

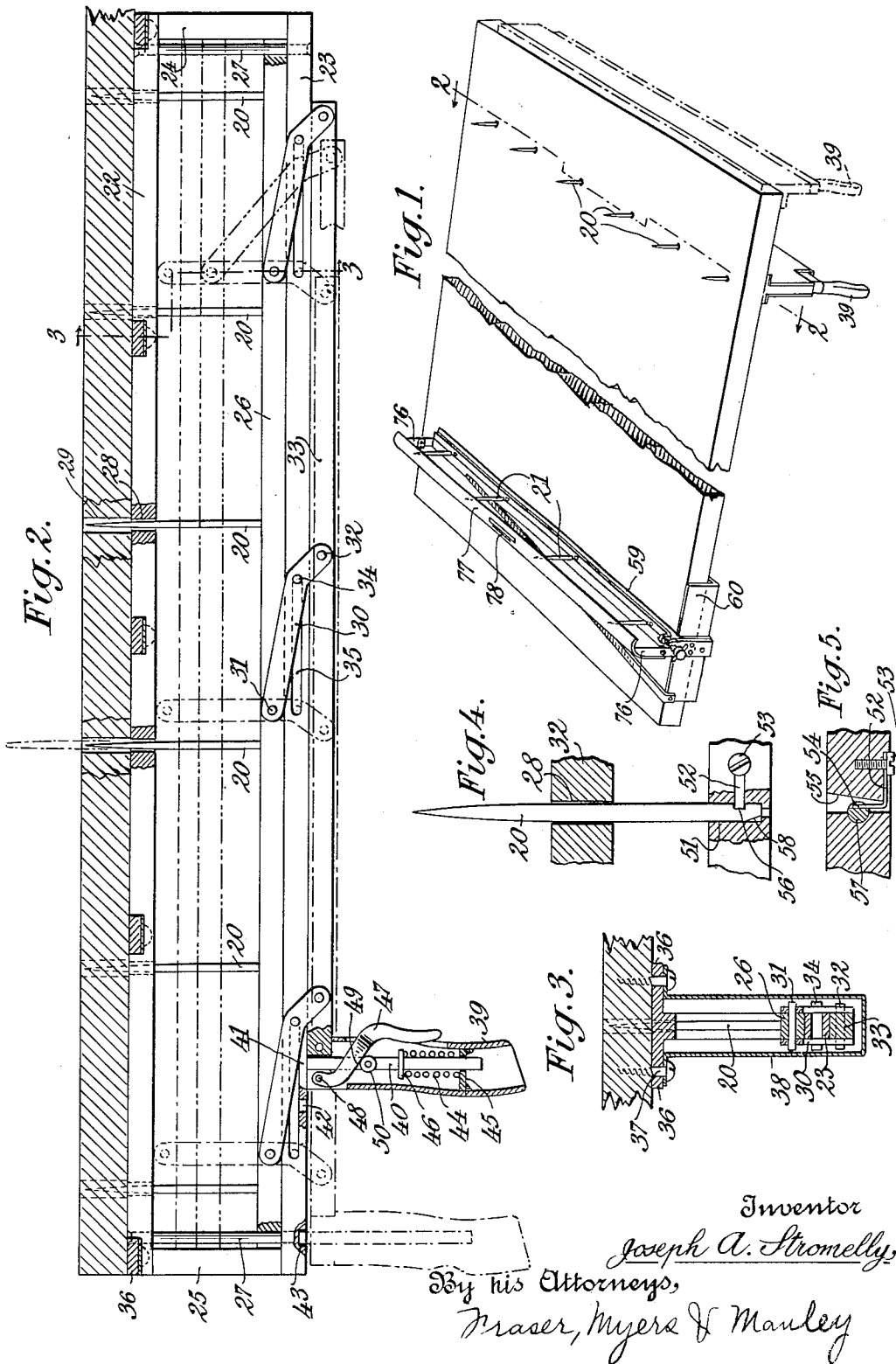
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GAUGING, SEVERING, PILING, AND HOLDING MECHANISM FOR SHEET MATERIAL

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GAUGING, SEVERING, PILING, AND HOLD-
ING MECHANISM FOR SHEET MATERIAL

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This invention relates to improvements in gauging, severing, piling and holding mechanism for sheet material. It is particularly adapted for use when cutting or tearing silk or other fabric into a number of pieces of equal length, piling them one above the other on a work-table and holding them securely during the cutting of parts of the piled pieces to the form of one or more patterns.

10 It is an object of the invention to provide means whereby the pins or pointed spikes to which one end of each sheet of fabric is to be attached may be very quickly raised above the table to the desired height or withdrawn below the level of the table.

15 In the accompanying drawing illustrating the invention in its preferred form,—

Figure 1 is a perspective view of the top of a work-table with a mechanism embodying the invention secured thereto.

Fig. 2 is a drawing of the part of the mechanism mounted at the right-hand end of the table as illustrated in Fig. 1, drawn to a larger scale.

25 Fig. 3 is a cross-sectional view of the part of the mechanism illustrated in Fig. 2, the plane at which the cross-section is taken being indicated by the line 3—3 of said figure.

Fig. 4 is a view of the part of the mechanism illustrated in Fig. 2 drawn to a still larger scale, indicating the manner in which the spikes are secured in their base bar.

Fig. 5 is a sectional view of a portion of the base bar illustrated in Fig. 4.

Referring first to Fig. 1, the invention comprises generally a row of pointed spikes 20 and means whereby they may be mounted at or near one end of a cutting table and a second row of pointed spikes 21 and means whereby they may be adjustably mounted upon the cutting table at any desired distance from the first row.

The mount or frame by means of which the spikes 20 are to be secured to the table may either be applied to the under side of the table top, as indicated in full lines in Fig. 1, or at the extreme end of the table, as indicated in broken lines in the same figure. If applied to the under surface of the table as indicated in full lines, the spikes for any given quantity of cloth to be cut and piled must be somewhat longer to allow for the thickness of the table top than if applied to the end of the table as indicated in broken lines.

One satisfactory means whereby the spikes 20 may be secured to the table and quickly elevated and lowered is illustrated in Figs. 2 and 3. As therein disclosed, this device may com-

prise a framework including top and bottom longitudinally-disposed bars 22, 23, connected by vertical end bars 24, 25. The spikes 20 may have their bases secured in a base bar 26, which may be movable vertically between the bars 22, 23 along guide-posts 27. When the base bar 26 is elevated, the spikes 20 mounted therein will be thrust upwardly through openings or guide-ways 28 in the top bar 22, and, if the device is secured beneath the table top, they must also be thrust upwardly through openings 29 provided therefor in the table top.

One satisfactory means of quickly elevating and lowering the spikes 20 is illustrated in Fig. 2. It comprises a plurality of levers 30 each pivoted at one end to the base bar 26 as at 31 and at its opposite end as at 32 to a common connecting rod or operating bar 33. Each lever has a fulcrum intermediate its ends which may comprise a cross bar of pin 34 adapted for endwise movement in a slot 35 in the bottom bar 23 of the frame or mount, by which the mechanism is secured to the table top.

The frame comprising the bars 22, 23, 24 and 25 may be provided with suitable lugs 36 (Figs. 2 and 3) by which the mechanism may be secured to the under side of the table top by screws 37 or other appropriate fastening devices, and all parts of the mechanism below the table except the operating handle or manipulator hereinafter to be described, may be enclosed within a casing 38 (Fig. 3) of thin sheet metal or other suitable material, which may have appropriate flanges at the top to be secured under the heads of the fastening elements 37.

The mechanism may be readily adapted for application either at the under surface of the table top or at its end, as indicated respectively in full and broken lines in Fig. 1, by merely making slight modifications as to the position of the attaching lugs and the means for securing the casing 38 to the framework of the mechanism.

One suitable means whereby the elevating and lowering mechanism for the pins or spikes 20 may be operated is illustrated in Fig. 2. It comprises a handle 39 fixedly secured to the operating bar 33 in a position for convenient access from the front of the table. Mounted in this handle is a locking bolt 40 adapted to be moved upwardly into engagement with any one of a number of holes 41, 42, 43. A spring 44 mounted in the handle between a fixed stop-plate 45 and a shoulder 46 on the locking bolt normally tends to move the bolt upwardly and cause it to enter any one of the holes 41, 42, 43 with which it may be brought

into alignment by a suitable movement of the handle.

One means whereby the locking bolt 40 may be moved downwardly so as to withdraw its upper end from any of the holes 41, 42, 43 which it may have entered, as illustrated in Fig. 2, comprises a trigger 47 pivoted at its upper end 48 to the operating bar 33 and having a cam surface 49 to engage a roller 50 on the bolt 40 and cause the bolt to move downwardly whenever the trigger is rocked about its pivotal connection 48 by the pressure of a part of the hand of the operator when grasping the handle 39. On movement of the handle to a position such as to bring the bolt 40 in alignment with any one of the openings 41, 42, 43, and the subsequent release of the handle and trigger, the bolt will be caused to enter the opening and lock the mechanism. It will be obvious that the bottom bar 23 may be provided with as many openings to receive the bolt 40 as may be desired, to make it possible to lock the mechanism with the points of the pins below the level of the table and with the points of the pins projected at various distances above the level of the table.

In Fig. 2 of the drawing the handle 39, operating bar 33, levers 30 and base bar 26 for the spikes are indicated in full lines in the positions which they assume to lower the points of the pins below the level of the table top, and these same parts are indicated in broken lines in the positions which they assume to elevate the points of the pins to their maximum distances above the level of the table. The levers and base bar for the spikes are also indicated in broken lines in the positions which they assume to hold the pins at an intermediate position.

In Figs. 4 and 5 is illustrated a satisfactory means of detachably securing the spikes 20 in the base plate 23. This fastening is effected by inserting the base of each spike in a recess 51 and in providing a spring-retaining element 52 secured at one end to the base plate by a screw 53 or other suitable fastening means, and having its opposite end 54 turned inwardly in a recess 55 provided therefor along one side of the recess 51, so that it may be snapped into engagement with a notch or recess 56 in one side of the base of the spike. The portion 57 of the base of the spike directly opposite the recess 56, as best indicated in Fig. 5, is adapted to serve as a cam whereby the free end 54 of the retaining spring may be thrust out of the notch by rotating the spike about its axis until the spring rests against a portion of the camming element 57 flush with the adjacent surface of the spike, after which the spike may be withdrawn in an endwise direction from the socket 51.

Preferably the base end of the spike will be provided at the side directly opposite the notch 56 with a cam surface 58 (Fig. 4) adapted to force the end 54 of the retaining spring inwardly when the spike is inserted in the recess 51 with said cam surface directed towards the spring, after which the end 54 of the spring may be permitted to enter the notch 56 by rotating the inserted spike through an angle of 180°, thus bringing the notch to a position facing the spring, as indicated in Figs. 4 and 5.

The means whereby the spikes 21 (Fig. 1) may be secured to a table top at any desired distance from the row of spikes 20 may comprise a base bar 59 adapted to lie along the table top and having a clamping bar 60 secured thereto at its forward end and provided with suitable clamping

means by means of which it may be firmly secured to the table top at any desired location.

The spikes 21 may be detachably secured to the above-described mounting element by inserting their base ends in recesses in the base bar 59 and releasably securing them therein.

Pivotaly connected to a pair of supports 76 extending upwardly from opposite ends of the base bar 59 is a guard-plate 77 which may normally extend along and above the pointed upper ends of the spikes 21 and provide means whereby a piece of fabric which has been secured at one end to the spikes 20 (Fig. 1) may be drawn over the row of spikes 21 and carefully adjusted in the position in which it is to be secured, after which the guard-plate may be rotated about its pivotal connections to a position such as to permit the fabric to be thrust downwardly and pierced by the spikes.

When using the above-described apparatus the mounting element for the row of spikes 21 (Fig. 1) will be clamped to the table top at a distance from the row of spikes 20 dependent upon the length of the sheets of fabric or other material to be cut and piled, and sets of spikes 20, 21 will be inserted in the two mounting elements of lengths dependent upon the thickness and number of layers of material to be used. The recesses in each mounting member for the spikes should be spaced at any desired distances, and the number of pins or spikes to be used in cutting and piling material in each instance will be dependent upon the width and nature of the material. After the apparatus has been set up, one end of the material will be thrust downward over the spikes 20 and with guard-plate 77 in its normal position covering the points of the spikes 21, the material will be drawn over the guard-plate and smoothed out in the position in which it is to be piled. Its central portion may then be thrust downwardly so as to be cut by the knife 78, after which the guard-plate may be thrown down, and the fabric lowered so as to be perforated by the spikes and then severed by tearing in opposite directions. The guard-plate may then be restored, the end of the remaining portion of the bolt of cloth secured over the spikes 20, and the process repeated until the desired lengths of fabric have been severed and piled with their ends firmly secured over the spikes 20 and 21.

After the fabric has been severed and piled as above described, it may be cut in the usual manner in conformity with one or more patterns while firmly held in place by the spikes. The cut portions may then be removed, the spikes quickly drawn below the surface of the table by simply grasping and moving the handle 39 while pressing the trigger 47, thus freeing the end portions of the fabric from the spikes 20, and the end portions of the fabric may be removed from the spikes 21 by pulling them upwardly.

The detachable connections between the spikes and their mounting elements make it possible to very quickly substitute new spikes for those which may have become dull or damaged, and to rapidly interchange the spikes in order that their lengths, and the number used may conform with the thickness and width of material and the number of layers to be piled.

The effective lengths of the spikes 20 may also be varied in accordance with the thickness and number of layers of material to be cut and piled by moving the spike-elevating mechanism for the spikes 20 to and locking it in any desired one of a number of positions provided for by the

placing of the openings 41, 42, 43 in the base bar 23 (Fig. 2).

The invention is not intended to be limited to the preferred form herein disclosed for purposes of illustration but should be regarded as including modifications and variations thereof within the scope of the appended claims.

What is claimed is:

10 1. A holding device for sheet material comprising a mount, a series of vertical pointed spikes movable upwardly and downwardly in said mount with their pointed ends up and their base ends down, a handle movable with respect to said mount, and a quick shift mechanism comprising
15 levers operatively connected with said handle and said spikes whereby the spikes may be raised to their effective sheet-holding positions and lowered to their ineffective positions as a result of a simple forward and backward movement of
20 the handle.

2. A holding device, as defined by claim 1, having readily releasable locking means between the spike-moving mechanism and the mount whereby the spikes may be detachably held in
25 any one of a plurality of effective sheet-holding positions of different elevation.

3. A holding device, as defined by claim 1, having a releasable locking element in its spike-moving mechanism and cooperating locking elements variously located in its mount whereby the spikes may be held in any one of a plurality
80 of predetermined positions of different elevation.

4. A holding device, as defined by claim 1, having means for locking its spike-moving mechanism in any one of a plurality of positions, a trigger so located as to be readily operated by
85 a portion of the hand when grasping the handle of the spike-moving mechanism, and an operating connection between the trigger and the locking means whereby the locking means may be disabled by pulling the trigger.
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5. A holding device, as defined by claim 1, having a base bar for the spikes vertically movable in the mount, a parallel lever operating bar connected with the handle, and a plurality of
95 levers each pivotally connected at its opposite ends with said base bar and operating bar respectively, each of said levers having a fulcrum intermediate its ends slidably connected with the mount.

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