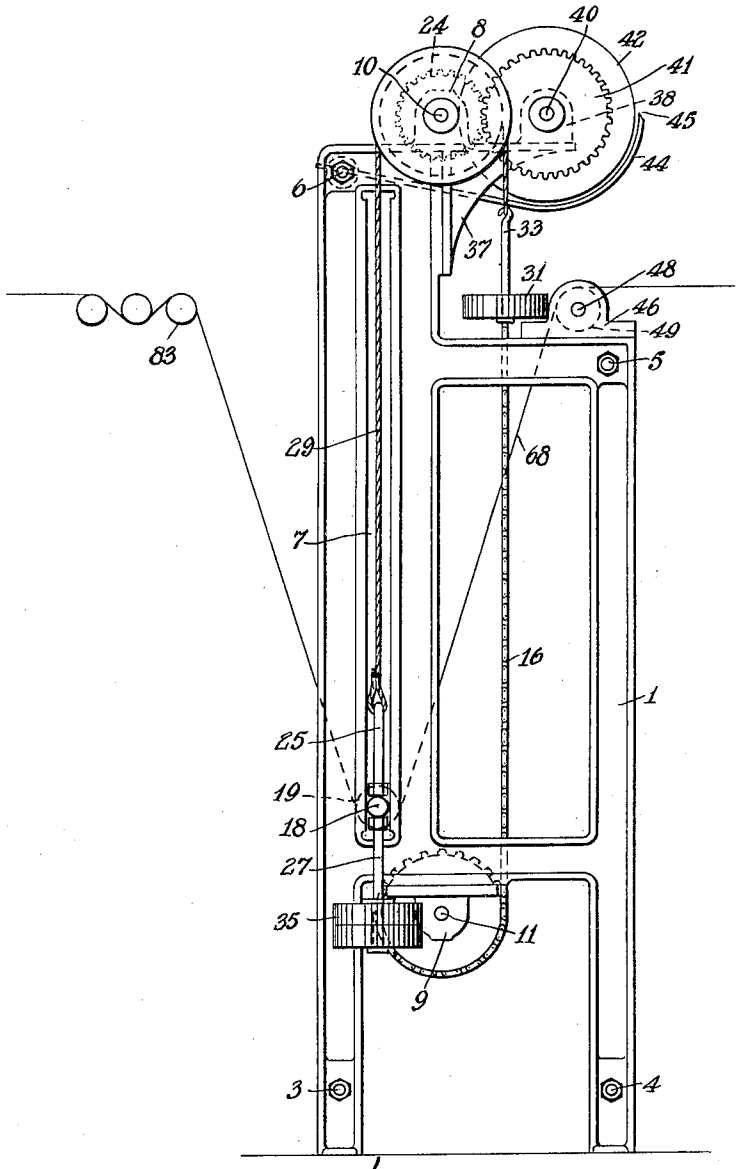
Feb. 6, 1934. W. A. BAER 1,946,264

TENSION CONTROLLING DEVICE

Filed June 14, 1930 3 Sheets-Sheet 1

Fig. 1.



Walter Arthur Baer INVENTOR

BY

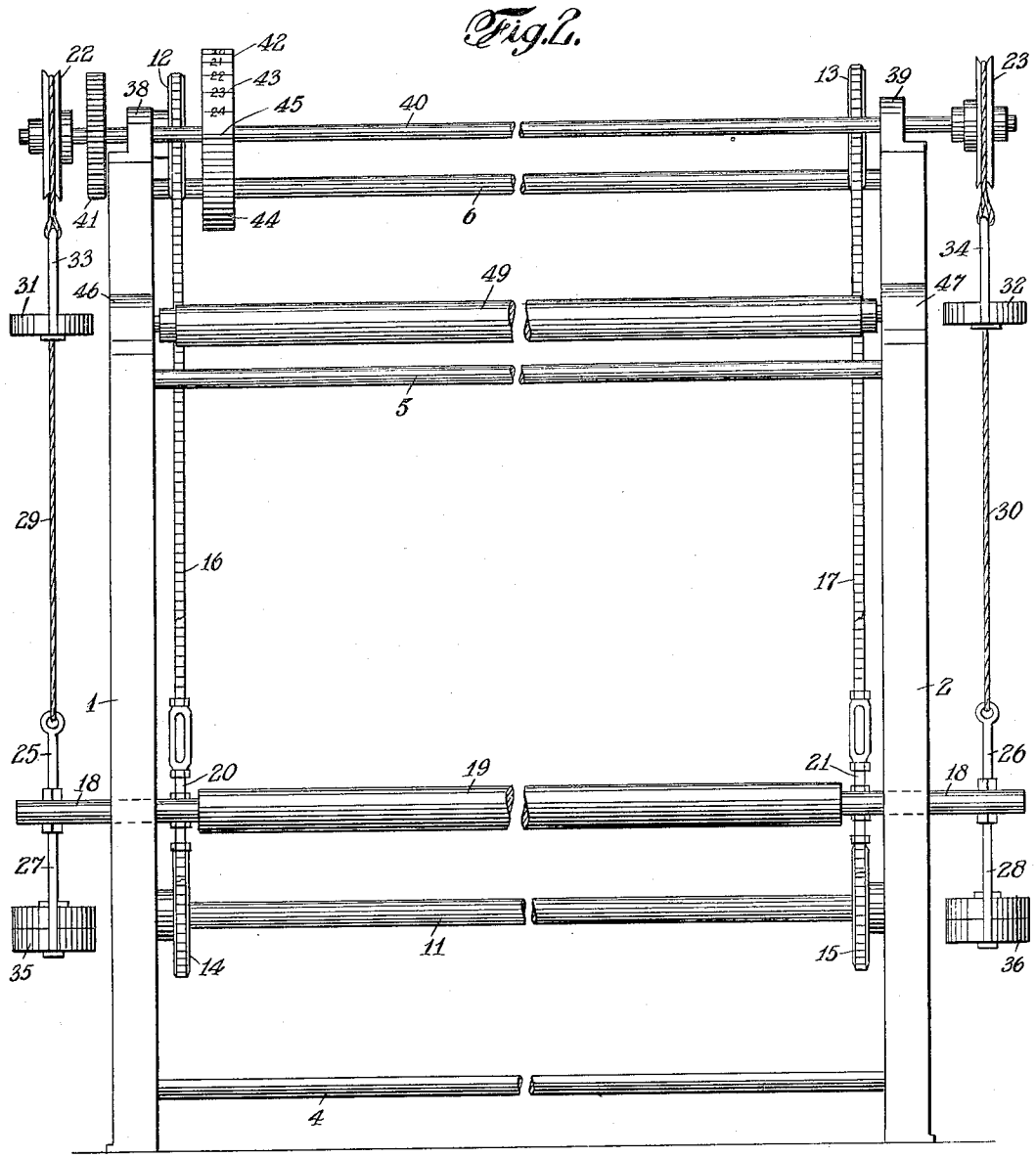
Wm. S. Pritchard ATTORNEY

Feb. 6, 1934. W A. BAER 1,946,264

TENSION CONTROLLING DEVICE

Filed June 14, 1930 3 Sheets-Sheet 2

Fig. 2.



Walter Arthur Baer INVENTOR

BY Wm. S. Pritchard

ATTORNEY

Feb. 6, 1934. W. A. BAER 1,946,264

TENSION CONTROLLING DEVICE

Filed June 14, 1930 3 Sheets-Sheet 3

Fig. 3.

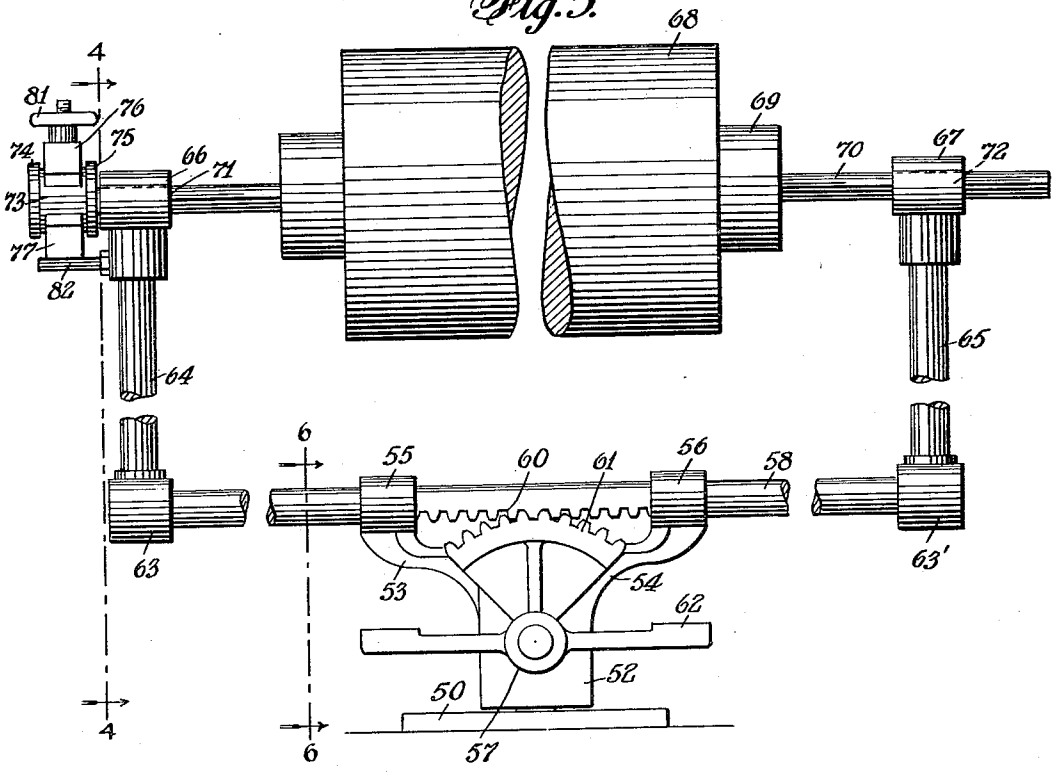


Fig. 4.

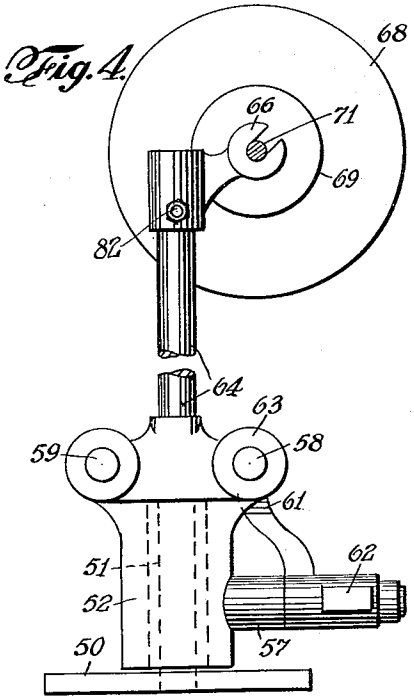


Fig. 5.

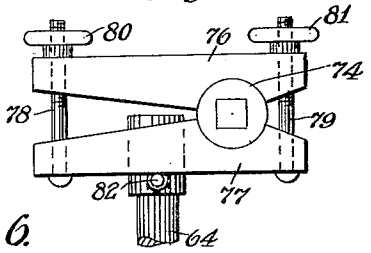
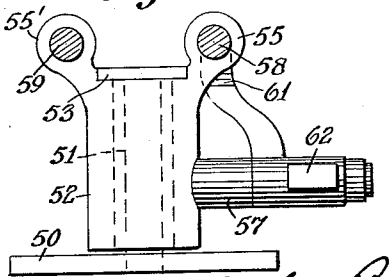


Fig. 6.



INVENTOR

BY

ATTORNEY

Patented Feb. 6, 1934 1,946,264

UNITED STATES PATENT OFFICE

1,946,264

TENSION CONTROLLING DEVICE

Walter Arthur Baer, Paterson, N. J., assignor to United Piece Dye Works, Lodi, N. J., a corporation of New Jersey

Application June 14, 1930. Serial No. 461,084

4 Claims. (Cl. 242—75)

My invention relates to a tension device and more particularly a tension device for controlling the tension on fabrics.

In the finishing of fabrics, such as dyeing, weighting, creping and the like, the goods shrink and sometimes assume, in the case of crepes, a knotted and unsightly appearance. These goods, after having been dyed or creped, are finished on a tenter frame. This machine is so devised as to give a stretch to the material in a direction transverse its length. The stretch in the direction of the length is generally given by the operator in feeding the goods into the machine. A great many different types of fabrics have a more pleasant appearance and feel if they are stretched after they have been treated. This is particularly true of crepe material. The lateral stretch provided by the tenter frame is substantially uniform. It is also desirable in material of this sort to have the longitudinal stretching substantially uniform. The longitudinal stretch of the goods varies according to the skill of the operator.

It is therefore one of the objects of my invention to devise a means for measuring the longitudinal tension on fabrics to enable the operator to impart a substantially uniform stretch or tension to the goods as they are being treated in the various processes to which they are subjected after dyeing, creping and the like.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself as to its objects, advantages and mode of operation may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part thereof, in which:

Figure 1 is a side elevation of the assembled machine.

Figure 2 is a front elevation of the assembled machine.

Figure 3 is an elevation showing the support for the goods to be treated with the braking means attached.

Figure 4 is an end view of Figure 3 along the lines 4—4.

Figure 5 is a detail showing the braking mechanism.

Figure 6 is an end view along the lines 6—6 showing the bearings 55, 55′ for the shafts 58, 59.

Like references denote like parts in the several figures of the drawings. In the following description and claims parts will be identified by specific names, but they are intended to be as generic in their application to similar parts as the art will permit.

The side frames 1 and 2 are connected by the tie rods 3, 4, 5 and 6. The frames 1 and 2 are provided with guideways 7, one of which is shown in Figure 1. Mounted on the frames are bearing blocks 8 and 8′, 9 and 9′, the latter not being shown. These blocks provide bearings for the shafts 10 and 11. Keyed to the shaft 10 are sprocket wheels 12 and 13, and to the shaft 11 sprocket wheels 14 and 15. These wheels are connected by sprocket chains 16 and 17. A spindle 18 is adapted to slide in the guideways 7. This spindle is provided with a rotatable sleeve 19. The sprocket chains 16 and 17 are secured to the spindle 18 by means of bolts 20 and 21. Loosely mounted on the shaft 10 are two grooved pulleys 22 and 23. A gear 24 is keyed to the shaft 10. Secured to the spindle 18 are eye-bolts 25 and 26 and studs or bolts 27 and 28. Cables 29 and 30 are secured at one end to the eye-bolts 25 and 26 and pass over the grooved pulleys 22 and 23. On the other end of the cables are supported the weights 31 and 32 by means of hooks 33 and 34. These weights counterbalance the weight of the spindle or shaft 18 and the sleeve 19. Supported by the studs 27 and 28 are the weights 35 and 36. The purpose of these weights will be afterwards explained.

Mounted on the frame or side pieces 1 and 2 are two brackets 37, one of which is shown in Figure 1. These brackets support the bearing blocks 38 and 39. Mounted on the bearing blocks 38 and 39 is a shaft 40. Keyed to the shaft 40 is a gear 41 which meshes with the gear 24 on the shaft 10. Keyed to the shaft 40 is also a drum 42 having a scale 43 on the periphery thereof. A curved strap or band 44 is secured to the tie rod 6, the curved portion of which tends to enclose the lower part of the drum 42. The edge 45 of the strap 44 serves to indicate the different positions on the scale. Mounted on the side frames 1 and 2 are bearing blocks 46 and 47 in which is mounted a shaft 48 carrying a roller 49.

Mounted on the floor and to the right of the machine, as shown in Figure 1, is a support for the goods to be treated. It is obvious that this device may be joined to the machine and made an integral part thereof, although, for the sake of convenience and clarity, it is illustrated as a separate device.

The support (Figures 3 and 4) consists of the base 50 which is provided with a stud 51. Sup-

ported on this stud 51 is a bearing 52. This bearing is provided with brackets 53 and 54 which support two sets of bearings 55, 55' and 56, 56' (56' not being shown). The bearing 52 is also provided with a horizontal stud 57. Sliding in the bearings 55 and 56 is the shaft 58 and sliding in the bearings 55' and 56' is the shaft 59. The shaft 58 is provided with a rack 60 which is adapted to engage a sector 61 mounted on the stud 57. Secured to the sector 61 is a double treadle 62 by means of which the sector is rocked, thereby sliding the shafts 58 and 59 through the bearings 55, 55' and 56, 56'. Secured to the ends of the shafts 58 and 59 are the double bosses 63 and 63'. Secured to the bosses 63 and 63' are the vertical supports 64 and 65. These vertical supports terminate in open bearings 66 and 67. A roll of goods 68 is shown rolled about a core or mandrel 69. This core or mandrel has a square hole extending therethrough. In the square hole of the core or mandrel 69 is the squared shaft 70. This squared shaft is provided with rounded portions 71 and 72 adapted to fit in the split bearings 66 and 67 whereby the squared shaft 70 may be rotated. Secured to the squared shaft 70 is a bearing 73 provided with two flanges 74 and 75. This bearing is for engagement with the braking means which will now be described.

The bearing 73 is encompassed by the clamping members 76 and 77. These clamping members are provided with bolts 78 and 79. The bolts 78 and 79 are provided with hand-wheels 80 and 81 respectively. By manipulation of these hand-wheels a greater or lesser tension may be exerted on the bearing 73. The upright 64 is provided with a stud 82 against which the member 77 engages and which prevents its rotation when the shaft 70 rotates. To the right of the machine (shown in Figure 1) are the rollers 83 of a tenter frame, or other machine, to which the goods is to be fed.

The operation of the device is as follows:

The roll of goods 68, which has previously been wound on the mandrel 69, is mounted on the squared shaft 70. This squared shaft 70 is dropped into the split bearings 66 and 67. The goods 68 is then fed over the roller 49, down under the rotating sleeve 19 and up to the feed rollers 83 of the tenter frame. The weights 35 and 36 are placed on the studs 27 and 28 to give the desired weight to the rotating sleeve 19, the weight of the rotating sleeve 19 and the shaft 18 having been previously counterbalanced by the weights 31 and 32. The tenter frame, or other device, (not shown) is then started. The operator standing beside the roll of goods manually varies the pressure of the braking member 76 and 77 on the shaft 70 in accordance with the indications on the scale 43. The pivot or stud 51 enables the operator to turn the goods to a position slightly out of parallel with the device (shown in Figure 1) whenever one side or the other of the goods is being stretched unduly. Also, the sector 61 operating the rack 60 enables the operator, by means of the double treadle 62, to shift the goods in a direction parallel with the machine so that the goods may be fed into the device in the desired position. It is obvious that when the braking action becomes too severe it will cause the shaft 18 and the rotating sleeve 19 to rise in the guideways 7. This will cause the shaft 10 with the gear 24 to rotate, thereby driving the gear 41 and varying the position of the indicator 43, indicating that a greater tension is being placed on the goods. It is obvious that the higher the shaft 18 and its rotating sleeve 19 rise in the guideways 7, the greater will be the tension on the goods without any change in the braking mechanism 76 and 77. When the shaft 18 and the rotating sleeve 19 rises in the guideways beyond the desired point, as indicated by the dial 43, the operator releases the braking tension of the braking member 76, 77 on the bearing 73 and permits the goods to run more freely through the device. When the shaft 18 and the rotating sleeve 19 fall in the guideways 7 below the desired point, the dial 43 will indicate that a reduced tension is being applied to the goods. The operator may then increase the tension, by means of either the hand-wheel 80 or 81 on the braking member 76, 77, and retard the passage of the goods through the machine until the desired tension is indicated on the dial 43. In this manner the goods can be subjected to an even stretch or tension as it passes through the tenter frame or other machine in which it is treated, the two variables being the position of the shaft 18 and the rotating sleeve 19 in the guideways 7 and the tension exerted by the braking member 76, 77 on the shaft 70.

While certain novel features of the invention have been shown and described and are pointed out in the annexed claims, it is understood that various omissions, substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In a tension controlling device, a frame, a tension roller mounted in said frame, means for guiding said tension roller, a shaft mounted on said frame, a gear mounted on said shaft, means for driving said gear connected to said tension roller, a second shaft, an indicator mounted on said second shaft, and a gear mounted on said second shaft adapted to be driven by the first-named gear.

2. A tension controlling device comprising in combination, a frame, guideways on said frame, a weighted roller guided by said guideways, a shaft, pulleys connected to said shaft, cables associated with said pulleys, one end of each of said cables being operatively connected to the roller and the other ends of said cables secured to counterweights, a gear on said shaft, a second shaft, a gear mounted on said second shaft adapted to mesh with the first-named gear, a scale mounted on said second shaft and indicating means associated with said scale.

3. In a tension controlling device in combination, a frame, a tension applying device mounted in said frame, a support having spaced bearings for rotatably supporting a roll of web material, said support being mounted to be reciprocated in the direction of the axis of the roll and to swing about a pivot intermediate said bearings.

4. In a tension controlling device in combination, a frame, a tension applying device mounted in said frame, a support having spaced bearings for rotatably supporting a roll of web material, said support being mounted to be reciprocated in the direction of the axis of the roll and to swing about a pivot intermediate said bearings, and operating means for reciprocating said support.

WALTER ARTHUR BAER.