April 8, 1952 W. E. LA PEDUS 2,592,437

CLOTH MATERIAL SPREADER

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Fig. 1

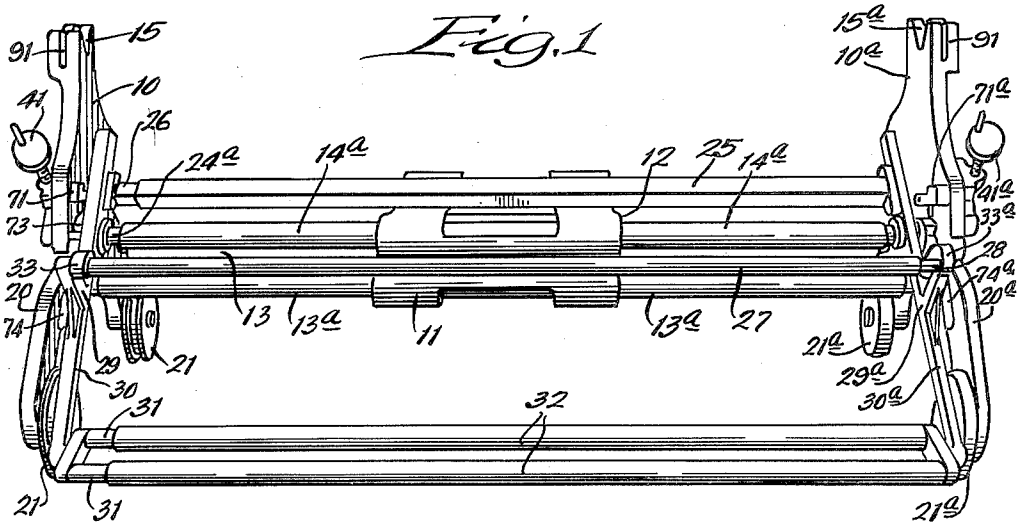
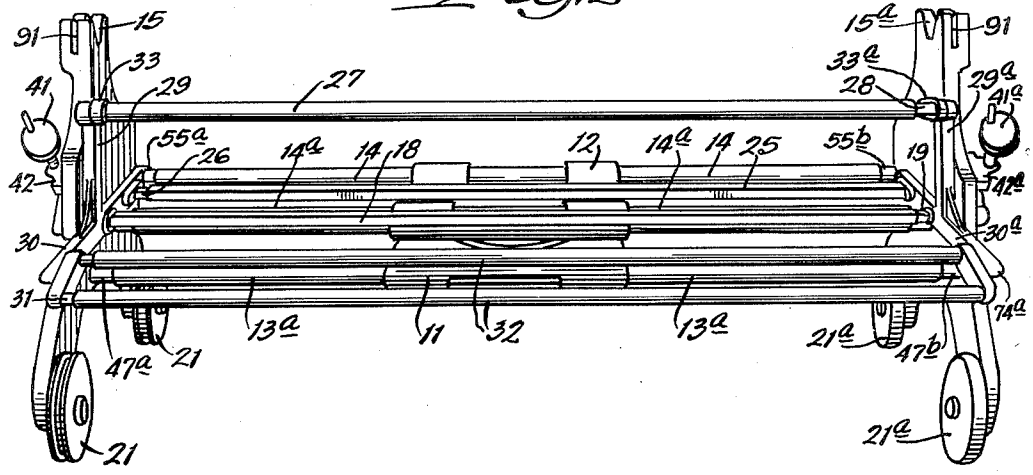


Fig. 2



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CLOTH MATERIAL SPREADER

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Fig. 3

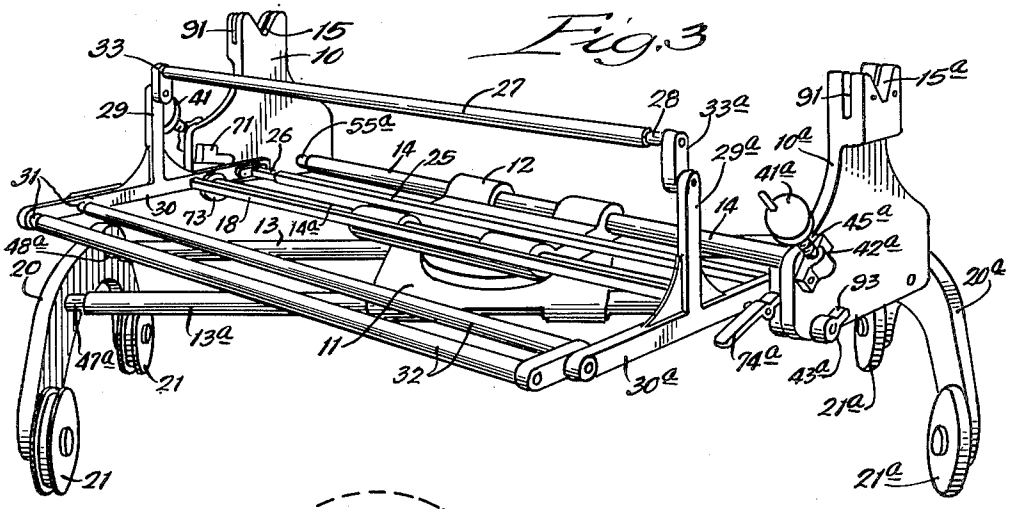
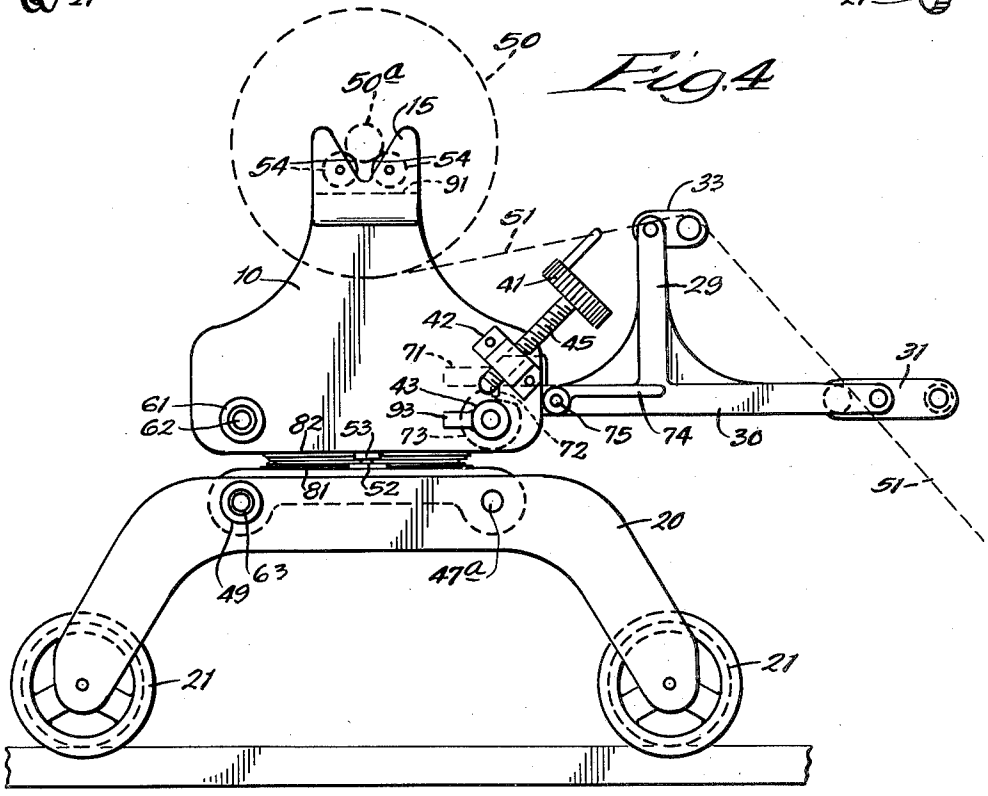


Fig. 4



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CLOTH MATERIAL SPREADER

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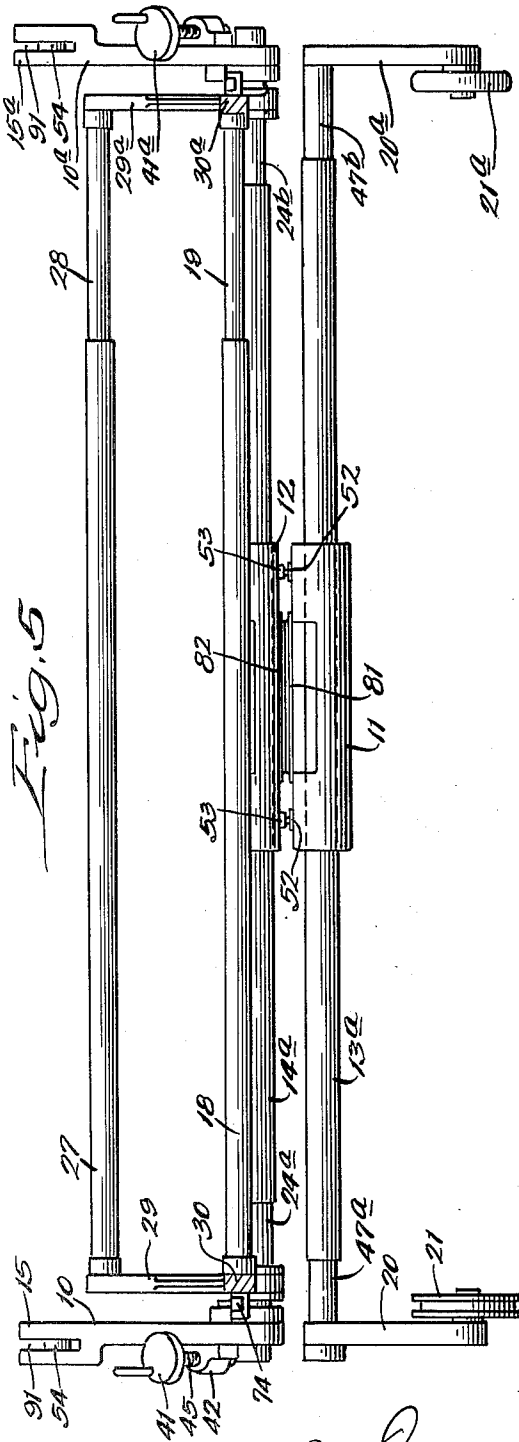


Fig. 5

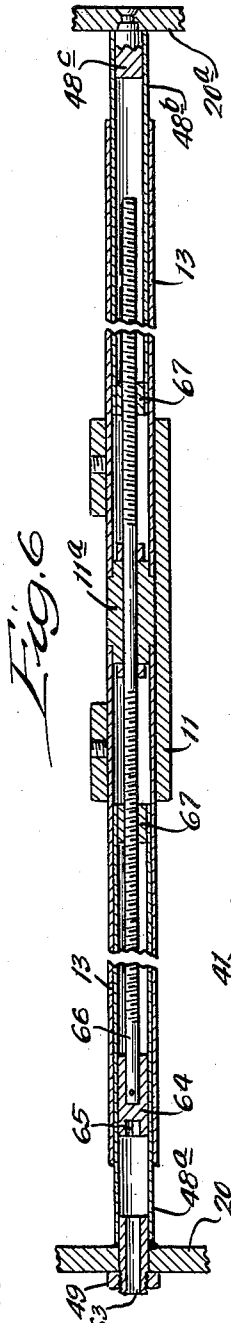


Fig. 6

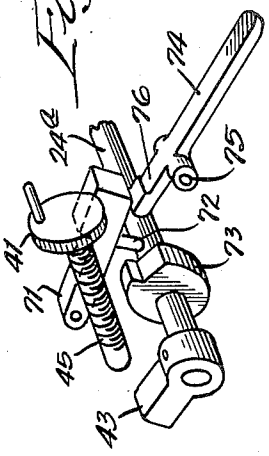


Fig. 7

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UNITED STATES PATENT OFFICE

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CLOTH MATERIAL SPREADER

William E. La Pedus, Rockford, Ill.

Application December 16, 1948, Serial No. 65,628

1 Claim. (Cl. 270—31)

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This invention concerns an improved machine adapted to receive a bolt of cloth and to support and guide the cloth as it is unrolled from the bolt into flat sheets of predetermined length for processing.

My invention has great practical use in dressmaking factories, large-scale tailoring establishments, and other manufacturing establishments in which cloth is fabricated into finished products.

Cloth for use in such manufacturing plants is delivered from the textile mill in large bolts containing a piece of cloth many yards in length. The width of the bolts may vary in particular cases from 36" to 54". Before the cloth can be cut according to pattern for the garment or other object to be fabricated, it must be unrolled from the bolt and cut off at a predetermined length. The proper length will be determined by the amount of cloth required in the garment to be formed; it may be from two to four yards in typical cases.

One manufacturing step, accordingly, in a clothing factory is the unrolling and cutting of bolt cloth. Long, flat tables are customarily provided for this purpose; and workers unroll a bolt of cloth back and forth along the table, unrolling the cloth as the bolt turns and cutting it off at the proper lengths. Thus a pile of cloth lengths is gradually developed on the table and the bolt of course grows smaller as cloth is removed from it.

The operation described in the foregoing paragraph is a tedious and tiresome one when it is performed by hand. While the bolt is near its original size, it is bulky and extremely heavy. Yet, when a sufficient amount of cloth for one piece has been unrolled, the workers must either physically carry the bolt back to the starting point or they must turn the bolt end for end in order to continue the unrolling process. This task is slow, tiresome, and is often sufficient to tax the strength of a woman worker. After the cloth has been largely removed from the bolt, the bolt is no longer so heavy, but its very lightness makes it difficult to unroll, particularly since it must at that stage be rolled back and forth across a table which is already piled with a thick layer of cloth sheets previously removed from the bolt.

My invention provides a machine which permits one worker to unroll the cloth from a full bolt easily, quickly, and efficiently. With my invention, she need never handle the bolt except when it is first placed on the machine, and she can, without any inconvenience, rapidly turn the bolt end for end after a suitable piece has been cut off, so that each pass of the machine across the table results in the removal from the bolt of a length of cloth.

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An object of my invention is to provide a cloth material spreading machine which can support a full bolt of cloth and guide the unrolling of cloth therefrom. Another object of my invention is to provide a cloth material spreading machine having an adjustable guide bar which will effectively guide the cloth as it leaves the bolt to prevent wrinkling or fouling, and which can be adjusted in height so as to distribute cloth effectively as the thickness of the pile of cloth sheets increases. Still another object of my invention is to provide a cloth material spreader in which the bolt and the spreading and guiding apparatus can be swiveled at will from one position to another position 180° removed, so as to facilitate the turning of the bolt end to end as the unrolling proceeds. A further object of my invention is to provide a cloth material spreader wherein the width of the operating members can at will be adjusted to accommodate bolts of cloth ranging between wide limits in width. Other objects and advantages of my invention will become apparent as the specification proceeds.

A preferred embodiment of my invention is illustrated in the following drawings, of which Figure 1 is a perspective view of a machine embodying my invention, shown with its guide member in advanced position; Fig. 2 is a perspective view with the guide member fully retracted; Fig. 3 is a perspective view of the machine with the guide member retracted and with the rotary member partially swiveled; Fig. 4 is a view in side elevation of the machine; Fig. 5 is a view in front elevation of the machine, a part of the guide member having been broken away to show in detail the swivel structure; Fig. 6 is a view in cross section showing in detail the structure of the screw mechanism which controls the width of the machine; and Fig. 7 is a diagrammatic perspective view which shows the mode of operation of the mechanism which controls the position of maximum

advance of the guide member and of the mechanism which operates to latch the guide member in its retracted position.

Referring now to the drawings, I show, in the embodiment therein illustrated, a machine having a base portion consisting of frame end plates **20** and **20***a*, joined by telescoping cross bars **13** and **13***a*. A swivel member **11** is carried by the cross bars **13** and **13***a* midway between the end plates **20** and **20***a*. Cross bar **13***a* is a simple telescoping structure comprising a main hollow tube and a telescoping tube cooperating therewith at each end. Telescoping tube **47***a* is rigidly affixed to frame member **20** while telescoping member **47***b* is rigidly affixed to frame member **20***a*. Each of these telescoping members is proportioned to fit snugly within the hollow tube **13***a* and to telescope therewith.

Cross bar **13** is similar in external appearance to **13***a*; it comprises a hollow tube and a pair of cooperating telescoping members **48***a* and **48***b*, member **48***a* being rigidly attached to frame member **20** and **48***b* being rigidly attached to frame member **20***a*. This cross bar, rather than being a simple telescoping structure like bar **13***a*, contains a screw mechanism by which the width of the frame can be controlled by the operator. This mechanism will be described in great detail in a later paragraph hereof.

Frame members **20** and **20***a* are each equipped with a pair of wheels. The wheels carried by frame member **20** are denoted **21** and those carried by frame **20***a* are denoted **21***a*. For convenience, wheels **21** may be provided as shown with rim flanges to permit their being guided by a track member on the bench or table on which the machine is to be operated. If preferred, wheels **21** may be provided with flat rims like wheels **21***a*.

The swivel element **11**, mounted at the midpoint of the frame structure, contains a swivel plate **81**, mounted on the upper surface of member **11** and having a central aperture for receiving a swivel rivet (not shown in the drawings). As will be seen by reference to Fig. 4 or Fig. 5, swivel member **11** cooperates with a corresponding swivel member **12** which is carried by the rotary member at its midpoint. Swivel member **12** has a cooperating swivel plate **82**, which is also provided with an aperture at its center to receive the swivel rivet. If preferred, a suitable bolt and nut may be employed in lieu of a rivet for holding swivel plates **81** and **82** in proper operating alignment.

To provide a means of securing the swivel fast in its two normal operating positions, swivel member **11** is equipped with a pair of studs **53**, symmetrically located with respect to the axis of rotation and located 180° apart. Swivel member **11** carries a pair of spring-biased detents **52** which are adapted to seat in recesses within studs **53** when the swivel is in either of two positions, said critical positions being 180° apart.

The rotary member of my invention is supported on swivel member **12**. It comprises a pair of end plates **10** and **10***a* respectively, joined by cross bars **14** and **14***a*. **14** and **14***a* are rigidly affixed at their centers to swivel plate **12**, and end plates **10** and **10***a* are supported by cross bars **14** and **14***a* by means of a telescoping cross-bar structure, best illustrated in Figs. 2, 4, and 5. Cross bar **14***a* contains a telescoping element **24***a* which is journalled into end plate **10** and a telescoping element **24***b* which is journalled into end plate **10***a*. Telescopic member **55***a* is carried

within cross bar **14** and is rigidly affixed to end plate **10**; while telescopic element **55***b*, carried within the opposite end of cross bar **14**, is rigidly attached to end plate **10***a*. Cross bar **14**, with its telescoping elements **24***a* and **24***b*, is similar in structure to the cross bar **13***a* which joins the frame members **20** and **20***a*. Cross bar **14**, on the other hand, contains a screw control mechanism similar to that of cross bar **13**, which is to be described later herein.

The upper portions of end plates **10** and **10***a* are modified to provide a receptacle for the bolt of cloth to be carried by the machine. The receptacle on the respective end plates are denoted **15** and **15***a*. As best shown in Fig. 4, each receptacle comprises a V-shaped notch provided with a deep slot **91** to accommodate a pair of small rollers **54**. These rollers **54** are journalled into suitable bearings drilled in the walls of the support members **15** and **15***a* respectively, and they provide a secure rolling support for the shaft **50***a* on the bolt of cloth **50**, as shown in Fig. 4.

A retractable guide member, to guide the cloth from the bolt to its proper position on the table, is pivoted on the members **24***a* and **24***b* which telescope into cross bar **14***a*. This guide member comprises a pair of transverse supporting bars **30** and **30***a* respectively, which are rigidly affixed to bars **24** and **24***a* respectively, extending forwardly thereof. A pair of telescoping cross braces **18** and **25** are provided to connect members **30** and **30***a* and to afford them mechanical rigidity. Member **25**, which is carried by bar **30***a*, telescopes with member **26** which is in turn carried by bar **30**. Similarly, supporting member **18**, which is carried by bar **30**, telescopes with member **19**, which is rigidly affixed to bar **30***a*. The construction just described is best shown in Figs. 1, 2, and 3.

At its forward end the retractable guide member is provided with a telescoping structure which has the function of depositing the cloth on the material pile smoothly and reasonably taut. This telescoping structure comprises an element **32**, which comprises two hollow parallel tubes connected by a yoke, which is in turn pivoted to the forward end of bar **30***a*. Telescoping into the parallel tubes in element **32** are a pair of parallel tubes **31**, which are likewise joined by a yoke, which is pivoted to the forward end of bar **30**. While some freedom of motion in the pivots which couple elements **31** and **32** to bars **30** and **30***a* respectively is desirable, they should not be overly loose; accordingly, fairly tight friction pivots are preferable at those points.

At approximately its midpoint, bar **30** carries an upright member **29**; a similar upright **29***a* is carried by bar **30***a* near its midpoint. A pair of crank members **33** and **33***a* are pivoted respectively to the upper ends of uprights **29** and **29***a*, and a telescoping cross bar connects crank members **33** and **33***a*. This telescoping cross bar consists of an outer tube **27**, which is rigidly affixed to crank member **33**, and an inner telescoping member **28** carried by crank member **33***a*. Pivots having a high coefficient of friction should be used for pivoting crank member **33** to upright **29** and crank member **33***a* to upright **29***a*.

Telescoping members **24***a* and **24***b* repsectively, which are free to rotate, project a short distance through end plates **10** and **10***a* respectively and are provided at their terminal ends with stop members denoted respectively **43** and **43***a*. These stop members are rigidly affixed to the ends of the

respective shafts by any suitable means, such as set screws. Each of the stop members has a small finger or projection 93. A bearing plate 42 is bolted to the outer side of end plate 10, and it carries in a threaded aperture a screw member 45 which is equipped at its upper end with a knob 41 adapted to permit convenient turning. A similar bearing plate 42a mounted on end plate 10a supports a screw member 45a and turning knob 41a. The orientation of the screw members 45 and 45a is such that when they are advanced a considerable distance their lower ends will engage the finger 93 on stop members 43 and 43a respectively, thereby providing a control which can fix the point of maximum advance of the retractable guide member affixed to and turning with bars 24a and 24b. Rigidly affixed to shafts 24a and 24b, on the inner sides of plates 10 and 10a respectively, are a pair of cams 73 and 73a respectively. Each of these cams is rigidly affixed to the shaft carrying it, and is adapted to turn with the shaft. A latch member 71 is pivoted to the inner wall of end plate 10 and is provided with a finger 72 adapted to engage the flat face of cam 73. A corresponding latch member 71a is carried on the inner wall of end plate 10a, where it is adapted to engage cam 73a. The flat faces on cam 73 and 73a are oriented with respect to the retractable guide member so that the cams engage the latch members when the guide member is fully retracted—that is, in the position it occupies in Fig. 2. A control lever 74 for releasing latch 71 is pivoted on the side of bar 30, in a position where its rear portion 76 will engage and lie under latch 71 when the guide member is fully retracted. A similar release lever 74a is carried by bar 30a to cooperate with latch 71a.

Fig. 7 shows a perspective view in great detail of the stop member and latch structure just described. It will be understood that the structure at the opposite end of the rotary member is symmetrical with that shown in Fig. 7.

Fig. 6 shows in section a view of the telescoping member 13 which controls the adjustment of width of the frame of the machine. As will be seen by reference to Fig. 6, a hollow plug 63, threaded at its outer end, is fitted tightly into the end of telescoping element 48a. Plug 63 passes through the wall of frame member 20 and is held in place by nut 49. A piston-like member 64 is slidably carried within the interior of tube 48a; at its outer end member 64 contains a recess 65 adapted to receive the terminal of a wrench, while its inner end is fitted over and securely affixed to a screw 66 which extends continuously through element 13, the hollow interior of element 11, and a considerable distance into the opposite end of element 13. A sleeve 67 is fitted tightly within the inner end of tube 48a, and it is internally threaded to receive screw 66. Sleeve 67 may, if desired, be made in two pieces, to facilitate its insertion into tube 48a around screw 67.

A bearing 11a supports screw 67 in the middle portion of swivel element 11; bearing 11a is machined to provide a slight clearance for screw 67, to permit it to turn freely therewithin.

A second sleeve 67 is carried within and secured tightly to the inner end of tube 48b. It is also internally threaded, and the screw 67 is threaded therethrough.

The threading on the portion of screw 67 which lies to the left of bearing 11a may be given a right-hand thread, while the portion of screw 67 which lies to the right of bearing 11a may be given a left-hand thread. It will be understood that so long as the directions of the threads in the two portions of screw 67 are opposite, it is immaterial which portion is given a right-hand thread.

The right-hand end of tube 48b, as seen in Fig. 6, carries a plug 48c securely affixed therein, and plug 48c is bolted tightly to frame member 20a.

The structure of cross bar 14, which connects uprights 10 and 10a on the swiveling member, is similar to that of element 13 which has just been described and which is illustrated in Fig. 6.

In the operation of my invention, the widths of the frame and the rotary member are appropriately adjusted by the insertion of a wrench into the aperture in plug 63 and into the corresponding aperture in plug 62. The wrench is caused to engage the recess provided therefor in the piston-like member carried within the telescoping cross bar (element 64 in the case of cross bar 13) and the wrench is then turned to cause the cross bar to take a length appropriate to the particular bolt of cloth to be unrolled. The frame and the rotary member can be independently adjusted as to width, provided the guide member is in its retracted position, since in that position the frame and the rotary member do not interfere with one another as their widths are altered.

After the widths of the frame and rotary member are set to appropriate value, the guide member is shifted to its advanced position by actuating levers 74 and 74a, the bolt of cloth is placed on supports 15 and 15a and the cloth from the bolt is unrolled and passed over cross bar 33 and between the guide bars 31—32, as shown in Fig. 4. The end of the bolt is then placed in the desired position on the table and the machine is rolled along the table until a piece of the desired length has been deposited thereon. The piece resting on the table is then cut off from the remainder of the bolt by any desired means, and the rotary member is then swiveled through an arc of 180°, so that the bolt of cloth is turned end for end. In accomplishing this result, the guide member should be temporarily returned to its retracted position. After the swiveling has been completed, the guide member can be again advanced and the machine rolled along a table in the opposite direction to the former movement, the bolt unrolling as the machine moves and depositing another flat sheet of cloth on the table. This process is repeated until the bolt is exhausted or until the desired number of sheets have been cut from the bolt. As the thickness of the pile of cloth on the table increases, it may be found desirable to raise slightly the advanced position of the guide member so as to prevent it from rubbing on the cloth already deposited on the table. This may be accomplished by appropriate adjustment of handles 41 and 41a.

While I have in this specification described in considerable detail the preferred embodiment of my invention, it will be understood that many variations in details may be made by those skilled in the art without departing from the spirit of my invention.

I claim:

In a machine for carrying a bolt of cloth and spreading cloth in flat sheets therefrom, a frame member, a rotary member swivel-mounted on said frame comprising end plates and telescoping members joining the same, one of said telescoping members comprising a center portion and a pair of end portions telescoped there-within, a screw member mounted for rotation within said

central member and provided with threads of opposite sense at its respective ends, a pair of nuts adapted to cooperate respectively with one of said threads, each of said nuts being respectively carried within and rigidly joined to one of said telescoping members, and means provided at one end of said screw member for manually rotating the same, whereby, on rotation of said screw member, said end telescoping members are moved inwardly or outwardly from said central member, the position of said central member being unaffected by such rotation.

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