

(No Model.)

2 Sheets—Sheet 1.

A. L. SINGER.

APPARATUS FOR MARKING AND CUTTING CLOTH.

No. 451,006.

Patented Apr. 21, 1891.

Fig. 1.

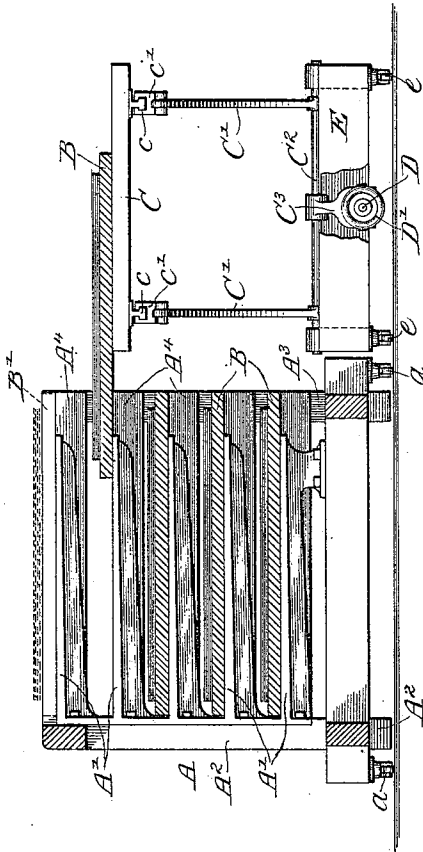
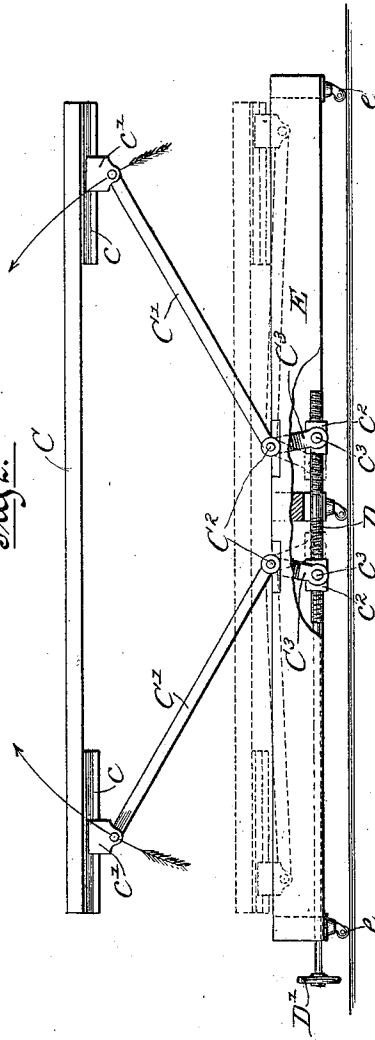


Fig. 2.



Witnesses

Wm. J. Keuning,  
Louis M. Whitehead.

Inventor

Adolph L. Singer

by Dayton, Poole & Brown  
his Attorneys.

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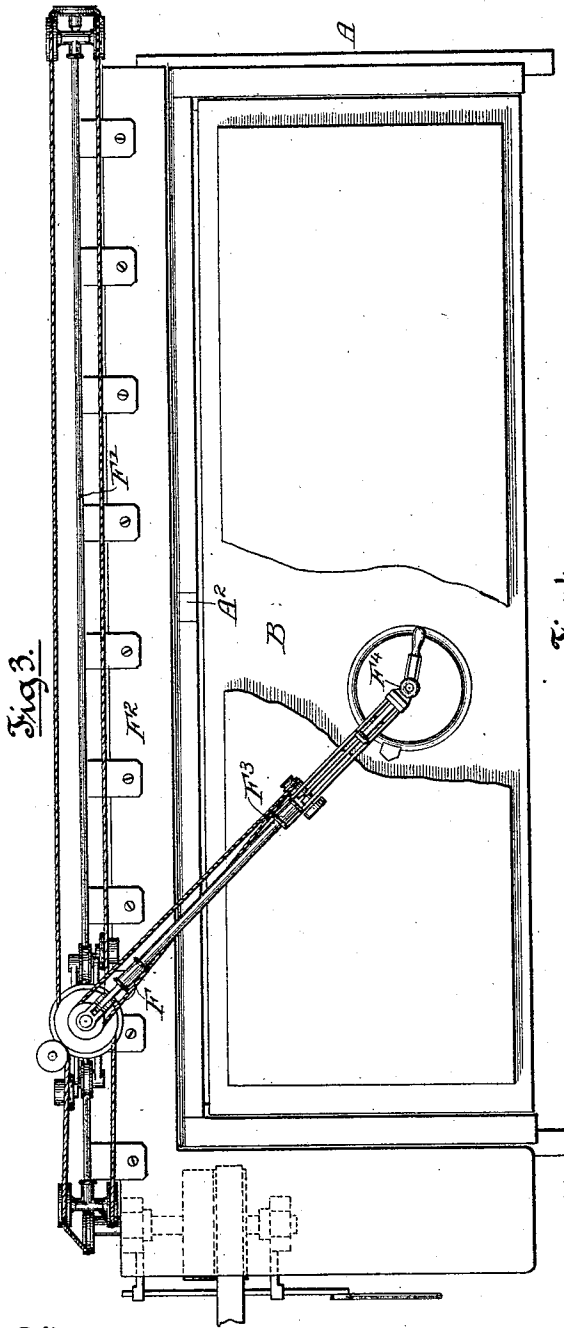


Fig. 3.

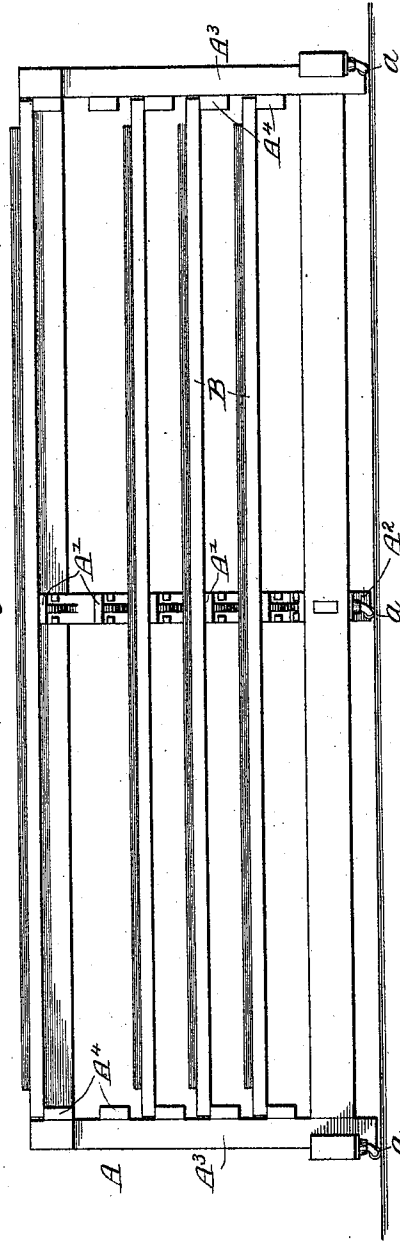


Fig. 4.

Witnesses  
*Wm. J. Heming*  
*Louis W. Whitehead.*

Inventor  
*Adolph L. Singer*  
 by *Rayton Poole & Brown*  
 his Attorneys.

# UNITED STATES PATENT OFFICE.

ADOLPH L. SINGER, OF CHICAGO, ILLINOIS.

## APPARATUS FOR MARKING AND CUTTING CLOTH.

SPECIFICATION forming part of Letters Patent No. 451,006, dated April 21, 1891.

Application filed September 25, 1890. Serial No. 366,112. (No model.)

*To all whom it may concern:*

Be it known that I, ADOLPH L. SINGER, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Marking and Cutting Cloth; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved apparatus for marking and cutting cloth, adapted more especially for use in factories where what is known as "ready-made garments" are manufactured.

Heretofore it has been customary to lay out several thicknesses of cloth, usually not less than eight or ten, upon a large table some twenty or more feet in length, and upon the upper layer of cloth mark out the shapes of the several parts of the garment. When the entire surface of the upper layer of cloth has been thus marked, the marker (commonly using an ordinary U-shaped clamp with a thumb-screw) secures the edges of the several pieces of cloth at the corners, and perhaps at two or three places along the sides, so as to clamp all the pieces together. He then folds the layers of cloth together in a bundle, which is carried by an attendant to a cutting-table, to which a machine is attached, where said bundle is unfolded by the cutter and spread out for the cutting implement. These implements are generally of that class wherein the knife is mounted upon a carriage which travels upon a track located at the edge of the cutting-table, so that the cutting-knife may be moved into any desired position along the entire length of the cutting-table.

It is found in practice that a skillful man operating the cutting-machine works faster than a skillful marker, and hence the machine is not worked to its full capacity unless several markers are preparing cloth for one operator.

It has heretofore been customary to employ four or five persons to mark the patterns upon the cloth which is to be cut upon one cutting-machine. In such cases the folded cloth is taken from the marker's table and deposited on the floor or another table in close prox-

imity to the cutter, who, when his table is clear, takes one of the bundles, places it upon the cutting-table and spreads it out, as before mentioned. In folding the cloth and moving it from the marker's table to the cutting-table and unfolding it upon the latter, it has been my experience that the several layers of cloth become shifted from the position that they originally occupied with relation to each other, so that some of the parts of the garment will vary from the original pattern—as, for instance, some pieces may be cut with a greater fullness than others by reason of the under or inside layers being given folds by the folding of the entire number of layers, which folds it is difficult to detect when the cutter spreads the mass of cloth before him on the table. It will be manifest that the cutting-machine will cut through such folds, and that therefore some parts will not be of the required shape and others, being of the proper general shape, will be of a size larger than the pattern. In some cases it is found necessary to throw parts of the cloth away because of this irregular cutting.

I have observed that heretofore the vibration of the cutting machinery and the machinery necessary for operating the same is imparted more or less to the cutting-table attached thereto. In cutting light-weight goods this vibration is a serious obstacle, as it prevents the operator from cutting straight lines without the exercise of the greatest care on his part, thus requiring more time than would be needed in cutting the quantity of goods on a non-vibrating table. Again, it has been impracticable heretofore to cut six-quarter goods, or goods fifty-four inches wide, when the goods were laid out flat or unfolded, owing to the fact that the operator of the cutting-machine could not properly and conveniently handle the cutting-tool from that side of the table having the track and driving-belts thereon, and the cloth cannot be cut entirely from one side of the table, because the operator's arm is not long enough to reach to the back or opposite side of the table.

In using wide goods heretofore it has been common to double or fold the same in the middle to enable it to be placed upon narrow marking and cutting tables; but this has the serious disadvantages of increasing the lia-

bility of displacement or shifting of the layers in case the marked cloth is moved from the marking to the cutting table, and of producing a waste of material along the line where the material is folded, it being obviously impossible to cut the cloth close to the folded edge, especially in cases where the number of layers is considerable and the pile of goods a thick one.

In order to obviate the foregoing objections, as well as to increase the capacity of a given number of machines and workmen, I employ in connection with a cutting-machine supported upon a narrow frame, which is independent of any table, a plurality of separate movable marking and cutting boards and one or more movable trucks constructed to sustain at their top a marking and cutting board in position convenient for the marker or cutter, and provided with a plurality of shelves or brackets located below the top and each adapted to sustain one of the marking and cutting boards.

In the use of an apparatus arranged as above described the marker places one of the boards upon the top of the truck and spreads out the thicknesses of cloth thereon, and after the same has been properly marked places said board upon one of the shelves or brackets and replaces it by another empty board, taken from one of the shelves or brackets or elsewhere. This operation is repeated until all the boards are filled and each deposited upon one of the supporting shelves or brackets. When all the boards have been filled, the entire frame supporting the same is shifted into proper position adjacent to the cutting-machine, and the cloth upon the board which rests upon the top of the truck is cut, the board removed and placed upon one of the shelves or brackets, and a second board placed upon the top of the truck. This operation is repeated until the cloth upon all the boards has been cut, when the truck is removed and another substituted.

It is obvious that by this construction and arrangement a very great number of marking and cutting boards may be employed, and said boards being placed upon shelves or brackets, as described, one above another, each set of boards will occupy only the amount of floor-space that would be taken up by a single table of the kind ordinarily in use. By the construction set forth, therefore, great economy of space is afforded, while a large number of markers, each provided with a sufficient number of marking-boards, may be employed in marking at the same time for a single cutting-machine, so that the cutter may be kept constantly busy and the cutting-machine run at its full capacity at all times.

By the use of an apparatus constructed as before described a skillful cutter can take care of the work of from eight to ten markers, whereas by the ordinary method, where the cloth is marked and the thicknesses then clamped together and the whole number of

layers then made into a roll, which the cutter unrolls upon the cutting-table, he can keep up with the work of four or five markers only. Furthermore, the work done is very much more accurate, for the reason that the cloth is operated upon by the cutting mechanism while resting upon the same board upon which it was originally marked, so that any displacement of the cloth layers, such as occurs in the handling of the same in transporting them from a marking-table to a cutting-table, is avoided.

Another important advantage gained by the use of the several marking and cutting boards arranged upon supports independent of the frame upon which the cutting mechanism is supported is that the cutting-boards are thereby relieved from the vibratory movement produced by the cutting-machine, so that more accurate work can be accomplished. Furthermore, the apparatus described is of great benefit, for the reason that when the marking and cutting boards are supported independently said boards are accessible upon all sides to the operator, so that boards of greater width may be used and wider cloth cut upon the same. When said boards are too wide for cutting entirely from one side thereof, they may be placed at a distance from the frame of the cutting-machine sufficient to allow the cutter to enter between said frame and the cutting-board, thereby enabling him to easily operate on that side of the wide board nearest the cutting-machine.

In the accompanying drawings, illustrating my invention, Figure 1 is a vertical cross-section of an apparatus embodying my invention. Fig. 2 is a side elevation of means for raising and lowering the marking and cutting boards. Fig. 3 is a plan view of a cutting-machine with one of the trucks provided with shelves located in position adjacent to the cutting-machine ready for the cutting operation. Fig. 4 is a front elevation of one of the trucks with a plurality of marking and cutting boards supported upon its shelves or brackets.

In said drawings, A indicates a suitable truck supported upon casters *a a* and provided with any desired number of horizontal shelves or brackets *A' A'*, placed one above the other, as shown more particularly in Figs. 1 and 4.

B B indicate any desired number of marking and cutting boards. The truck A is preferably made with a frame the lower part of which rests upon casters *a a*, and provided with vertical standards *A<sup>2</sup>*, to which the brackets *A' A'* are attached at the middle portions of the truck, together with end frame-pieces *A<sup>3</sup> A<sup>3</sup>*, provided with horizontal cleats *A<sup>4</sup> A<sup>4</sup>*, upon which the boards rest. By this construction and arrangement the boards may be quickly and easily removed from their supports and placed in position upon the top of the truck, or vice versa, the ends of the boards resting upon the horizontal cleats *A<sup>4</sup> A<sup>4</sup>* and

the central portions resting upon the intermediate brackets A' A', which, being attached to the vertical standards at one side only of the truck, permit the boards to be freely withdrawn from or placed in position upon said supporting cleats and brackets.

A main advantage gained by the employment of an apparatus arranged as herein described is that each marker is provided with a sufficient number of marking and cutting boards all arranged upon the supporting shelves or brackets, so that the entire set of boards occupies no more room in the shop than one separate table or board mounted on independent supports, thus effecting a great saving of room.

Another advantage gained by the use of an apparatus constructed as herein described is that the entire set of marking and cutting boards supported upon one of the trucks may be shifted from one part of the room to the other at the same time, so that the cutter has a number of such boards within his reach at all times, and after cutting the cloth upon one board may quickly remove the same and replace it with another board without waiting for the first board to be moved away and another brought from a distant part of the shop.

F indicates a cutting-machine of familiar construction, preferably mounted upon a track F', which is supported upon a narrow independent frame F<sup>2</sup>.

F<sup>3</sup> indicates the movable arm, and F<sup>4</sup> the head of said cutting-machine.

In order to facilitate the handling of the heavy boards, I provide a lifting device consisting of a vertically-movable support for the boards, a movable frame supporting the same, and means for raising and lowering said vertically-movable support. As far as this feature of my invention is concerned, any one of a great variety of well-known devices may be employed for giving vertical movement to said support.

The lifting device shown, which embodies one practical form thereof, is constructed as follows: C is a vertically-movable support or table; E, a truck or frame adapted to rest upon the floor and affording support to the table C and other operative parts of the device. Said truck or frame is preferably mounted upon casters *ee*, by which it may be easily moved from place to place. The table C is directly supported upon arms C' C', which are attached at their lower extremities to the shafts C<sup>2</sup>, said shafts being provided with crank-arms C<sup>3</sup>, provided at their lower ends with threaded nuts or blocks *c*<sup>2</sup>, connected with said arms by means of pivots *c*<sup>3</sup>.

The support or table C is provided upon its under side with guides *e*, and the upper ends of the arms C' C' are provided with sliding blocks *c'* *c'* engaging said guides. D indicates a screw-threaded shaft, preferably made with right and left hand screw-threads, which engage the threaded blocks *c*<sup>2</sup> and force

them farther apart or draw them together as the screw-shaft is turned. D' indicates a suitable operating-handle for the shaft D. It will be readily seen that by this construction, the crank-arms C<sup>3</sup> C<sup>3</sup> being much shorter than the arms C' C', a slight motion of the arms C<sup>3</sup> C<sup>3</sup> will cause a considerably greater motion of the arms C' C' at their upper extremities. It is obvious that by the rotation of the shaft so as to spread the blocks *c*<sup>2</sup> *c*<sup>2</sup> apart the longer arms will move in the direction of the arrows in Fig. 2, and the frame C will be raised, or if the shaft be rotated in the opposite direction the frame C will be lowered. It is furthermore obvious that this adjustment may be easily and quickly accomplished by the means herein shown, and that the marking and cutting boards may be easily slid off from the shelves or brackets upon the frame C and then raised to the proper height, when the board may be easily moved into position upon the top shelf or bracket, as indicated in Fig. 1 at B' by dotted lines.

The particular form of the vertically-movable frame and the mechanism for operating the same is of course immaterial, inasmuch as any suitable means for raising and lowering said frame with the boards thereon may be employed; but a construction similar to that shown is preferred, since rapid adjustment of the frame is accomplished with but slight movement of the operating-handle.

A main advantage gained by the use of the lifting device described is that one man can by its use easily and quickly move the boards, which are made of planking, and usually from twenty to thirty feet long and from two and a half to five feet in width, so that while one man provided with suitable machinery can easily handle them, yet their weight is so great that two or more strong men would be required to move them by hand.

Having described my invention, what I claim is—

1. The combination, with a cloth-cutting machine, of one or more movable supporting frames or trucks provided with a plurality of shelves or brackets, and a plurality of marking and cutting boards adapted to rest upon said shelves or brackets, substantially as described.

2. The combination, with a cloth-cutting machine, of one or more movable supporting frames or trucks provided with a plurality of shelves or brackets, a plurality of marking and cutting boards adapted to rest thereon, and a lifting device for handling said boards, substantially as described.

3. The combination, with a cloth-cutting machine and a plurality of marking and cutting boards, of a supporting frame or truck supported upon rollers and provided at its ends with frame-pieces having horizontal cleats, and with intermediate standards having brackets, which, together with the cleats,

constitute shelves for supporting said boards, said frame or truck being adapted to sustain one of said marking and cutting boards upon its top and one of said boards upon each of  
5 said brackets or shelves below the top, substantially as described.

In testimony that I claim the foregoing as

my invention I affix my signature in presence of two witnesses.

ADOLPH L. SINGER.

Witnesses:

C. CLARENCE POOLE,  
GEORGE W. HIGGINS, Jr.