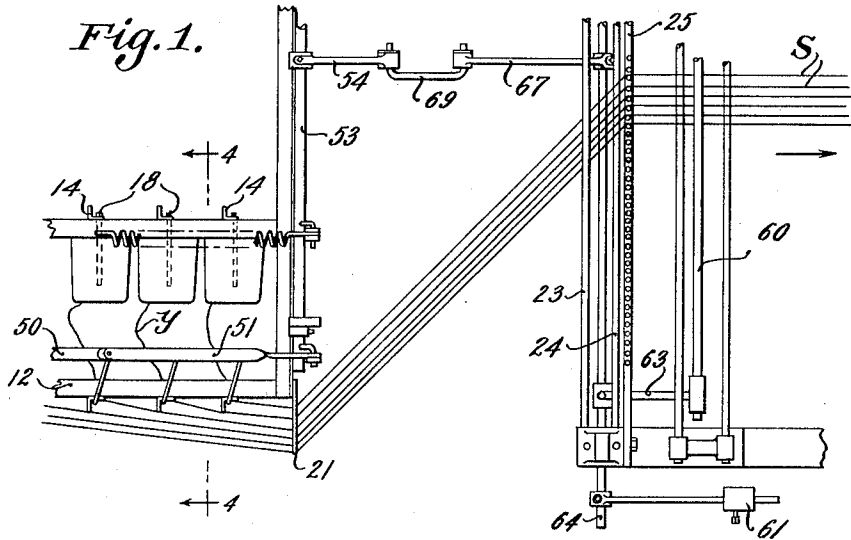
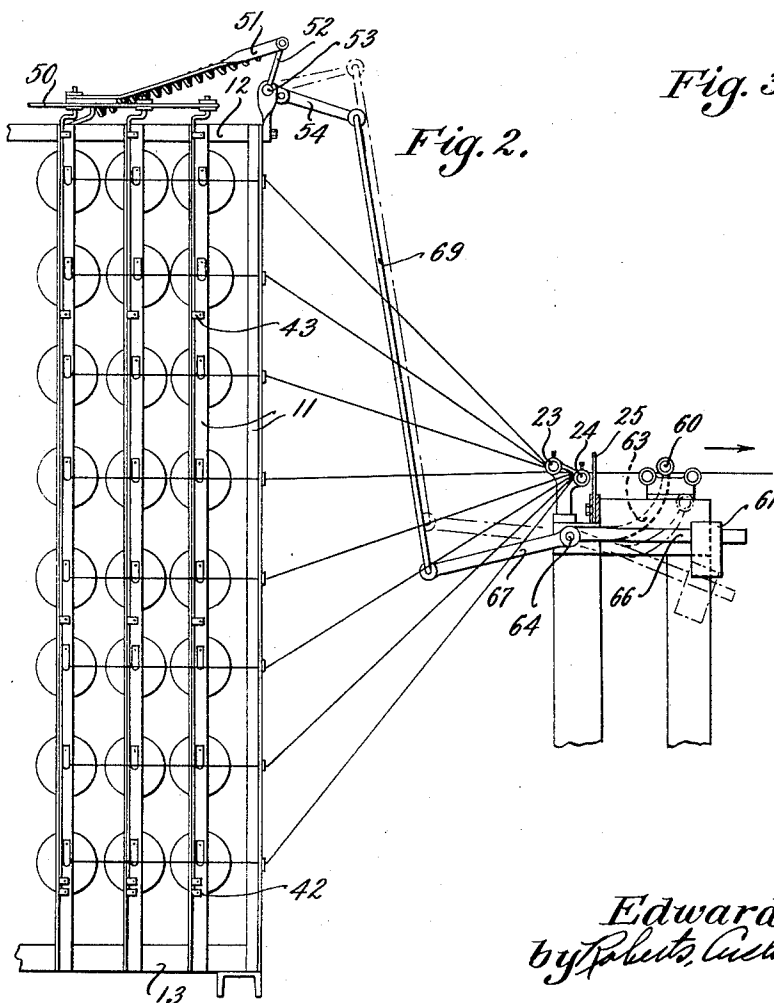
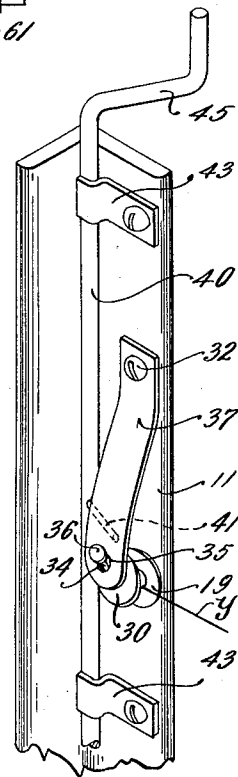


Fig. 3.



*Inventor,
Edward J. Abbott.
by Roberts, Cushman & Woodberry.
Attys.*

Dec. 19, 1933.

E. J. ABBOTT

1,940,476

TEXTILE MECHANISM

Filed July 3, 1931

2 Sheets-Sheet 2

Fig. 4.

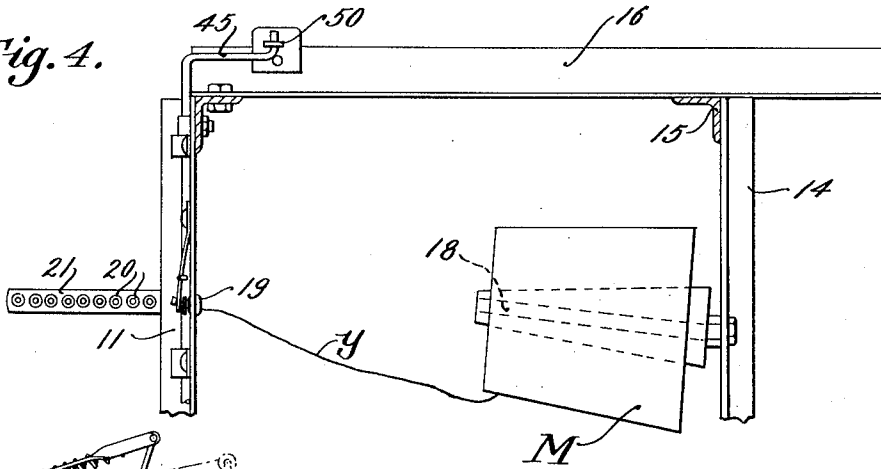
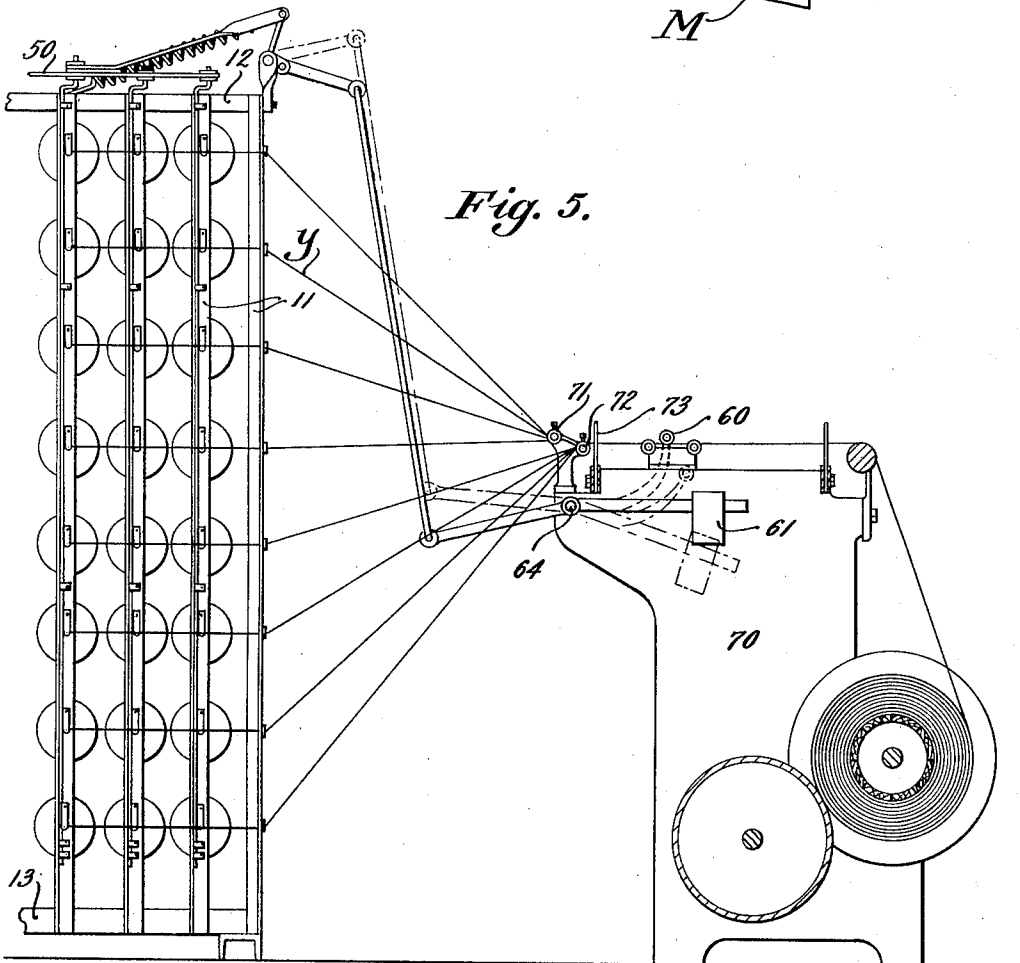


Fig. 5.



*Inventor,
Edward J. Abbott,
by Roberts Cushman & Woodbury
Attys.*

UNITED STATES PATENT OFFICE

1,940,476

TEXTILE MECHANISM

Edward J. Abbott, Wilton, N. H., assignor to
Abbott Machine Company, Wilton, N. H., a
corporation of New Hampshire

Application July 3, 1931. Serial No. 548,491

8 Claims. (Cl. 28—35)

This invention relates to creels adapted to hold a plurality of textile strand masses and to supply the strands therefrom to any suitable winding or strand-using device, such for example as a warper. It is an object of my invention to provide a creel especially adapted for high-speed unwinding (for example at speeds of 400 or 500 feet per minute or higher) wherein the strands which may be especially fine yarn, run freely through the creel under no substantial frictional drag other than is caused by unwinding from their supply masses, and wherein the many strands when stopped may automatically be clamped adjacent to their respective supply masses, thus to be held against entanglement. As is well known, the operator of a creel must often reach in among the strands to thread up the creel or repair a strand after breakage or exhaustion; the creel of the present invention is capable of securely holding all of the many strands of the creel to prevent any such slackness as would cause the strands to become tangled when accidentally brushed or touched by the operator.

My invention also aims to provide in its preferred form, automatic clamping means adapted so to operate as to avoid tensioning action, but on the contrary to clamp the strands of the creel only when they have ceased to run therefrom. This prevents the accumulation of twist in the strands in rear of their clamps, thus avoiding one of the causes of entanglement of strands in a creel.

Other objects of invention, and features of novelty and advantage will appear from this specification and its drawings wherein a specific embodiment of the invention is explained by way of example.

In the drawings:

Fig. 1 is a fragmentary side elevation of a machine of the present invention;

Fig. 2 is a plan view of the parts shown in Fig. 1;

Fig. 3 is a perspective view of one of the upright frame members of the creel of Fig. 1 showing the arrangement thereon of one of the yarn clamps and a controlling member therefor;

Fig. 4 is a vertical section of the line 4—4 of Fig. 1; and

Fig. 5 is a side elevation, like Fig. 2, but showing the detecting mechanism of the device mounted in a warper.

One side or half of the frame of the creel preferably includes outer vertical angle irons 11 connected at their tops and bottoms by longitudinal, horizontal frame members 12 and 13, and inner

vertical angle irons 14 connected by like longitudinal members, one of which is indicated at 15 in Fig. 4. These two sets of frame members are preferably tied together by transverse members such as indicated at 16. These transverse members 16 may conveniently extend across and similarly connect corresponding frame members at the opposite side of the creel, leaving an intervening space or runway for the operator between the two halves or sides. Since the creel may be symmetrical, only one of these halves or sides is illustrated.

The inner vertical angle irons 14 conveniently constitute supports for vertically spaced pins, pegs or spindles 18 adapted to receive unwinding supply strand packages or masses M. From each such mass the unwinding strand Y runs to a porcelain eye 19 extending through the corresponding outer angle iron 11. After passing through this eye 19, the strand runs to the front end of the creel, passing through a guide eye 20 in one or more outwardly projecting brackets 21. At the front of the creel, all of the ends (including usually those from both sides of the creel) are collected into a sheet or web S by any suitable guiding means, such as a pair of rolls 23, 24 and a suitable reed 25; this sheet or web runs onto a winding beam or other strand-using device which is not illustrated in Figs. 1, 2, 3 and 4.

Means is provided for clamping each of the many strands in the creel at a point adjacent to its supply mass. Preferably such clamping means takes the form of individual clamps each disposed at the point at which the strand just leaving its supply mass joins the group of strands leading to the front end of the creel. In the preferred form of the invention, such a clamp utilizes as a stationary or backing member the above-described porcelain eye 19 (Fig. 3) through which the strand first passes. A movable member adapted to clamp the strand against this eye 19 preferably consists of a circular piece of metal 30 (Fig. 3) of about the same diameter as the eye 19. To force the member 30 against the strand extending through the eye, a light spring 37 fastened to the upright 11 at 32 is arranged to bear against the rear face of this member 30. The member 30 may be supported by this spring by means of any suitable connection, preferably a universal tilting connection which insures that the member 30 will seat with certainty on the strand which extends through the eye 19. As illustrated, the member 30 is connected to the spring 31 by a pin 34 fastened to the member

30, passing loosely through a hole 35 in the spring, and headed at 36.

The spring 37 tends to urge the member 30 toward eye 19 so as to clamp the strand; during the progress of unwinding the spring 31 and attached member 30 are held away from the eye 19, for instance in the position of Fig. 3, to permit the strand to pass freely through the eye without any clamping action.

The controlling mechanism for simultaneously operating the clamps includes vertically disposed rotatable rods 40, (Figs. 1 and 3) each having a pin 41 projecting therefrom in position to engage the inner surface of the spring 37, and adapted to move the spring and member 30 away from the eye 19. As shown in Figs. 1, 2 and 3, each of the outer vertical angle irons 11 carries one of these rotatable rods, the rod in each case resting on a suitable step or supporting bracket 42 which projects from the lower part of the angle iron, and being rotatably held in the corner of the two flanges of the iron by suitable vertically spaced clips 43. The numerous rotatable rods 40 are preferably bent at their tops to form crank arms 45 which are engaged by reciprocating rods 50 extending along the top of the creel. These rods, which may be suitably articulated if necessary, are connected by a link 51, arm 52 and shaft 53 to an arm 54, so that movement of this arm 54 in one direction causes all of the rotatable rods 40 simultaneously to remove the clamping members 30 from contact with the guide eyes 19, while movement of the arm 54 in the opposite direction has the effect of applying all of the clamps of the creel.

For automatically actuating the clamps in this manner, the device preferably includes controlling means which is responsive to the movement of the strands from these unwinding supply masses. Such means, which is most conveniently in the form of a detector, preferably operates on the sheet of yarn leading out from the frame of the creel at any distance therefrom. While many forms of mechanism competent to control the clamps in accordance with the movement of the strands from their supply masses may be employed, the preferred form utilized in the illustrated machine comprises a detector arranged to respond to the tension or slack in the sheet of yarn. Assuming the sheet of yarn to be stopped, the sheet will become less taut; the detector responds to this condition and causes actuation of the various clamps. When the sheet of yarn begins again to move, the detector responding to the resumed tautness of the sheet will cause the clamps to be removed from the strands; thus the strands in initially moving are not pulled between the clamping surfaces, but run freely through their respective eyes 19 with no applied tension.

As illustrated, the detecting mechanism, utilized in conjunction with the clamping means, comprises a bar 60 resting on the sheet of yarn and urged against the sheet by any suitable means such as its own weight, aided if desired by a weight 61. The opposite ends of the rod 60 may be held in arms 63 which are fast on a suitably supported rotatable shaft 64; and the weight 61 may be adjustably held on another arm 66 also fast to this shaft 64. The shaft 64 can be connected to the crank arm 54 of the clamp controlling mechanism, for instance by a crank 67 fast on the shaft 64 and a link 69

which extends between this crank 67 and crank 54.

The operation of the device will now be readily apparent. When the sheet S stops, the slackness or absence of sufficient tension therein will allow bar 60 to drop, thus actuating the above described connections to apply all of the clamps of the creel. The rod 60 when it rises in response to the tautness of the sheet which begins to move, operates the same connections to release all of the clamps.

In this way it is assured that while the strands are running from the creel the clamps will not interfere with or tension the strands, but during periods of stoppage will hold the strands securely in the desired manner.

The device described above need have no mechanical connection to whatever winding or strand-using device takes the strands from the creel. In some cases convenience of arrangement may render it desirable to position the detecting or other mechanism which responds to the strand travel close to or in such winding or strand-using device. For example, in using this creel with a warper which includes rolls, reeds or the like for bringing the many strands into a sheet at the warper, the detecting mechanism may be mounted directly on the warper in position there to act on the sheet. For example, as shown in Fig. 5 wherein a warper 70 is provided with guide rolls 71 and 72 and a reed 73 which acts to arrange the strands in a sheet directly at the warper, the bar 60 may be arranged to act on the thus arranged sheet as it passes over the warper, so that the rolls 71 and 72, and reed 73 need not be duplicated in the creel. In this case, the shaft 64 which carries the bar 60 may advantageously be rotatably mounted at the top of the warper on the side nearest the creel frame, as shown. With this arrangement, the detecting mechanism need have no connection to the starting, stopping, controlling or driving mechanism of the warper, but operates as described above in response to the condition of the sheet of yarn.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A creel having therein means for supporting a plurality of unwinding supply strand masses, and means for clamping the several strands which extend therefrom at points near their respective supply masses, in combination with means acting on a group of the strands extending from their masses for detecting stoppage of travel of the group of strands from the creel and means actuated by said detecting means for actuating said clamping means.

2. A textile mechanism comprising means for supporting a plurality of unwinding supply strand masses, means for guiding the strands of said masses to form a sheet of yarn, a detector responsive to slack or deficiency of tension in said sheet of yarn, strand-clamping devices adjacent to the several supply masses of the creel, and means for simultaneously actuating said clamping devices upon the detection by said detector of slack or deficiency of tension in said sheet of yarn.

3. A textile mechanism comprising means for supporting a plurality of unwinding supply strand masses, and guiding means for the strands leading therefrom, a detector operating simul-

- taneously with respect to a group of said strands to detect variation in tension in said group of strands as a whole, strand-clamping devices adjacent to the several supply strand masses, and means for causing said clamping devices to become operative upon detection by said detector of diminution of tension in said group of strands.
4. A textile mechanism comprising means for supporting a plurality of unwinding supply strand masses, and guiding means for the strands leading therefrom, a detector operating simultaneously with respect to a group of said strands to detect variation in tension in said group of strands as a whole, normally inactive mechanism for resisting unwinding of the strands from their supplies, and means for causing said mechanism to become operative in response to detection by said detector of diminution of tension in said group of strands.
5. A creel having therein means for supporting a plurality of unwinding supply strand masses, and means for clamping near their respective supply masses the several strands which extend therefrom, in combination with means acting on a group of the strands extending from their masses for detecting the starting of travel of the group of strands from the creel and means actuated by said detecting means for rendering said clamping means ineffective.
6. A textile mechanism comprising means for supporting a plurality of unwinding supply strand masses, means for guiding the strands of said masses to form a sheet of yarn, a detector responsive to tension in the sheet of yarn, strand-clamping devices adjacent to the several supply masses of the creel, and means for simultaneously rendering said clamping devices ineffective upon the detection by said detector of working tension in said sheet of yarn.
7. A textile mechanism comprising means for supporting a plurality of unwinding supply strand masses, and guiding means for the strands leading therefrom, a detector operating simultaneously with respect to a group of said strands to detect variation in tension in said group of strands as a whole, strand-clamping devices adjacent to the several supply strand masses, and means controlled by said detector for rendering said clamping devices ineffective.
8. A textile mechanism comprising means for supporting a plurality of unwinding supply strand masses, and guiding means for the strands leading therefrom, a detector operating simultaneously with respect to a group of said strands to detect variation in tension in said group of strands as a whole, mechanism acting to resist unwinding of the strands from their supplies, and means controlled by said detector for rendering said mechanism ineffective.
- EDWARD J. ABBOTT.

35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150