Jan. 7, 1941. F. M. COLLIER 2,228,050

CLOTH BIN PILER

Filed Oct. 13, 1939 3 Sheets-Sheet 1

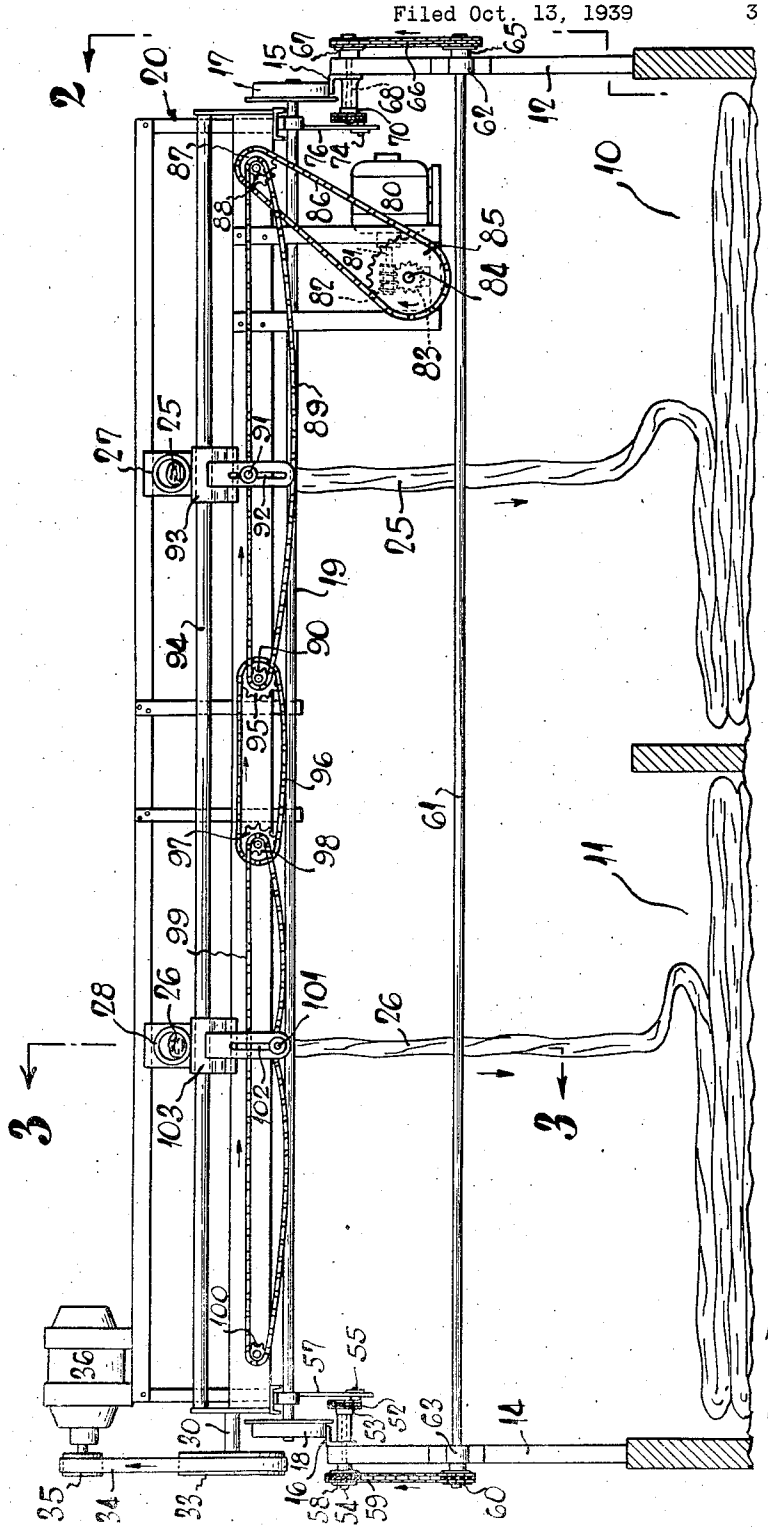


FIG. 1

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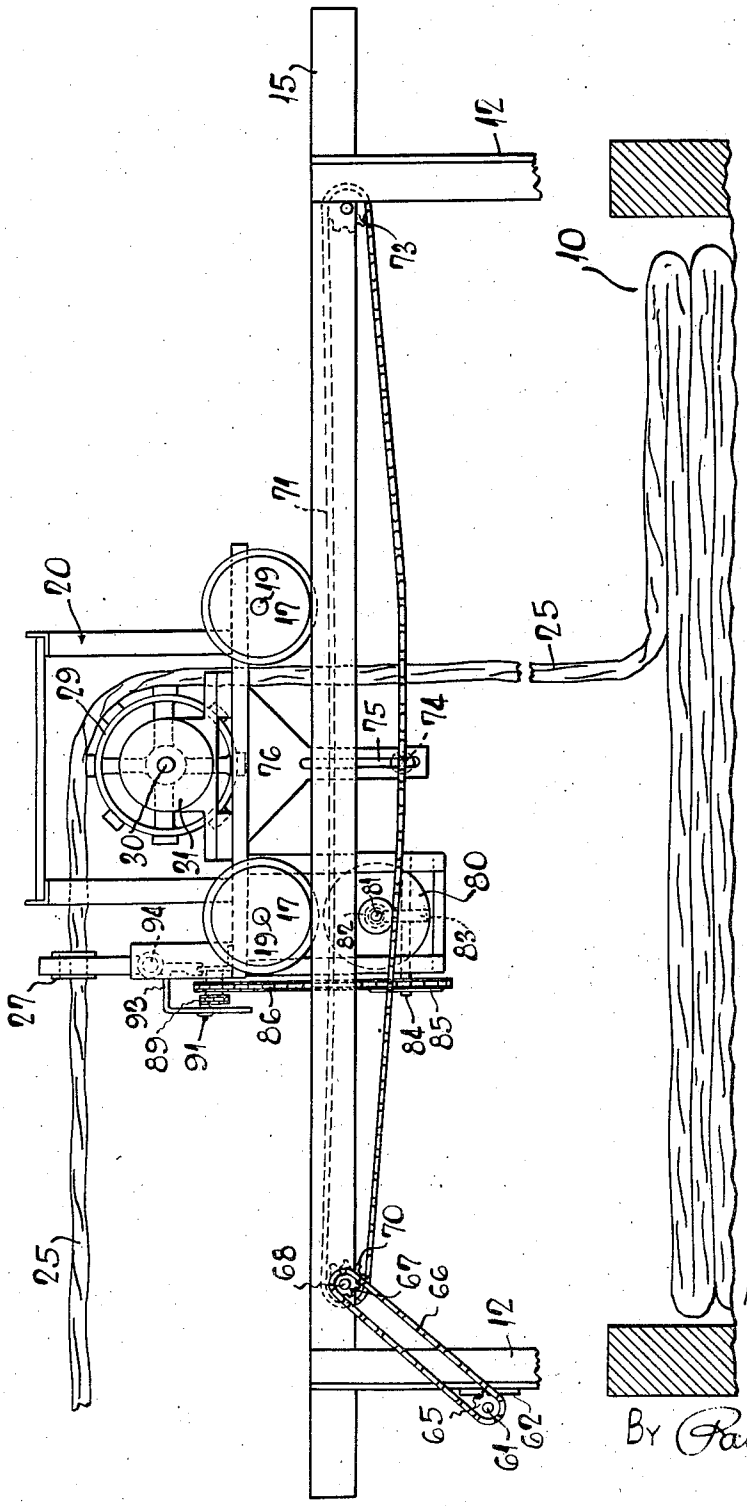


FIG. 2

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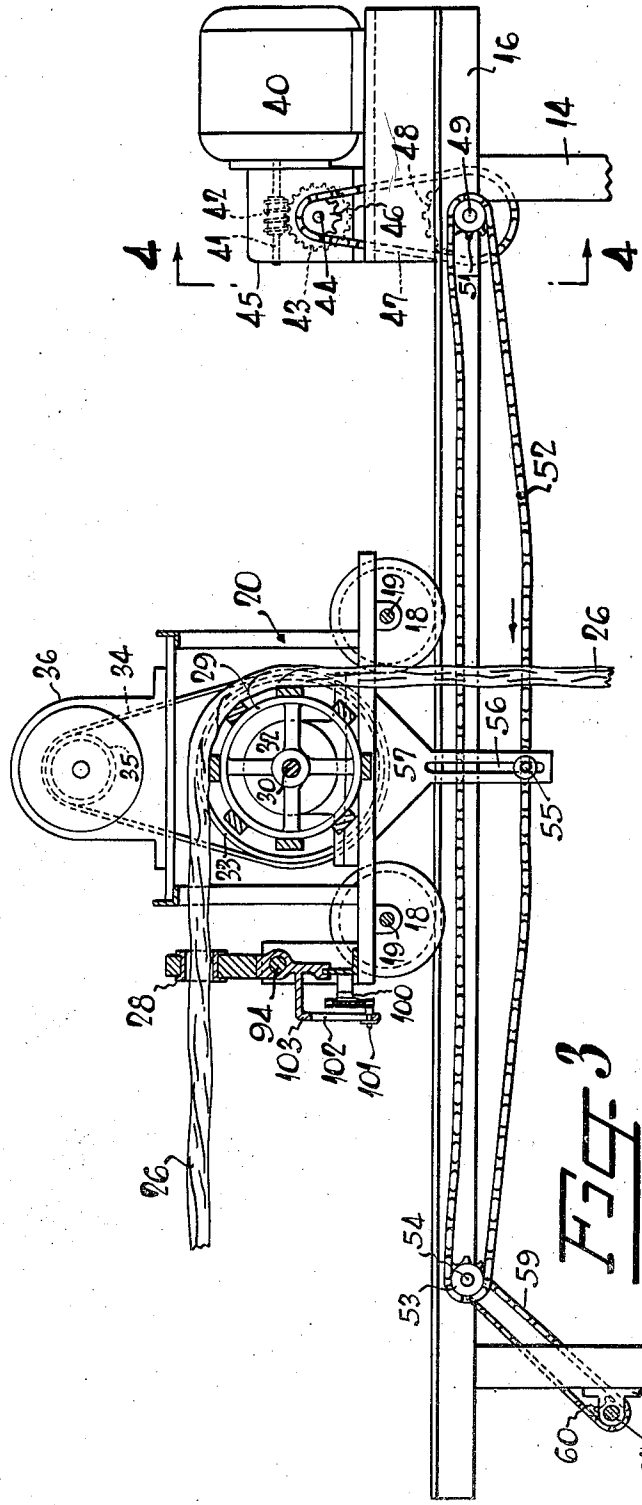


FIG. 3

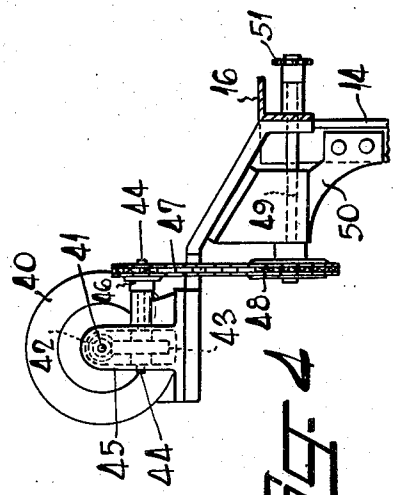


FIG. 4

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UNITED STATES PATENT OFFICE

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CLOTH BIN PILER

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Application October 13, 1939, Serial No. 299,355

1 Claim. (Cl. 68—177)

This invention relates to a cloth handling apparatus and more especially to a mechanism for evenly distributing cloth in rope form into a bin or a container.

It is a well known fact that after cloth is woven it is necessary to subject same to various processes and treating solutions such as caustic and the like, so as to prepare it for the market. When the cloth is subjected to a caustic solution it is very often necessary to condense the warp from sheet form to a rope form and pass the same into a large container commonly called a bin. If this cloth, while in rope form is improperly placed within the bin much difficulty will be encountered when withdrawing it for future processing. Also if the proper type of piling apparatus is not used, much of the space within the bin will be unused. Heretofore, various types of cloth bin pilers have been provided, and in many of these longitudinal and transverse reciprocatory movement of the piling mechanism has been employed. One of the chief objections to the pilers which have heretofore been used is the lack of simplicity in the reciprocatory mechanism.

It is an object of this invention to provide a cloth bin piler for depositing cloth in rope form over the entire bin area said piler comprising a carriage mounted for back and forth movement longitudinally of the bin. The carriage and the eyelets are connected to chains which impart longitudinal and lateral reciprocatory movement respectively. In other words, the carriage, together with the eyelet has its framework secured to a link of an endless chain, which chain is mounted around a pair of sprockets. It is evident that as the chain is driven that the carriage will likewise move in the same direction and also when the chain moves over one of the sprockets a predetermined amount, the direction of travel of the carriage will be reversed. The same, simple type of reversing mechanism is employed for the transverse movement back and forth of the eyelet which directs the cloth in rope form into the bin.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

Figure 1 is an elevation of a cloth bin piler showing a pair of cloth bins therebelow in section and looking longitudinally of the bins;

Figure 2 is an elevation taken along the line 2—2 in Figure 1;

Figure 3 is a vertical longitudinal sectional view taken along the line 3—3 in Figure 1;

Figure 4 is a sectional view taken along the line 4—4 in Figure 3.

Referring more particularly to the drawings, numerals 10 and 11 denote cloth bins or containers into which cloth, while in rope form, is adapted to be deposited. Supported by the upper edges of these cloth bins are suitable posts 12 and 14, the upper ends of which are adapted to support angle trackways 15 and 16, respectively. The trackways 15 and 16 have flanged wheels 17 and 18 respectively mounted thereon, said wheels being mounted upon transversely disposed rotatable shafts 19. These wheels are adapted to support a carriage framework 20 which is so positioned that it can move back and forth along the trackways 15 and 16 so as to distribute the cloth which is carried by the carriage longitudinally of the bins 10 and 11.

As heretofore stated, after the cloth has been subjected to certain treating solutions, it is often necessary to condense it into a rope form and distribute it into the bins 10 and 11. In the drawings, two ropes of cloth 25 and 26 are shown, and it is here seen that these ropes of cloth are adapted to pass through suitable eyelets 27 and 28 respectively and then over reel 29 from whence they are allowed to drop by gravity into the bins 10 and 11.

In order to draw these ropes of cloth 25 and 26 from the machine through which the cloth has previously passed, such as a jig and from which the cloth has been previously discharged, it is necessary to provide means for imparting a positive rotation to the reel 29. The reel 29 is fixedly mounted upon a shaft 30 the ends of which are rotatably mounted in bearings 31 and 32 on the framework 20. The left hand end of shaft 30 (Figure 1) has a pulley 33 fixedly secured thereon over which a belt 34 passes. The belt 34 is also mounted upon a motor pulley 35 of motor 36, said motor being supported by the carriage framework 20. When the motor is put into action the necessary positive rotation will be imparted to the reel 29 by way of the belt 34 and the pulley 33.

Longitudinal reciprocating mechanism

The means for causing the carriage 20 and its associated parts to reciprocate back and forth along the trackways 15 and 16 so as to distribute the ropes 25 and 26 evenly in a longitudinal manner with respect to the bins 10 and 11 will now be described. This means comprises a motor 40 (Figures 3 and 4) which has a shaft 41 with a worm 42 thereon, said worm being adapted to

mesh with a pinion 43 on a shaft 44. This shaft 44 is rotatably mounted in a housing 45 and one end thereof projects past the housing a sufficient amount to allow a sprocket 46 to be fixedly secured thereon. Upon the sprocket 46, a chain 47 is mounted which also is mounted upon a second sprocket 48 on a shaft 49 therebelow.

Shaft 49 is rotatably mounted in a bracket 50 and in trackway 16 and has a sprocket 51 on the other end thereof upon which is mounted an endless chain 52. The chain 52 extends longitudinally of the bin 11 and is also mounted upon a second sprocket 53 which in turn is rotatably secured upon a short shaft 54, said shaft being rotatably secured in the angle trackway 16.

It will be noted by referring to Figure 3 that the chain 52 has a pin 55 extending from the near side thereof which penetrates a vertically disposed slot 56 in downwardly extending bracket 57, the upper end of said bracket being secured to the lower side of carriage framework 20. As the motor 40, through the connecting sprocket and chain, imparts rotation to the sprockets 51 and 53, the pin 55 and the associated framework will be moved back and forth as the chain passes over the pulleys. The point where the pin and framework reverses the direction of travel, of course, will be at the pulleys 51 and 53.

The purpose of providing the vertically disposed slot 56 is to allow the pin 55 to adjust itself to a higher level, which the pin 55 assumes when it has moved over the top side of sprocket 53. Chain 52 works in association with another similar chain which will be presently described, to effect the longitudinal reciprocatory motion of the carriage 20 along the trackways 15 and 16.

The shaft 54 as shown in Figures 1 and 3 has another sprocket 58 secured thereto, said sprocket having a sprocket chain 59 mounted thereon. The chain 59 is also mounted upon a sprocket 60 therebelow which in turn is fixedly secured on one end of transversely disposed shaft 61, which shaft is rotatably mounted in bearings 62 and 63 secured to posts 12 and 14 respectively. The other end of the shaft 61 has a sprocket 65 thereon upon which a chain 66 is mounted (Figures 1 and 2) and this chain is mounted upon a sprocket 67 thereabove, said sprocket being fixedly secured on a shaft 68. The shaft 68 is rotatably mounted in the angle trackway 15.

The inner end of the shaft 68 has a sprocket 70 secured thereon upon which a chain 71 is mounted. This chain is similar in all respects to the chain 52 previously described and which is shown in Figure 3. It is seen here that the chain 71 is also mounted upon a sprocket 73, and at a point 74 on the chain a pin is adapted to project into a slot 75 in downwardly extending bracket 76. This bracket has its upper end secured to the carriage framework 20. The chains 52 and 71 are so connected with the source of power that they will be driven at identically the same rate of speed; consequently both ends of the carriage 20 will be forced in the same direction at the same time and at the same speed. This will give an equalizing effect upon the longitudinal reciprocatory motion of the carriage during the distribution of the ropes of cloth 25 and 26, since the chains apply their force simultaneously at the ends thereof.

Transverse reciprocating mechanism

It is necessary to combine the longitudinal reciprocatory motion with a transverse reciprocatory motion for each bin into which the cloth is being deposed. If this is not done, the distribution of the cloth will not be even throughout the bin and this unevenness of course will result in the piling up and tangling of the cloth so that easy removal can not be effected. Figure 1 shows a detail view of the mechanism for performing this transverse reciprocatory motion.

A motor 80 is carried by the carriage 20 which has a shaft 81 extending therefrom upon which a worm 82 is secured. This worm meshes with a worm gear 83 on shaft 84, which shaft has a sprocket 85 fixedly secured thereon. Upon this sprocket a chain 86 is mounted, said chain being also mounted upon another sprocket 87 thereabove. Integral with the sprocket 87 is a sprocket 88 upon which a chain 89 is mounted, and this chain is also mounted upon a sprocket 90, both of the sprockets 88 and 90 being rotatably secured to the framework 20. At a point 91 in the endless chain 89 a pin is provided and this pin extends laterally into a vertically disposed slot 92 of a bracket 93, said bracket being slidably mounted for reciprocatory motion upon a transversely disposed rod 94. The bracket 93 has the eyelet 27 secured thereon which has been previously described. As the motor 80 operates the chain 89, the associated pin 91 will move over the sprockets 88 and 90, thereby imparting reciprocatory motion to the bracket 93 and its associated eyelet 27 to cause the rope of cloth 25 to be evenly distributed laterally of the bin 10.

The sprocket 90 is integral with a somewhat larger sprocket 95 upon which a chain 96 is mounted. This chain is also mounted upon another sprocket 97 which has integral therewith a smaller sprocket 98 and upon the sprocket 98 a chain 99 is mounted. Chain 99 is also mounted upon a sprocket 100. As in the case of the chain 89, a pin 101 extends from the chain 99 which pin penetrates a vertically disposed slot 102 in bracket 103. This bracket is mounted for transverse reciprocatory motion upon the rod 94 previously described. It is by way of the chain 96 that the chain 99 is rotated and the chain 99 imparts reciprocatory motion to bracket 103 and eyelet 28 by means of pin 101. In other words, the rope of cloth 26 is reciprocated laterally of the bin 11 at the same time and in an identical manner as the rope 25 is reciprocated over the bin 10.

It is therefore usually preferable to have the eyelet make several back and forth movements while the carriage 20 is making one trip from one end of the bin to the other. It is also preferable to have eyelet not only make several back and forth movements while the carriage 20 is moving from one end of the bin to the other, but to also have the eyelet make a portion of a trip across the bin in addition, said portion of a trip being either more or less than a half trip, thus resulting in the eyelet travelling over a different path each time it moves longitudinally and laterally of the bin. This can be determined by the proper ratio being provided in the various driving mechanisms.

It is therefore seen that I have provided a simple chain mechanism which effects both the lateral and longitudinal reciprocatory motion of the cloth eyelets relative to the bins in which the cloth in rope form is adapted to be deposited.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms have been employed, they are used in a generic and descriptive sense only and not for purposes of limitation,

the scope of the invention being set forth in the appended claim.

I claim:

Mechanism for distributing cloth in rope form into a bin comprising a framework having a pair of trackways above the bin, a wheeled carriage mounted for travel on the trackways, a sprocket wheel at each end of the trackways, an endless sprocket chain mounted on the sprocket wheels, a downwardly depending and vertically slotted member on said carriage, a pin fixed to said chain and having a loose fit in said slot, a first motor mounted on the framework and having a driving connection with said sprocket chain, a reel on said carriage, a second motor on said carriage and connected to the reel for rotating the same to feed the cloth rope, an eyelet member mounted for sliding movement on said carriage at right angles to the trackways and through which the cloth rope passes on its way to the reel, a third motor on said carriage, a pair of sprocket wheels on said carriage, an endless sprocket chain on the last-named sprocket wheels, said eyelet having a depending slotted portion, a pin on said last-named chain and slidably penetrating said slot in the depending portion of the eyelet member, a driving connection between the third motor and the last-named sprocket chain whereby recipro-atory movement is given to the carriage and also reciprocatory movement is given the eyelet member at right angles to the travel of the carriage when both of said chains are driven continuously.

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