Aug. 31, 1965 E. THEODOSIOU 3,203,638

HIGH SPEED CLOTH LAYING MACHINE

Original Filed Nov. 20, 1961 4 Sheets-Sheet 1

Fig. 1

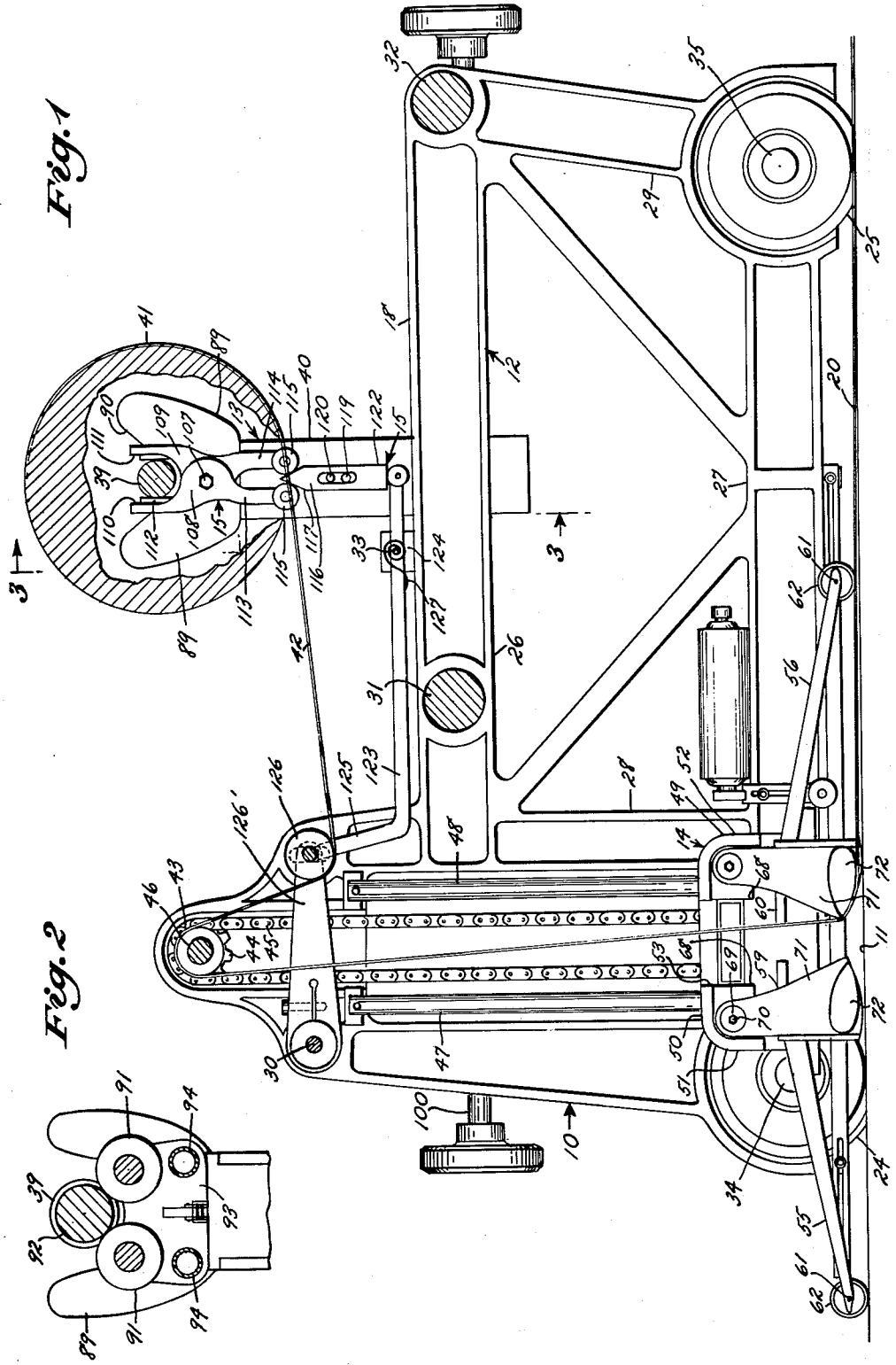
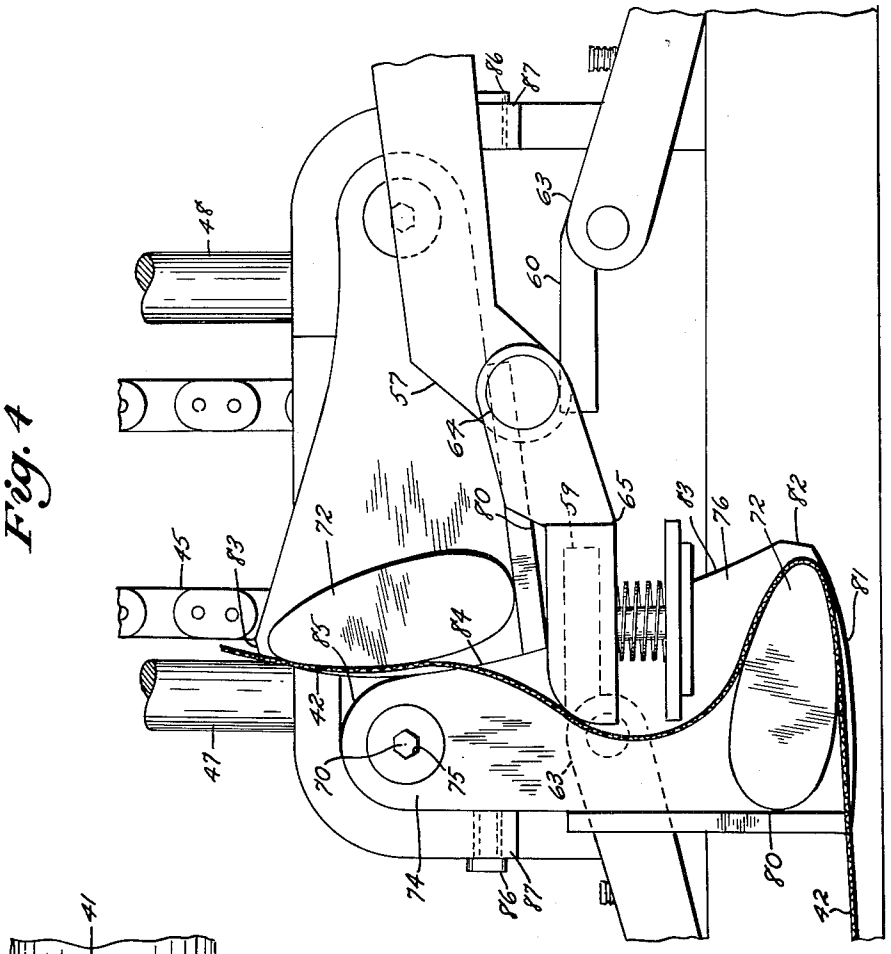


Fig. 2

HIGH SPEED CLOTH LAYING MACHINE

Original Filed Nov. 20, 1961 4 Sheets-Sheet 2

Fig. 4



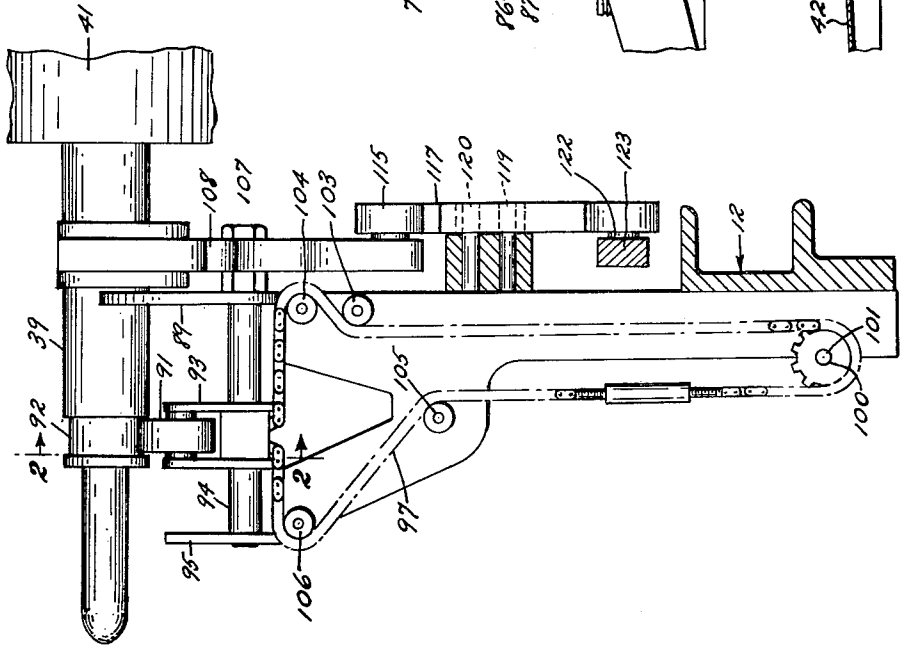


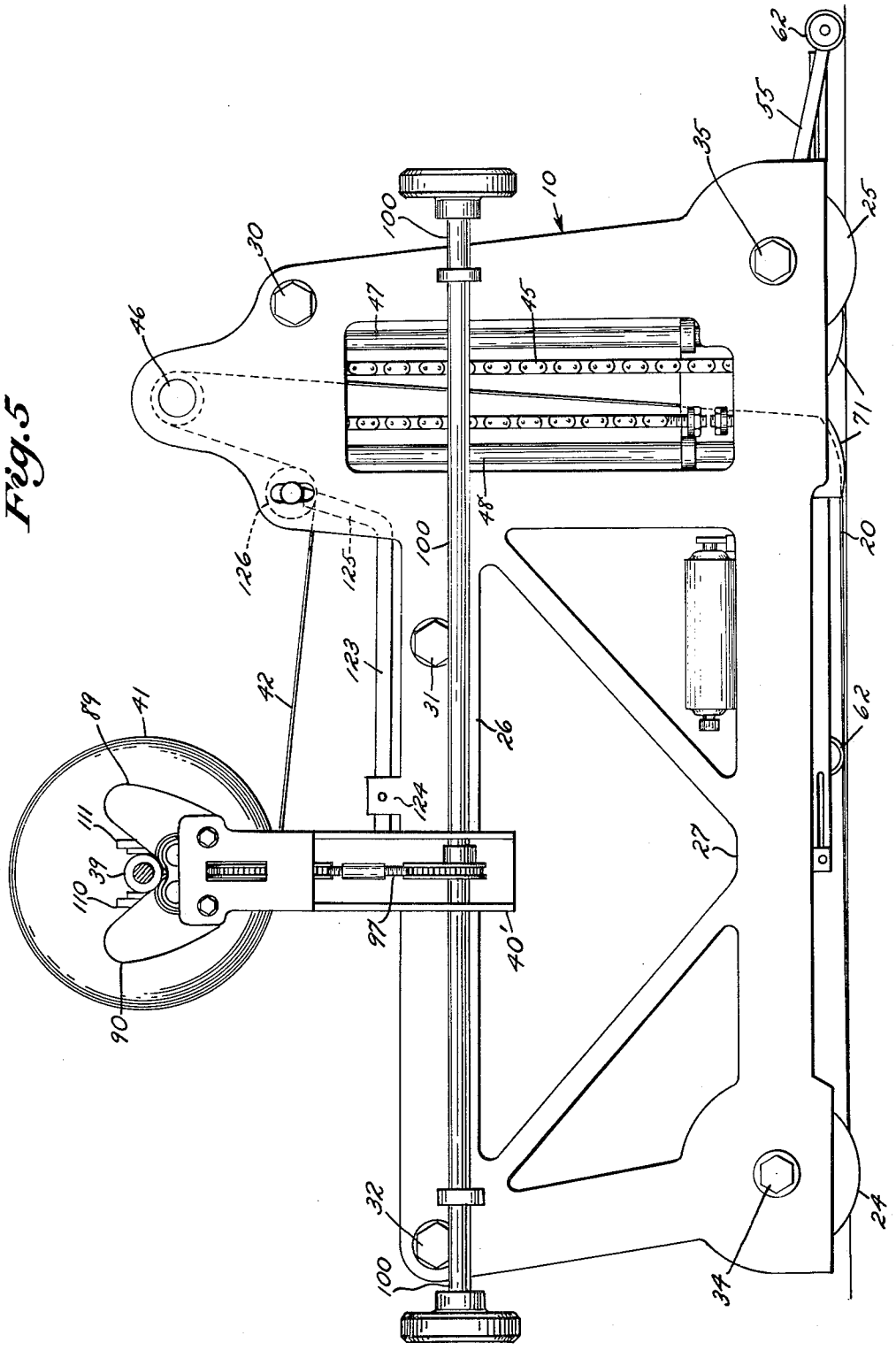
Fig. 3

Aug. 31, 1965 E. THEODOSIOU 3,203,638

HIGH SPEED CLOTH LAYING MACHINE

Original Filed Nov. 20, 1961 4 Sheets-Sheet 3

Fig. 5



Aug. 31, 1965 E. THEODOSIOU 3,203,638

HIGH SPEED CLOTH LAYING MACHINE

Original Filed Nov. 20, 1961 4 Sheets-Sheet 4

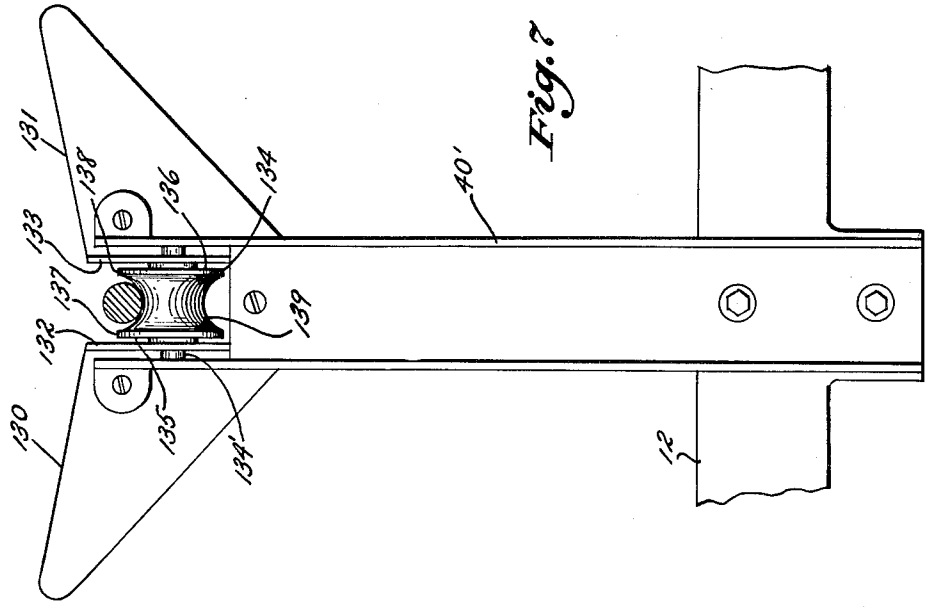


Fig. 7

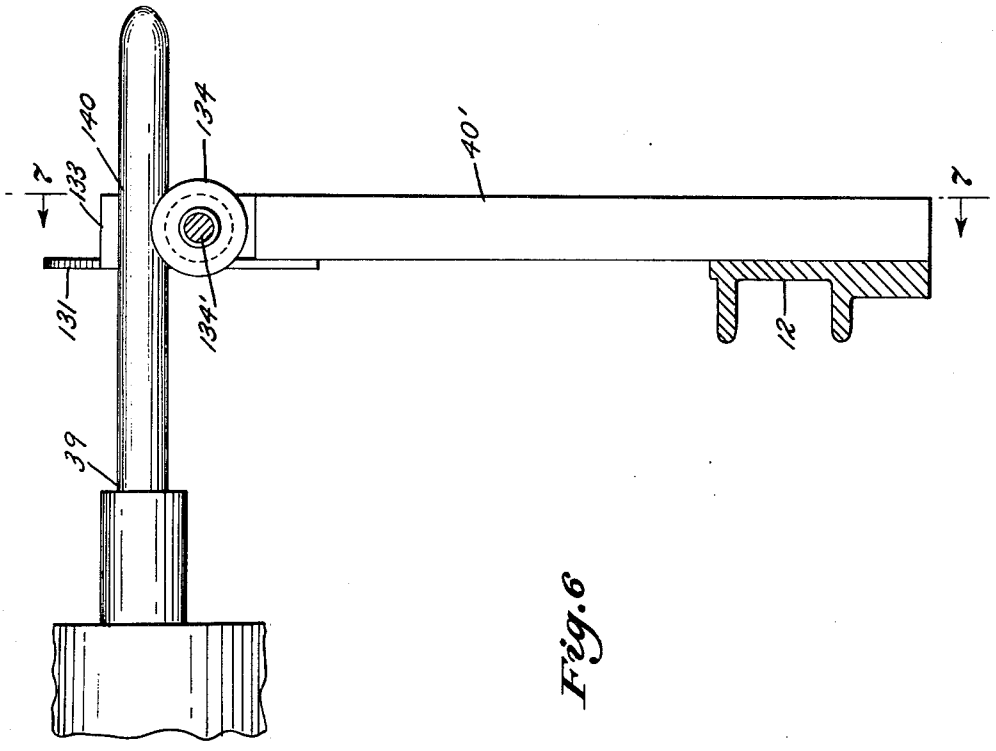


Fig. 6

United States Patent Office

3,203,638

Patented Aug. 31, 1965

3,203,638

HIGH SPEED CLOTH LAYING MACHINE

Emmanuel Theodosiou, New York, N.Y., assignor to Cutting Room Appliances Corporation, New York, N.Y., a corporation of New York

Original application Nov. 20, 1961, Ser. No. 153,546, now Patent No. 3,112,107, dated Nov. 26, 1963. Divided and this application Mar. 11, 1963, Ser. No. 271,539

3 Claims. (Cl. 242—75.43)

This application is a division of my copending application, Serial No. 153,546, now Patent No. 3,112,107.

This invention relates generally to the field of cloth laying machines used in the garment making industries, and more particularly to an improved cloth laying machine carriage particularly adapted for high speed hand operation. Devices of this general class are well-known in the art, and the invention lies in specific constructional details which particularly adapt the disclosed construction for the above-mentioned purpose.

An object of the invention lies in the provision of improved cloth feed braking means having a variable braking action dependent upon the presence of surplus cloth in feeding position in the carriage element.

A feature of the invention lies in the substantial reduction of frictional forces encountered during a cloth laying operation.

Another feature of the invention lies in the provision of antifriction means facilitating both rotational and axial motion of the cloth roll supporting spindle.

These objects and features, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claims.

In the drawings, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIGURE 1 is a vertical sectional view of a reciprocating carriage forming a part of a cloth laying machine embodying the invention.

FIGURE 2 is an enlarged fragmentary view in elevation corresponding to the upper right-hand portion of FIGURE 1.

FIGURE 3 is a fragmentary vertical sectional view as seen from the plane 3—3 in FIGURE 1.

FIGURE 4 is a fragmentary elevational view corresponding to the lower left-hand portion of FIGURE 1, and showing certain of the parts in altered relative position.

FIGURE 5 is a view in elevation as might be seen from the rear of FIGURE 1.

FIGURE 6 is a fragmentary vertical sectional view corresponding to FIGURE 3 but showing an opposite end of the cloth supporting spindle.

FIGURE 7 is a fragmentary sectional view as seen from the plane 7—7 in FIGURE 6.

In accordance with the invention, the device, generally indicated by reference character 10, includes broadly a table 11 which supports a carrier element 12, cloth feed means 13, a cloth spreading element 14, and cloth feed braking means 15.

The carrier element 12 may be of generally conventional construction, including a pair of side frame elements, one of which is indicated by reference character 18, which support the carrier element 12 upon the upper surface 20 of the table 11. Table-engaging wheels (not shown) are mounted for rotation on one of the elements 18, while track-engaging wheels 24 and 25 engage a guiding track (not shown) in well-known manner. The frames 18 include horizontal frame members 26 and 27,

as well as vertical frame members 28 and 29. A plurality of tubular connecting members 30, 31 and 32 interconnect the frame elements 18, and extend across the surface 20 of the table 11. The wheel 24 is mounted on a first axle 34, and the wheel 25 is similarly mounted on a second axle 35.

The cloth supply means 13 includes a cloth supply roll supporting spindle 39 maintained in a horizontal condition upon the carrier element 12 by supporting members 40 and 40'. The cloth roll 41 is supported by the spindle 39, which acts as an axle. A web of cloth 42 feeds from the roll 41 around a roller 43 on a shaft 46. The shaft 46 also independently mounts a sprocket wheel 44 driving a sprocket chain 45 for imparting vertical movement to the cloth spreading element 14 by means (not shown) to compensate for the rising level of the layers of deposited fabric, as is known in the art.

The cloth spreading element 14 is supported from the carrier element 12 by vertical supporting rods, two of which are indicated by reference characters 47 and 48, in pendant fashion. The element 14 includes a downwardly opening housing 49 bounded by a top wall 50, side walls 51 and 52, and including a transversely extending opening 53. Extending from each side of the side walls 51 and 52 are catcher-operating cams, two of which are indicated by reference characters 55 and 56, of well-known type which operate well-known cloth fold retaining means 57 at each end of the table 11, the details of which form no part of the present disclosure. The surface of the cams 55 and 56 lead to catcher-supporting platforms 59 and 60 at one end thereof, there being pintles 61 at opposite ends thereof having rollers 62 contacting the table 11. The cloth fold-engaging members 57 include catcher arms 65 having rollers 64 thereon adapted to engage the upper surface 63 of the cams 55 and 56 for the operation thereof in well-known manner.

The cloth spreading element 14 receives cloth from the cloth feed means 13 and spreads it smoothly in superimposed layers upon the table 11. The housing 49 is provided with supporting bosses 68 on the inner surface thereof having horizontal bores 69 engaged by pintles 70. Pivotal link members 71 are arranged for motion on the pintles, and support fold-forming members 72 at the lower ends thereof. The link members 71 are substantially similar, each including an upper portion 74 having a horizontal bore engaging the pintles 70, and a lower portion 76 supporting the ends of the elongated fold-forming members 72. The periphery of each link member 71 includes an outer generally rectilinear edge 80, a lower arcuate edge 81, an inner rectilinear edge 82 which is generally vertically disposed, and an inner angularly disposed edge 83. The edge 83 communicates with an inner arcuate edge 84 in turn leading to an upper arcuate edge 85. Adjustment screws 86 are mounted in a catcher contact flange 87, and determine the lowermost limit of the path of travel of the links 71.

Referring to FIGURE 1, the support members 40 include guiding plates 89, which facilitate the engagement of a relatively cumbersome roll of cloth thereupon. The spindle 39 rides within an upper notched portion 90 in each of the plates 89, and is supported upon roller bearings 91 (see FIGURE 3) which engage a groove 92 in the spindle 39. The bearings 91 in turn are mounted for slidable motion within brackets 93 which ride on a transversely arranged shaft 94 which extends between one of the plates 89 and a plate 95. A sprocket chain 97 engages the bracket 93, and transmits motion from a gear 100 on a manually operated shaft 101. The chain 97 passes about idler pulleys 103, 104, 105 and 106. This motion permits edge alignment of the web 42 with respect to the upper surface 20 of the table 11.

Referring to FIGURE 1, one support member 40 is provided with a threaded stud 107 (see also FIGURE 3) which pivotally supports two caliper-type brake shoes 108 and 109. The shoes 108–109 include operative faces 110 and 111, respectively, equipped with brake lining material 112 adapted to bear directly upon the surface of the shaft 39. Actuating arms 113 and 114 are provided with rollers 115 selectively engageable by a wedge-shaped cam member 116 having inclined faces 117 and 118. The member 116 is provided with an elongated groove 119 and rides on a fixed pin 120 on the support 40. The cam member 116 is actuated by a lever 123 interconnected therewith by a stud 122, the lever 123 being mounted on a fulcrum 124. The opposite end 125 of the lever 123 supports an idler roller 126 also supported by a link 126′ from connecting member 30, for orbital motion over a relatively limited arc. An adjustable biasing spring 127 supports the weight of the roller 126, so that it rests upon the web 42 in such manner as to be easily deflected under tension in the web.

During operation, excess material in the web 42 between the spindle 39 and the roller 126 will cause actuation of the brake shoes 108 and 109, and the occurrence of tension in the web will immediately slacken off the pressure upon the brake shoes, permitting relatively free turning of the spindle 39.

Referring to FIGURES 6 and 7, the member 40′ supports a pair of guiding flange members 130 and 131, having lateral extensions 132 and 133, respectively. A longitudinally disposed shaft 134′ extends through the extensions 132 and 133, and mounts a bearing member 134 for rotation about the axis of said shaft. As best seen in FIGURE 7, the bearing member 134 includes end surfaces 135 and 136, cylindrical surfaces 137 and 138, and a concave surface of revolution, e.g. a concave toroidal surface 139 of radius somewhat greater than that of the end 140 of the spindle 39. The bearing member 134 is preferably formed from a suitable synthetic resinous material such as nylon, so that the surface 139 may be smooth and of a low coefficient of static and dynamic friction. Thus, during axial adjustment of the spindle 39, the bearing member 134 may rotate about its own axis, and during rotation of the spindle, as during a cloth feeding operation, the end 140 turns in sliding relation to the surface 139 with very little friction.

As the carriage is reciprocated back and forth over the surface of the table 11, the cloth spreading element 14 will deposit folds of cloth upon the table. Upon the engagement of the leading fold-forming members 72 with the corresponding cloth fold-retaining member 57, the same will be deflected, as seen in FIGURE 4, causing the lower arcuate edge to be juxtaposed opposite the inner arcuate edge 84 of the oppositely disposed link member 71, thereby effectively locking it against any pivotal movement until the carrier element 12 has commenced motion in the opposite direction and moved to a point where the cloth fold-retaining means 57 is no longer engaged. By locking the operating fold-forming member 72 until the cloth fold-engaging means 57 has passed the then operating platform 59, the fold of cloth is firmly engaged by the means 57 while the same is still supported by the member 72, and the member 72 remains rigid relative to the carrier element 12 as the same is withdrawn. In this manner, the formed fold is created

uniformly, without wrinkles being formed as the member 72 is withdrawn.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim:

1. In a cloth laying machine having a cloth roll spindle supporting means, a cloth roll spindle supported by said means, and means for adjusting the axial position of said spindle, the improvement comprising: antifriction means at one end of said spindle including a bearing member having a principal axis and means supporting said bearing member for rotation about said principal axis, said axis being positioned perpendicular to and laterally offset from the axis of said spindle, said bearing member having a concave outer peripheral surface of revolution about said axis of said bearing member, a portion of said spindle being slidably positioned to contact said concave outer peripheral surface and rotatably supported therein.

2. In a cloth laying machine having a cloth roll spindle supporting means, a cloth roll spindle supported by said means, and means for adjusting the axial position of said spindle, the improvement comprising: antifriction means at one end of said spindle including a bearing member having a principal axis and means supporting said bearing member for rotation about said principal axis, said axis being positioned perpendicular to and laterally offset from the axis of said spindle, said bearing member having a concave toroidal peripheral surface in which a portion of said end of said spindle is slidably positioned and rotatably supported therein.

3. In a cloth feed mechanism for use in conjunction with a cloth laying carriage, the improvement comprising: cloth roll spindle supporting means, a cloth roll supporting spindle arranged for relative rotation upon said supporting means, a cloth supply roll supported upon said spindle, a resiliently biased lever pivotally mounted upon said carriage intermediate each of two ends thereof, a guiding idler roller mounted upon one end of said lever, and brake actuating means including a wedge-shaped cam member at the opposite end of said lever, caliper brake means supported by said spindle supporting means, said brake means having cam follower means thereon engageable with said wedge-shaped cam member, and adapted to selectively bear against said spindle, said caliper brake means being actuated by said lever.

References Cited by the Examiner

UNITED STATES PATENTS

1,664,026	3/28	Farmer	242—75.4 X
1,987,329	1/35	Fankboner	242—75.43
2,107,234	2/38	Chambers	308—6
2,423,778	7/47	Johnstone	242—57.1 X
2,879,063	3/59	Newell	242—75.43
2,972,452	2/61	Aumann	242—75.43
3,009,664	11/61	Huck	242—57.1

OTHER REFERENCES

Kleinwefers, Ger. app. No. 1,055,486, pub. 4–23–59.

MERVIN STEIN, *Primary Examiner.*