

No. 786,160.

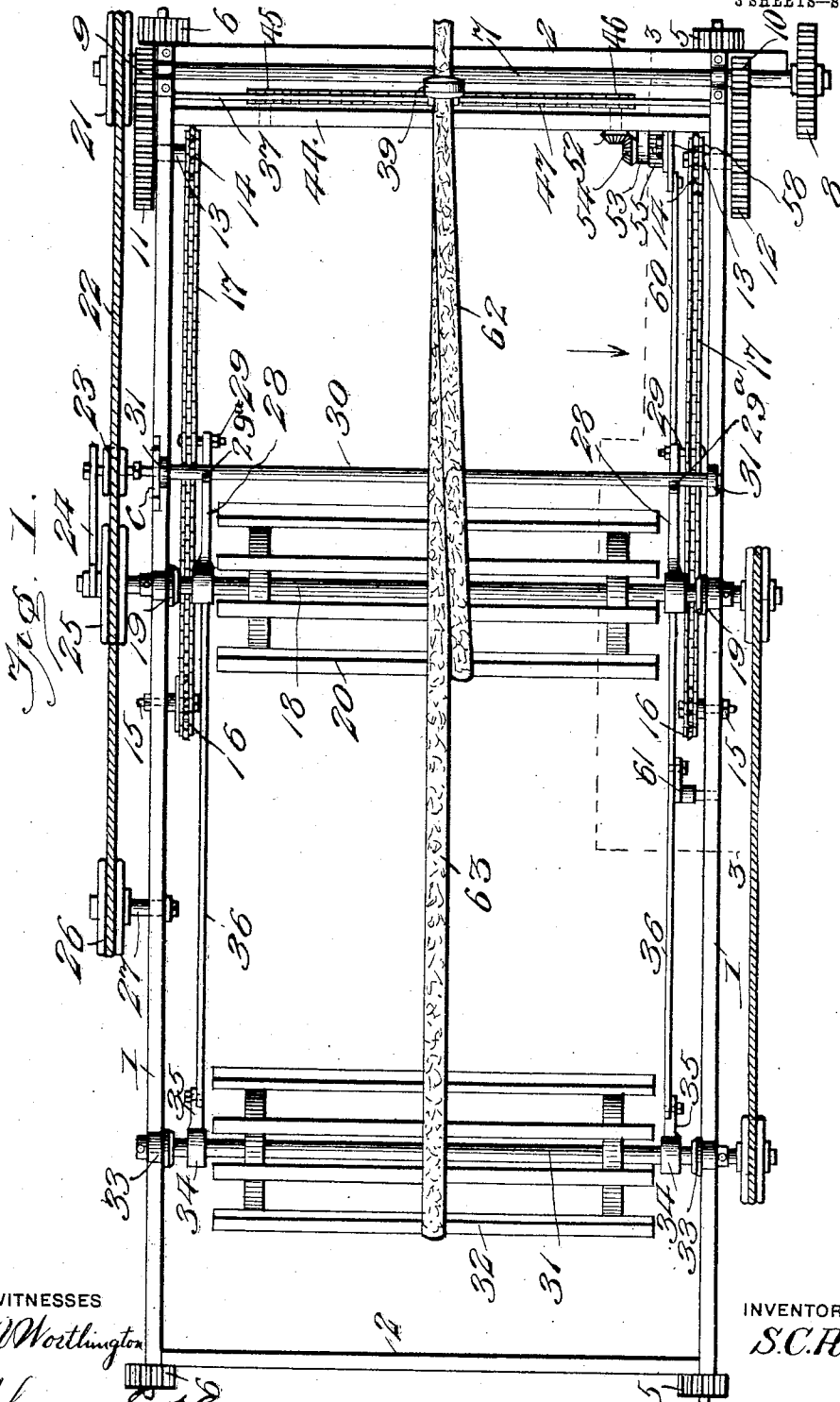
PATENTED MAR. 28, 1905.

S. C. ROWE.

MACHINE FOR AUTOMATICALLY FOLDING CLOTHS IN VATS.

APPLICATION FILED AUG. 19, 1903.

3 SHEETS—SHEET 1.



WITNESSES

G. W. Worthington

INVENTOR

S. C. Rowe

Chas. S. Hoyer.

By Victor J. Evans atty.

No. 786,160.

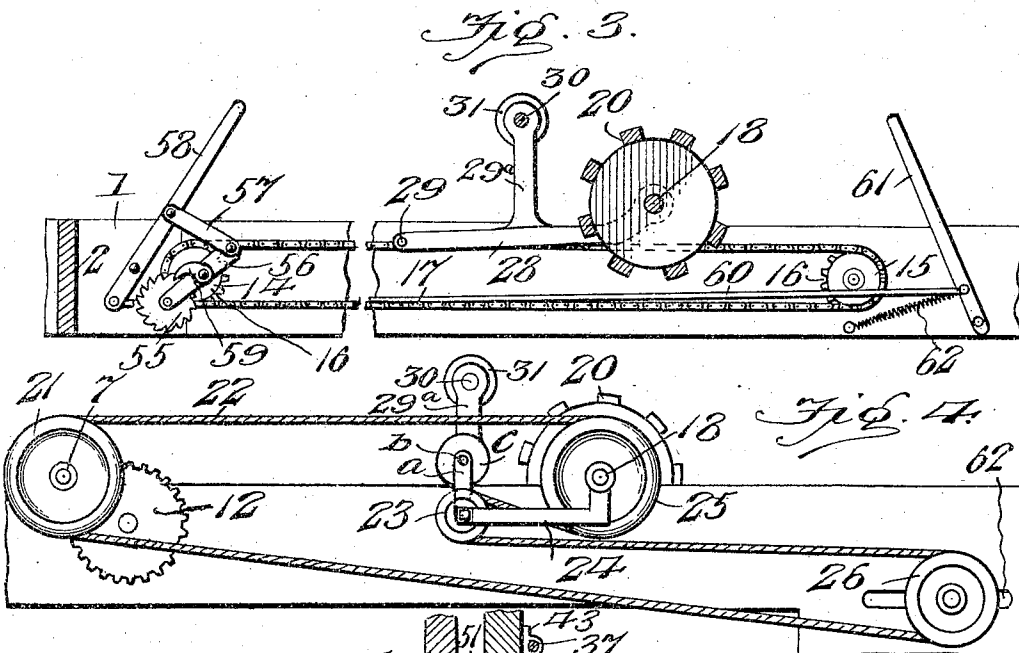
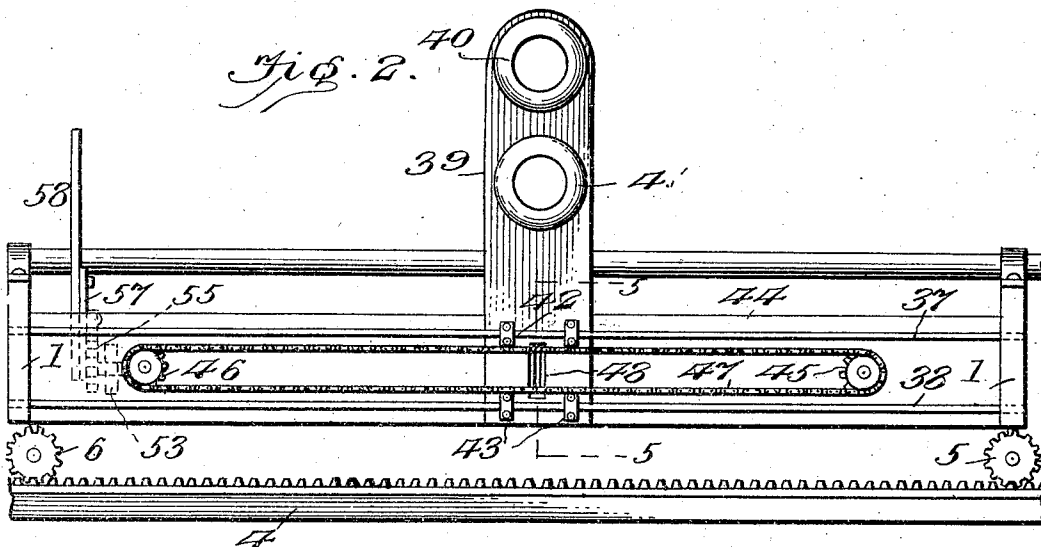
PATENTED MAR. 28, 1905.

S. C. ROWE.

MACHINE FOR AUTOMATICALLY FOLDING CLOTHS IN VATS.

APPLICATION FILED AUG. 19, 1903.

3 SHEETS—SHEET 2.



WITNESSES
H. W. Worthington
Chas. S. Hoyer.

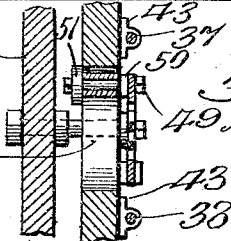


Fig. 5.
INVENTOR S. C. ROWE
By Victor J. Evans
Att'y.

No. 786,160.

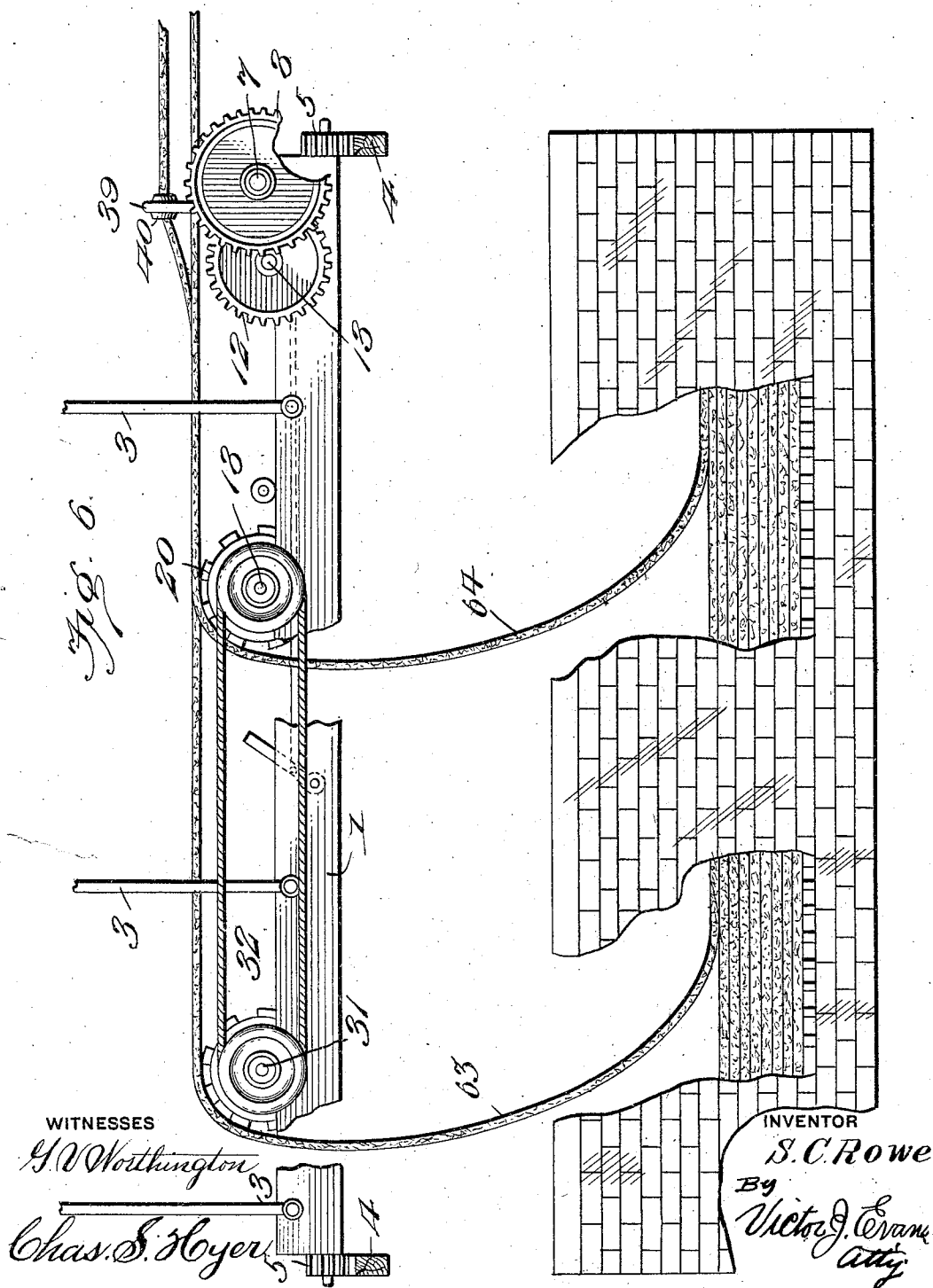
PATENTED MAR. 28, 1905.

S. C. ROWE.

MACHINE FOR AUTOMATICALLY FOLDING CLOTHS IN VATS.

APPLICATION FILED AUG. 19, 1903.

3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

SAMUEL C. ROWE, OF SOMERSWORTH, NEW HAMPSHIRE.

MACHINE FOR AUTOMATICALLY FOLDING CLOTHS IN VATS.

SPECIFICATION forming part of Letters Patent No. 786,160, dated March 28, 1905.

Application filed August 19, 1903. Serial No. 170,065.

To all whom it may concern:

Be it known that I, SAMUEL C. ROWE, a citizen of the United States, residing at Somersworth, in the county of Strafford and State of New Hampshire, have invented new and useful Improvements in Machines for Automatically Folding Cloth in Vats, of which the following is a specification.

My invention relates to improvements in machines for automatically folding or piling strips of cloth or textile goods or material in vats or keirs; and the object is to provide a machine or apparatus of the kind named which is simple in construction and efficient in operation, as will be hereinafter fully specified, and the novelty claimed particularly pointed out and defined.

I have fully and clearly illustrated my improvements in the accompanying drawings, to be taken as a part of this specification.

Reference being had to the drawings, Figure 1 is a top plan view of a machine wherein are embodied my improvements. Fig. 2 is an end elevation showing the guide-eye support, the means for moving the support, and the track-rack and pinions to permit the movement of the machine from one position to another over a number of vats. Fig. 3 is a side elevation, partly in section, taken on line 3 3 of Fig. 1, showing the means for moving the reels longitudinally back and forth on the frame and the levers which actuate the sprocket mechanism that moves the guide-eye. Fig. 4 is a side view showing the arrangement of the driving-rope on the pulleys and the tension-pulley for the rope. Fig. 5 is a detail view, in vertical section, taken on the line 5 5 of Fig. 2, showing the connections of the sprocket-chain to the post or support of the guide-eye. Fig. 6 is a view in side elevation, partly broken away, showing the delivery of the material into the vats.

A rectangular carrying and supporting frame is provided of such length and width as may be required to suit it to the purposes intended. This frame is composed of wooden side pieces or rails 1 1 and end pieces 2 2, secured rigidly and strongly together. This frame is held suspended by means of depending rods 3, the upper ends of which are

so disposed as to slide on the supports from which they are suspended. The frame is also supported from below by means of rack-rails 4 at each end, in which engage pinions 5 and 6, journaled on suitable studs or shafts at the ends of the frame, so that the frame, with the mechanism carried by it, may be moved in lateral direction from vat to vat over a series of them.

The cloth strips are fed or delivered to the mechanism carried by the frame from a machine which is connected operatively to the folding mechanism, so that when such machine is stopped the folding mechanism will also be stopped.

It will be stated that the improvements may include a single reel or may consist of two reels, both operated in unison, as shown in the drawings.

Across the front end of the frame is mounted a driving-shaft 7, on which is fixed a driving gear or pulley 8, and near the ends of this shaft are mounted pinions 9 10, which mesh with counterpart gear-wheels 11 12, mounted on short shafts 13, journaled in the side pieces of the frame and in alinement with each other, and on the inner projecting portions of the short shafts 13 are carried sprocket-wheels 14. At proper and determined places in the frame and positioned to suit the distance of the travel of the carriage are fixedly disposed and secured stud-shafts 15 opposite to each other and in alinement with each other, and on the inner ends of these stud-shafts are loosely mounted sprocket-wheels 16. On the sprocket-wheels 14 16 are arranged sprocket-chains 17, as shown in the drawings.

18 designates a shaft arranged across the frame and provided with flanged collars 19, which when the shaft 18 is rotated ride rotatively on the upper faces of the side pieces of the frame. The flanges of the collars engage against the inner faces of the side pieces of the frame, and thus guide the reel in its travels and prevent endwise movement of the shaft. On the shaft 18 is mounted a reel 20, the bars or slats of which reach nearly across the space between the side rails of the frame. On one end of the driving-shaft 7 is mounted a grooved pulley 21, on which is a rope or belt 22, which

is carried over a grooved pulley 25 on the end of the reel-shaft 18, thence over a tension or tightening pulley 23, journaled in the free end of an arm 24, mounted on the reel-shaft 18, and from the tension-pulley 23 the rope is arranged about a grooved pulley 26, journaled on a stud-shaft 27, slidably disposed in a longitudinal slot 62 in the side rail of the frame, and thence to the grooved pulley 21. At the free end of the arm 24 on the inner end of the arbor of the pulley 23 is mounted a standard *a*, in the upper end of which is fixed a stud-shaft or arbor *b*, extending inward, and on this arbor is loosely mounted a roller *c*, arranged to bear upon and run on the upper edge of the side rail of the frame, whereby the tension-pulley and arm are held against downward movement. It will be perceived that by this arrangement of the driving-rope and its relation to the mechanism for reciprocating the reel 20 in longitudinal movement and direction along the frame the tension-pulley will travel with the movement of the reel, and thus always maintain the same stress on the driving-rope. On the shaft 18, adjacent to each end of the reel 20, are pivotally-mounted arms 28 28, extending forward, and in the ends of each arm is pivotally secured a pulling-pin 29, one end of which is attached to a link of the adjacent sprocket-chain, substantially as indicated in the drawings. To keep the arms 28 in alinement, they are formed with vertical posts 29", the upper ends of which are united by a cross-bar 30 secured thereto, the ends of which are extended beyond the posts, and on the extensions are mounted rollers 31, which ride on the upper edges of the side rails of the frame, thereby preventing the arms from falling down when the pins 29 are traveling with the lower stretches of the chains. It will now be perceived that the reel 20 will be rotated by the driving-rope 22 and that by reason of the connection of the arms 28 to the sprocket-chains 13 14 the reel will be reciprocated longitudinally on the frame.

31 designates a shaft arranged across the frame and on which is carried a second reel 32, which is a counterpart of reel 20 and is designed to carry a second strip of cloth and deliver it into the vat below. Adjacent to the ends of the shaft 31 are mounted flanged collars 33 33, riding on the side rails of the frame and the flanges of which engage against the inner faces of the side rails, as shown, to prevent endwise movement and keep the shaft straight across the frame. On the shaft 31 are pivotally mounted collars 34, formed with arms 35, to the ends of which are fastened the one end of rods 36, the other ends of which are fastened to the collars of the arms 28, carried by the shaft 18 of the reel 20. It will now be seen that as the reel 20 is moved back and forth on the frame the reel 32 is also so moved.

Across the frame adjacent to the rear end thereof are secured upper and lower parallel cross-bars 37 38, on which is slidably carried a vertical post 39, provided with apertures adjacent to its upper end, in which apertures are secured guide-eyes 40 41, through which the cloth strips pass onto the reels. These guide-eyes are made of any suitable material which will stand the wear attending the passage of the cloth strips and decrease friction. The vertical post 39 is slidingly held to the bars 37 38 by means of keepers 42 43, substantially as shown.

Adjacent to the rear end of the frame is secured a cross plate or strip 44, wherein are journaled two sprocket-wheels 45 46, which are mounted on short shafts having their bearings in the strip 44, as indicated. On these sprocket-wheels is mounted a sprocket-chain 47. In the vertical post 39 at the lower end portion is a vertical slot 48, into which loosely projects a pin 49, on which is mounted an anti-friction-sleeve 50. One end of the pin 49 is connected to the chain 47, and on the end of the pin which projects through the slot is a washer 51 to prevent the pull-pin 49 from being displaced in the operation of moving the post 39. On the inner end of the shaft of the sprocket-wheel 46 is mounted a bevel-pinion 52, to which is imparted an intermittent rotary movement, as will be hereinafter stated.

In the cross-rail 44 is secured a bearing piece or bracket 53, wherein is journaled a short shaft carrying on its inner end a bevel-pinion 54, which meshes with the bevel-pinion 52, as shown. Fixed to this short shaft is a ratchet-wheel 55, and pivoted on said shaft is one end of a bar 56, the upper end thereof being pivotally connected to the end of a link 57, the other end of which is pivotally fastened to a lever 58, fulcrumed to the frame. On the bar 56 is hung a pawl 59, the nose of which engages the teeth of the ratchet-wheel 55, as shown in Fig. 3 of the drawings. To the lower end of lever 58 is secured the one end of a rod 60, the other end of said rod being pivotally connected to a lever 61, to which is connected a contractile spring 62, which tends to restore and hold the lever in normal position. The levers 58 and 61 stand in alinement with each other and in the path of travel of the arms 28 on the reel-shaft 18, and the levers are so positioned that they are contacted or encountered a short distance from the limit of the strokes or movements of the carriage, the result being that the bevel-gear 52 is rotated a determined distance—say about one-sixth of a revolution—and by reason of its connection to the sprocket-wheel 46 the chain 47 is moved along about three inches and carries with it the post 39 a like distance at each stroke of the arms 28. By the movement of the chain, and consequently the lateral movement of the post 39, strips of cloth material are carried later-

ally and the folds of the cloth strip are laid in different places in succession, and thus the strips are evenly piled in succession in the vats below. It will be readily perceived that at each contact of the reel-carriage with the levers 58 and 61 the post 39, with the strips of fabric, will be moved a determined distance in either direction, accordingly as to whether the pin 49 is traveling with the upper or lower line of the chain. It will be further observed that when the post 39 reaches the limit of the chain at each or either end it will miss one lateral movement, because the link of the chain to which the pin 50 is connected will be moving around one or the other of the sprocket-wheels. This peculiarity of movement occurs at each end of the chain and is necessary, so that the first layers of cloth at the limit of movement of the post 39 will be laid or piled in the same place during two journeys of the reels.

The stud-shaft of pulley 26 may be journaled in a slot-bearing 62, as directed in Fig. 4 of the drawings, so that any slack in the driving-rope may be readily taken up or adjusted by moving the stud-shaft of the pulley to accommodate the demand of tension.

63 64 designate the strips of cloth or fabric led from a washing-machine and passed through the guide-eyes and thence over the reels, from where they are directed downwardly, as indicated, into the vats.

The operation of the machine in its particular parts has been stated in the premises of the description; but the consecutive steps or functions of the mechanism which accomplish the objects may be stated as follows: The strips of cloth are led from the washing-machine, thence through the guide-eyes over the reels, and thence drop or hang down into the vats. Then when movement is communicated to the reels and the frames which carry them the reels are reciprocated on the frame at the same time they are rotated, and at each limit

of the reciprocation the arms carried by the reel-shaft contact the levers, and through the connections with the guide-post 39 that element is moved laterally a determined distance and carried in reverse directions, as stated. During these movements the cloth strips are laid in reverse relation consecutively.

What I claim is—

1. In a machine for automatically piling cloth in a vat, the combination with a longitudinally-movable cloth-delivering reel, of levers fulcrumed in the path of the reel, a pawl-and-ratchet mechanism actuated by the levers, a support therefor, bevel-gears intermittently rotated by the ratchet mechanism, an endless chain operated by the gears, and a laterally-movable post connected to the chain and provided with cloth-guide apertures.

2. In a machine for automatically piling cloth in a vat, the combination with the rotative and longitudinally-movable cloth-reel and its shaft, of an endless chain mounted across the machine, a vertical post movable laterally and provided with cloth-guide apertures and connected to the chain, and means actuated by the reel to move the chain intermittently.

3. In a machine for automatically piling cloth in a vat, the combination with the rotative and longitudinally-movable cloth-reel and its shaft, of an endless chain mounted across the machine, parallel bars mounted across the machine, a vertical cloth-guide post slidably secured to the parallel bars, and formed with a vertical slot at its lower end portion, a pin loosely projected through the slot and fastened to a link of the chain, and mechanism actuated by the reel to impart intermittent movement to the chain.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL C. ROWE.

Witnesses:

SIDNEY B. SMITH,
JOHN E. NADAN.