March 28, 1933. J. GOCH 1,903,040

BEAM AND MOUNTING FRAME FOR AXMINSTER LOOMS

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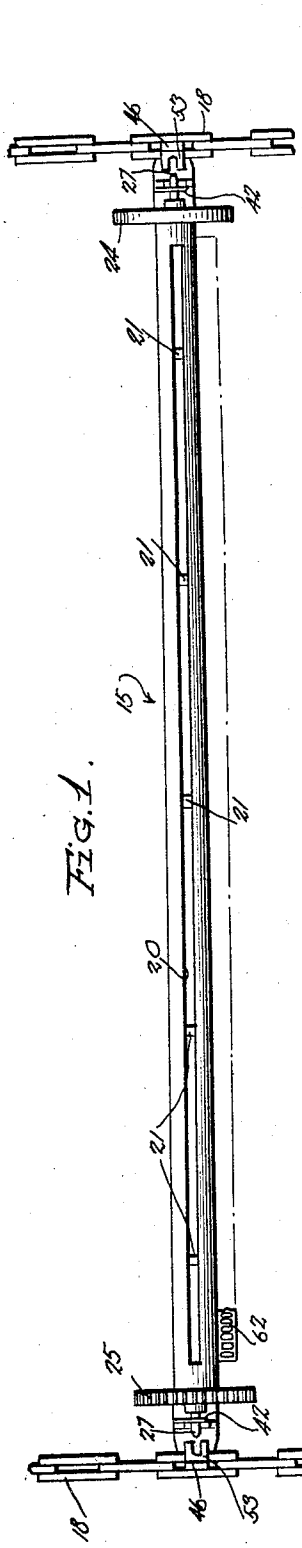


Fig. 1.

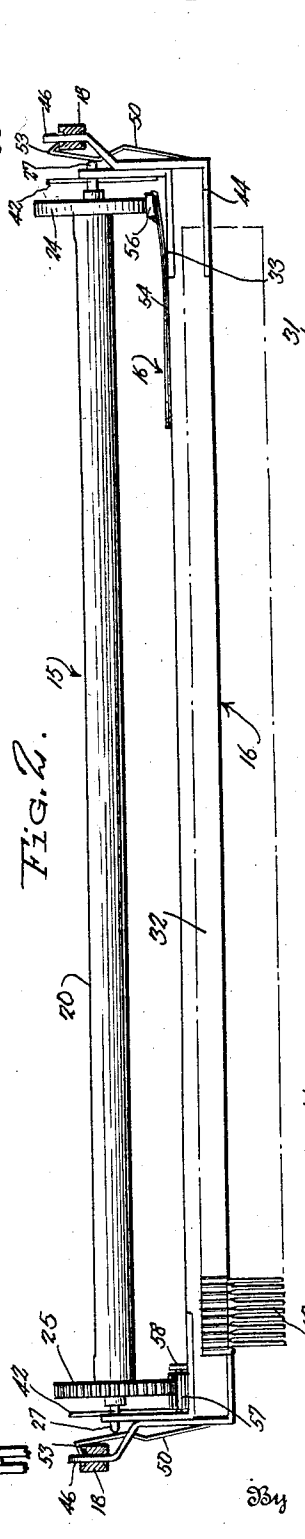


Fig. 2.

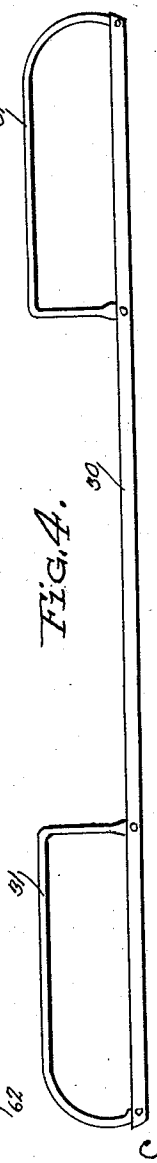


Fig. 4.

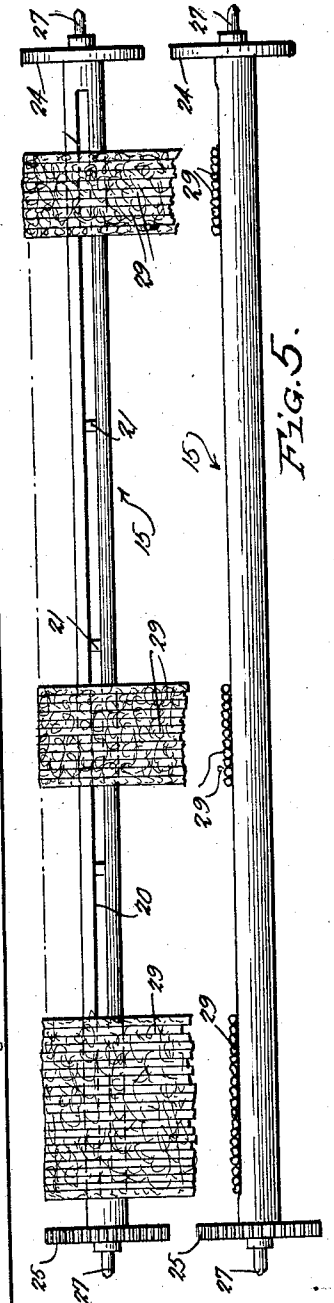


Fig. 3.

Fig. 5.

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BEAM AND MOUNTING FRAME FOR AXMINSTER LOOMS

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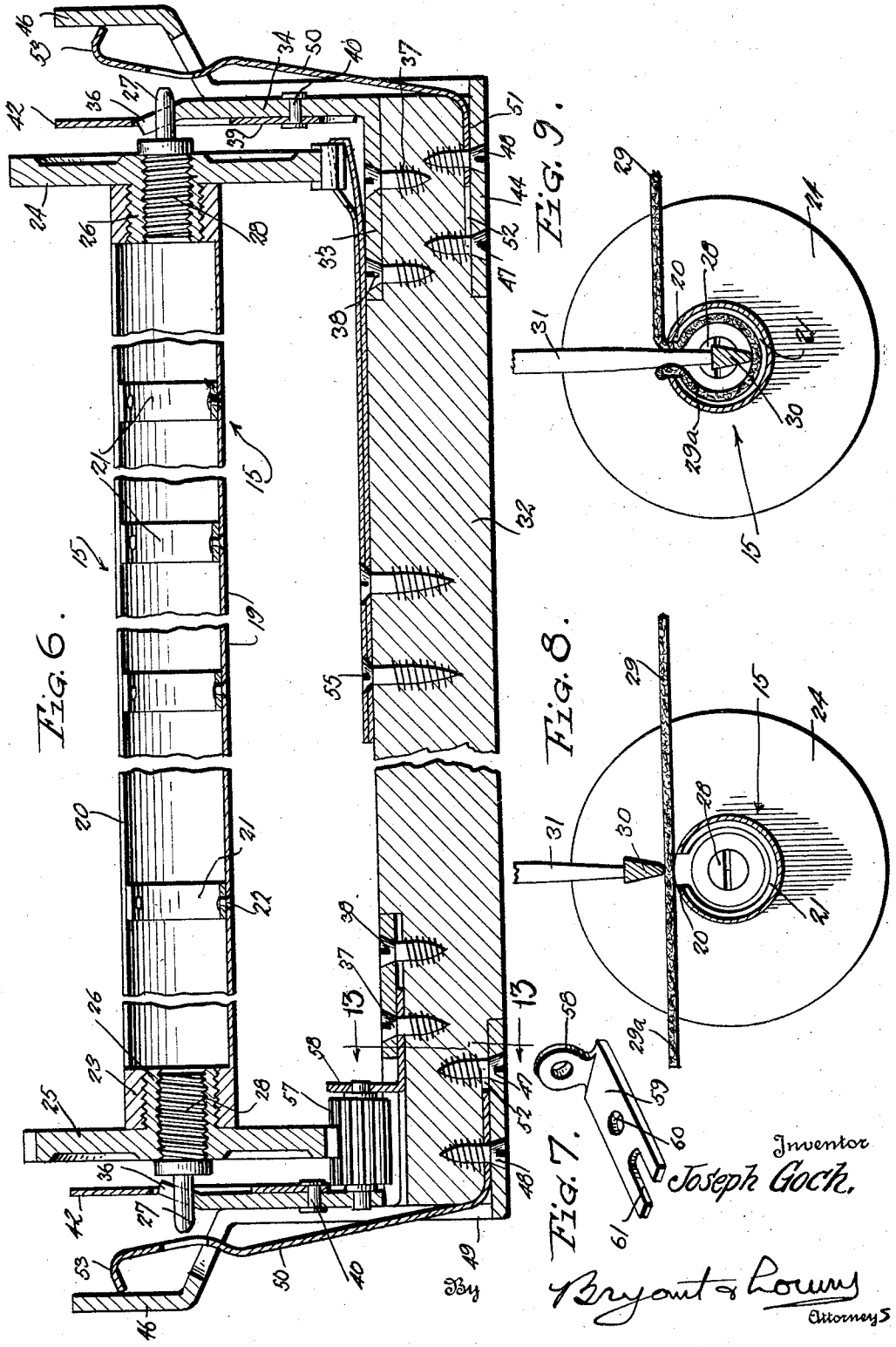


Fig. 6.

Fig. 9.

Fig. 8.

Fig. 7.

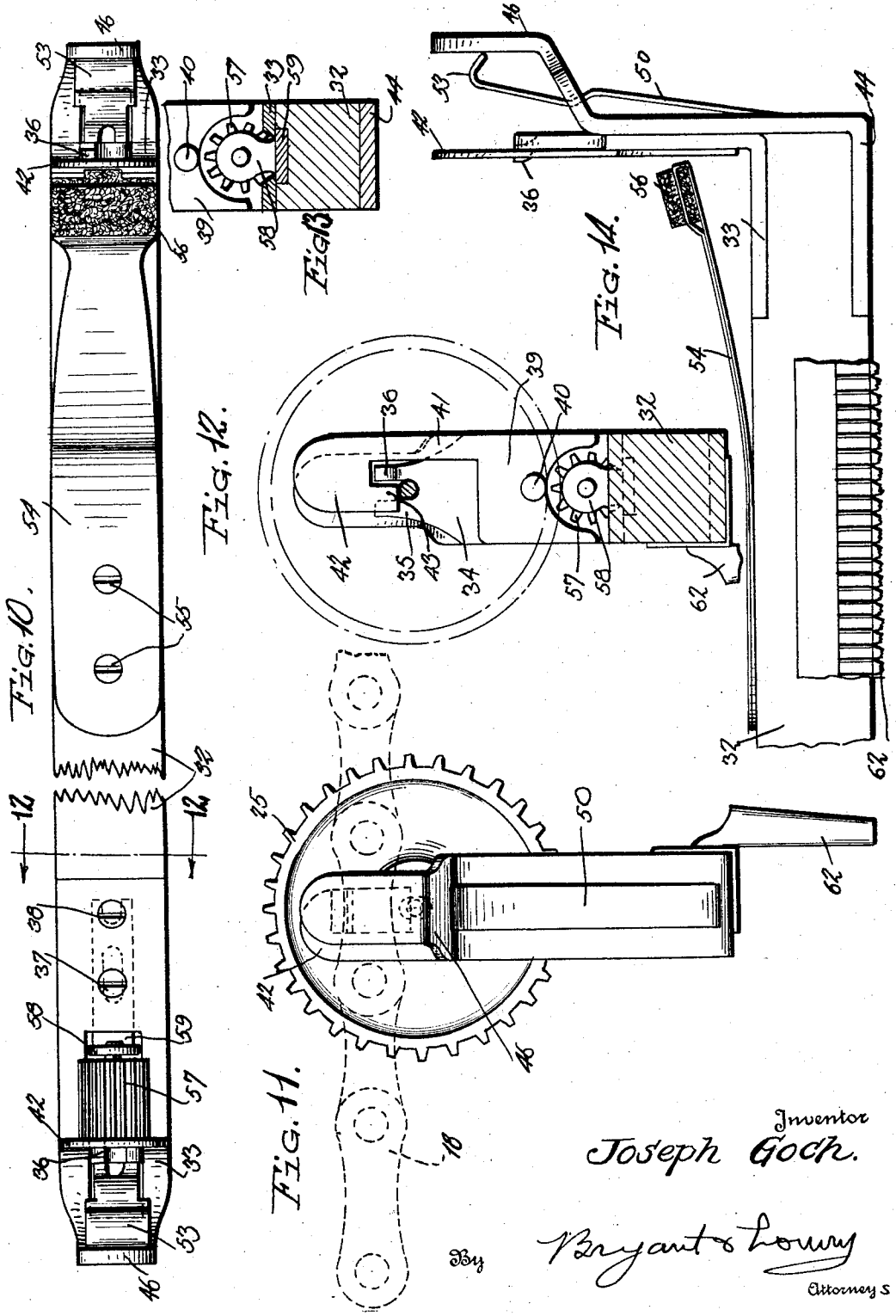
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BEAM AND MOUNTING FRAME FOR AXMINSTER LOOMS

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1,903,040

UNITED STATES PATENT OFFICE

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BEAM AND MOUNTING FRAME FOR AXMINSTER LOOMS

Application filed April 22, 1932. Serial No. 606,996.

This invention relates to certain new and useful improvements in a beam and mounting frame for Axminster looms.

The primary object of the invention is to improve the yarn spool or beam and the mounting frame therefor by constructing the beam in a manner whereby practically all yarn wound thereon may be utilized in the weaving operation and eliminating the loss of comparatively long ends of yarn that has heretofore been utilized in effecting the winding of the yarn on the beam.

It has heretofore been customary to employ spring devices engageable with end flanges on the beam to provide proper tension on the yarn when being unwound from the beam, but it has been found that it is extremely difficult to obtain proper tension with the result that if frictional contact between the spring devices and the beam flanges is excessive, the yarns will break and interfere with the weaving operation and a further object of this invention is to associate a single spring device with one end of the beam and to provide a freely rotatable gear and pinion combination at the other end of the beam with a single spring providing proper tension and insuring even and steady unwinding movement of the beam.

A still further object of the invention is to improve the mounting for the spring catch that is engageable with a link of the carrier chain whereby the spring catch may be readily removed from the frame without disturbing the beam bearing and carrier chain engaging arm in the event of breakage of the spring catch or for other purposes.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings:—

Figure 1 is a top plan view of the assembled beam and carrying frame with the latter attached to the carrier chain of an Axminster machine;

Figure 2 is a side elevational view;

Figure 3 is a top plan view of the beam removed from the frame and showing the yarn ends disposed over the longitudinal slot of the tubular beam in position to be inserted in the beam for attaching the ends of the yarn thereto;

Figure 4 is a side elevational view of the rod frame for inserting or pressing the ends of the yarn into the tubular beam;

Figure 5 is a side elevational view of the beam showing the yarn ends extending from the beam slot;

Figure 6 is a fragmentary vertical longitudinal sectional view of the assembled beam and carrying frame, showing the slotted tubular beam and the details of each end bearing including a single spring device and the gear and pinion combination;

Figure 7 is a perspective view of the shiftable bracket bearing for one end of the pinion;

Figure 8 is a cross-sectional view of the beam showing the yarn ends extending over the longitudinal slot of the beam with the frame rod in position to insert the yarn ends into the beam;

Figure 9 is a cross-sectional view, similar to Figure 8 showing the frame rod moved into the tubular beam through the slots thereof and with the ends of the yarn moved into the tubular beam;

Figure 10 is a fragmentary top plan view of the beam carrying frame;

Figure 11 is an end elevational view of the assembled beam and frame with the carrier chain illustrated by dotted lines;

Figure 12 is a cross-sectional view taken on line 12—12 of Figure 10 with the retaining clamp for the bearing end of the beam illustrated by dotted lines in open position;

Figure 13 is a cross-sectional view taken on line 13—13 of Figure 6; and

Figure 14 is a fragmentary side elevational view of the end of the beam carrying frame provided with the beam engaging spring device.

Referring more in detail to the accompanying drawings, there is illustrated a beam and mounting frame for use in Axminster machines, the beam 15 in the form of a yarn

spool being removably supported in a mounting frame 16 that carries end bearings for the beam with the carrier chains 18 of an Axminster machine being detachably engageable with parts of the bearings.

The beam 15 comprises a tubular metal cylinder 19 that is longitudinally slotted as at 20 along one side thereof, the tubular cylinder being reinforced by internal split rings or bands 21 anchored therein in any preferred manner as indicated by the reference numeral 22, the ends of the split reinforcing bands terminating laterally of the slot 20 in the tubular cylinder 19. The wall of the tubular cylinder 19 at each end thereof is enlarged inwardly as at 23 and internally threaded for the reception in one end of a friction flange disk 24 while the other end receives a gear wheel 25. The friction disk 24 and gear wheel 25, each carry an axial offset tubular bearing 26 both internally and externally threaded for threaded reception in the respective ends of the tubular cylinder 19, the bearing pin 27 for each end of the beam carrying a screw stud 28 threaded into the bearing 26. With a construction of this character, it is possible to replace the friction disk 24 or gear wheel 25 as well as the bearing pins 27 should any of these parts become worn or damaged.

The manner of securing the ends of the yarn strands to the beam 15 is illustrated in Figures 3 to 5, 8 and 9, the yarn strands 29 being positioned over the longitudinal slot 20 in the beam 15 with the free ends of the yarn strands projecting only a slight distance beyond the beam as illustrated. The device for inserting the ends of the yarn strands into the interior of the tubular cylinder 19 of the beam is shown in Figure 4 as comprising a rod 30 of substantially the same length as the beam slot 20 with a hand grip 31 at each end thereof, the rod 30 is positioned with respect to the yarn ends and beam as illustrated in Figure 8 and is then moved downwardly through the slot 20 in the beam as illustrated in Figure 9, carrying therewith the yarn ends 29*a* which are substantially entirely confined within the tubular beam. The yarn pressure 30 is then removed from the tubular beam and the latter manipulated in an appropriate manner for the winding of the yarn strands 29 thereon. It is to be noted that the presence of relatively long waste ends of the yarn strands are eliminated resulting in a great saving of yarn material as a minimum length of the yarn end is required for attaching the same to the beam.

The beam carrying the yarn wound thereon is then placed in the mounting frame carried by the Axminster machine, the mounting frame 16 including a bar 32 having opposite ends at the upper sides thereof rabbetted for the reception of the base portion 33 of a bearing bracket that carries an upstanding leg 34 that is bifurcated at its upper end to provide side lugs 35 and 36 and an intermediate bearing for the adjacent bearing pin 27 of the beam 15. The base portion 33 of the beam bearing bracket is anchored to the bar 32 by a pair of spaced screws 37 and 38. The bearing pins 27 are retained in the bearings at the upper ends of the legs 34 of the angle bracket by means of a latch 39 pivotally mounted as at 40 upon the bracket legs 34, the latch plate 39 including a side edge leg 41 laterally offset as at 42 at its upper end and carrying a depending lug 43 that overlies the bearing between the spaced lugs 35 and 36 to be engaged with the associated bearing pin 27, the lug 36 being laterally offset as illustrated in Figure 6 to be engaged by the lug 43 upon the latch plate to retain the latter in its closed position, the latch plate being of a resilient character so that the upper end thereof may be properly shifted to displace the co-acting lugs 36 and 43 to permit pivotal movement of the latch plate upon the pin 40 for assuming the dotted line position shown in Figure 12.

The lower face of each end of the bar 32 is mitered for the reception of the base portion 44 of an angle arm that has an end portion engaged with the leg 34 of the bracket bearing and is offset at its upper end as at 46 to receive a link of the carrier chain 18. The base portion of the angle arm is secured to the bar 32 by a pair of spaced screws 47 and 48.

The end portion of the angle arm is longitudinally slotted as at 49 for the passage of the leg of the spring catch 50 that has a lower angle end 51 disposed between the bar 32 and base portion 44 of the angle arm, the lower angle end 51 of the spring catch having an opening therein through which the screw 48 passes with the terminal end thereof bifurcated as at 52 to straddle the shank of the screw 47. The other end of the spring catch is provided with a hook 53 to overlie a side of a chain link engaged with the offset portion 46 of the angle arm, the spring catch extending upwardly through the slot 49 in the angle arm as shown in detail in Figure 6. To remove the spring catch for replacement or other purposes, it is only necessary to remove the single screw 48 so that the remaining portion of the bearing for the beam is undisturbed.

In lieu of the usual double use of spring tensioning devices for opposite ends of the beam 15, a single spring device is employed and is associated with the friction disk 24, the spring device comprising a spring arm 54 anchored as at 55 to the upper side of the bar 32 and carrying a friction shoe 56 positioned to be engaged by the peripheral edge of the friction disk 24 as shown in Figure 6. It has been found that where two spring devices are employed, one for each end of the

beam, that it is practically impossible to obtain like frictional engagement with each end of the beam so that the tension on the yarn strands is varied, resulting in breakage thereof.

The end of the beam 15 carrying the gear wheel 25 has the gear wheel engageable with a pinion 57 supported by the adjacent leg portion 34 of the bracket bearing and a removable angle bracket 58 shown in detail in Figure 7 as having a base portion 59 mounted on the bar 32 beneath the base portion 33 of the adjacent angle plate. The base portion 59 of the angle bracket 58 is provided with an opening 60 through which the screw 37 passes while the free end of the base portion 59 is slotted as at 61 to straddle the screw 38. To remove the pinion 57, it is only necessary to remove the screw 37 and slide the angle bracket 58 longitudinally of the bar 32 as will at once be apparent from an inspection of Figure 6. The gear and pinion combination 25 and 57 promote even rotation of the beam 15 and relieve the yarn strands of undue pulls and strains during unwinding movement of the beam.

From the above detailed description of the invention, it is believed that the construction and operation thereof will at once be apparent, it being noted that the foregoing improvements in the beam and mounting frame are to be embodied in devices of a character to which they relate, only the novel features of the invention being herein illustrated with the exception of the carrier chain 18 and the tubular eyes or quills 62 fragmentarily illustrated in several of the figures.

While there is herein shown and described the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:—

1. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are adapted to be moved through the slot and confined within the tubular beam by frictional engagement with the walls thereof.

2. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam by frictional engagement with the walls thereof, and split reinforcing straps secured to the inner side of the beam and terminating at the edge of the slot.

3. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam, the tubular beam at each end being of increased cross-section and internally threaded and a friction disk and gear wheel removably mounted in the ends of the beam, the disk and wheel each including a tubular offset internally and externally threaded bearing receivable in the beam ends and a bearing pin having a screw stud removably received in the bearing.

4. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam, and split reinforcing straps secured to the inner side of the beam and terminating at the edge of the slot, the tubular beam at each end being of increased cross-section and internally threaded and a friction disk and gear wheel removably mounted in the ends of the beam, the disk and wheel each including a tubular offset internally and externally threaded bearing receivable in the beam ends and a bearing pin having a screw stud removably received in the bearing.

5. In a beam and mounting frame for Axminster machines, a mounting frame including a bar, bracket bearings on the bar for the support of a beam, angle arms on the bar for attachment to a carrier chain, a pair of screws for attaching each angle arm to the bar and a spring catch for the carrier chain having an angle end with an opening for the passage of one of said screws and bifurcated to straddle the other screw whereby the spring catch may be removed by removing one screw and without disturbing the beam mounting bearings.

6. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tublar beam by frictional engagement with the walls thereof, split reinforcing straps secured to the inner side of the beam and terminating at the edge of the slot, and the beam mounting frame including a bar and a bearing at each end of the bar for the beam.

7. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam, the tubular beam at each end being of increased cross-section and internally threaded and a friction disk and gear wheel removably mounted in the ends of the beam, the disk and wheel each including a tubular offset internally and externally threaded bearing receivable in the beam ends and a bearing pin having a screw stud removably received in the bearing, and the beam mounting frame including a bar and a bearing at each end of the bar for the beam.

8. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam, split reinforcing straps secured to the inner side of the beam and terminating at the edge of the slot, the tubular beam at each end being of increased cross-section and internally threaded and a friction disk and gear wheel removably mounted in the ends of the beam, the disk and wheel each including a tubular offset internally and externally threaded bearing receivable in the beam ends and a bearing pin having a screw stud removably received in the bearing, and the beam mounting frame including a bar and a bearing at each end of the bar for the beam.

9. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam, the tubular beam at each end being of increased cross-section and laterally threaded and a friction disk and gear wheel removably mounted in the ends of the beam, the disk and wheel each including a tubular offset internally and externally threaded bearing receivable in the beam ends and a bearing pin having a screw stud removably received in the bearing, and the beam mounting frame including a bar, a bearing at each end of the bar for the beam, a spring device on the bar engageable with the friction disk and a pinion on the bar engageable with the gear wheel for the even distribution of retarding friction to the beam and for the even rotation of the beam.

10. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam, split reinforcing straps secured to the inner side of the beam and terminating at the edge of the slot, the tubular beam at each end being of increased cross-section and internally threaded and a friction disk and gear wheel removably mounted in the ends of the beam, the disk and wheel each including a tubular offset internally and externally threaded bearing receivable in the beam ends and a bearing pin having a screw stud removably received in the bearing, and the beam mounting frame including a bar, a bearing at each end of the bar for the beam, a spring device on the bar engageable with the friction disk and a pinion on the bar engageable with the gear wheel for the even distribution of retarding friction to the beam and for the even rotation of the beam.

11. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam, the tubular beam at each end being of increased cross-section and laterally threaded and a friction disk and gear wheel removably mounted in the ends of the beam, the disk and wheel each including a tubular offset internally and externally threaded bearing receivable in the beam ends and a bearing pin having a screw stud removably received in the bearing, and the beam mounting frame including a bar, a bearing at each end of the bar for the beam, a spring device on the bar engageable with the friction disk and a pinion on the bar engageable with the gear wheel for the even distribution of retarding friction to the beam and for the even rotation of the beam, one end of the pinion having a support in the adjacent beam bearing and a slidably mounted bracket for supporting the other end of the pinion.

12. In a beam and mounting frame for Axminster machines, a beam of tubular formation longitudinally slotted along one side whereby the ends of yarn to be wound on the beam are confined within the tubular beam, split reinforcing straps secured to the inner side of the beam and terminating at the edge of the slot, the tubular beam at each end being of increased cross-section and internally threaded and a friction disk and gear wheel removably mounted in the ends of the beam, the disk and wheel each including a tubular offset internally and externally threaded bearing receivable in the beam ends and a bearing, the beam mounting frame including a bar, a bearing at each end of the bar for the beam, a spring device on the bar engageable with the friction disk and a pinion on the bar engageable with the gear wheel for the even distribution of retarding friction to the beam and for the even rotation of the beam, one end of the pinion having a support in the adjacent beam bearing and a slidably mounted bracket for supporting the other end of the pinion.

13. Beam mounting means for Axminster machines including a bar, a bearing at each end thereof, a beam mounted in the bearings and having a friction disk at one end and a gear wheel at its other end, a spring device on one end of the bar for contact with the friction disk and a pinion on the other end of the bar for meshing engagement with the gear wheel whereby constant retarding tension is imparted to the beam and even rotation thereof promoted.

In testimony whereof I affix my signature.

JOSEPH GOCH.