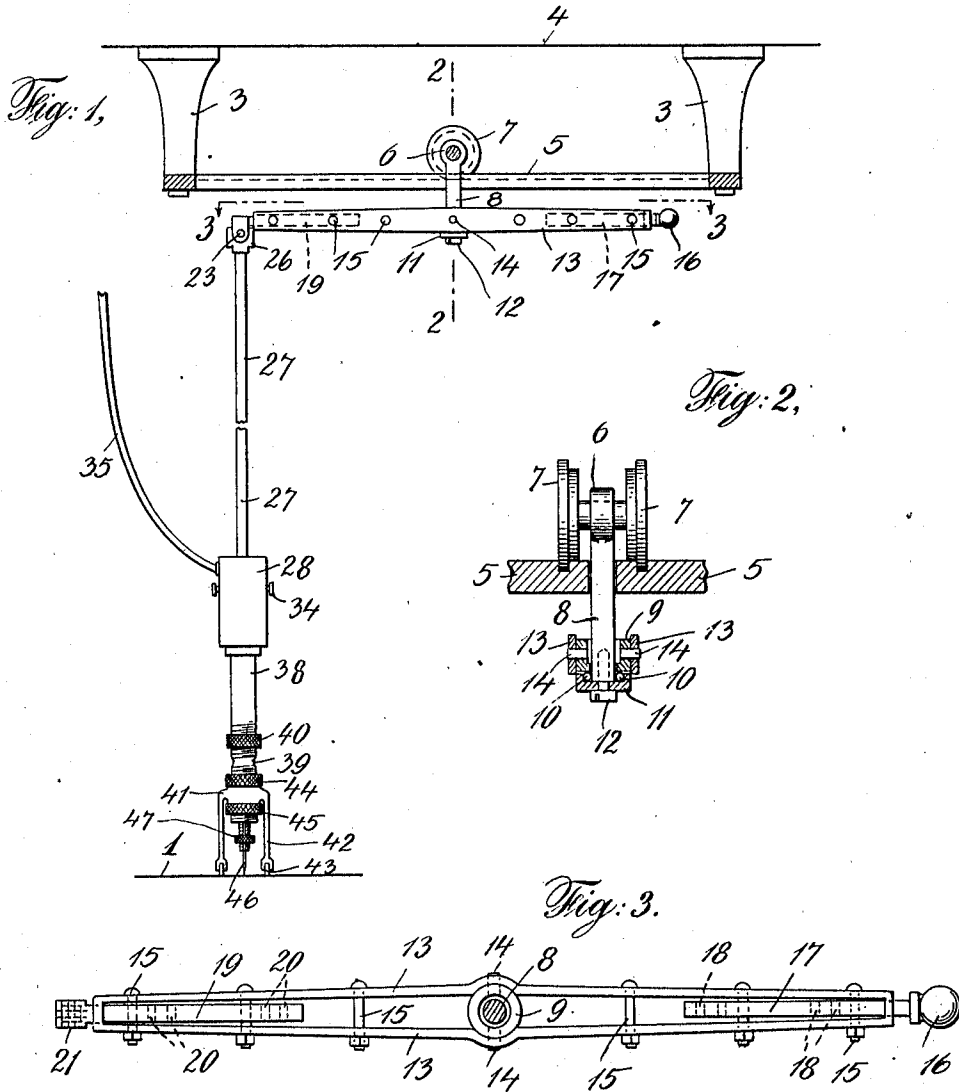


E. PIGNONE.  
 APPARATUS FOR CUTTING PAPER, CLOTH, OR SIMILAR PATTERNS.  
 APPLICATION FILED MAY 12, 1910.

974,293.

Patented Nov. 1, 1910.

2 SHEETS—SHEET 1.



Witnesses:  
*Max P. A. Doring.*  
*F. M. Donaluck*

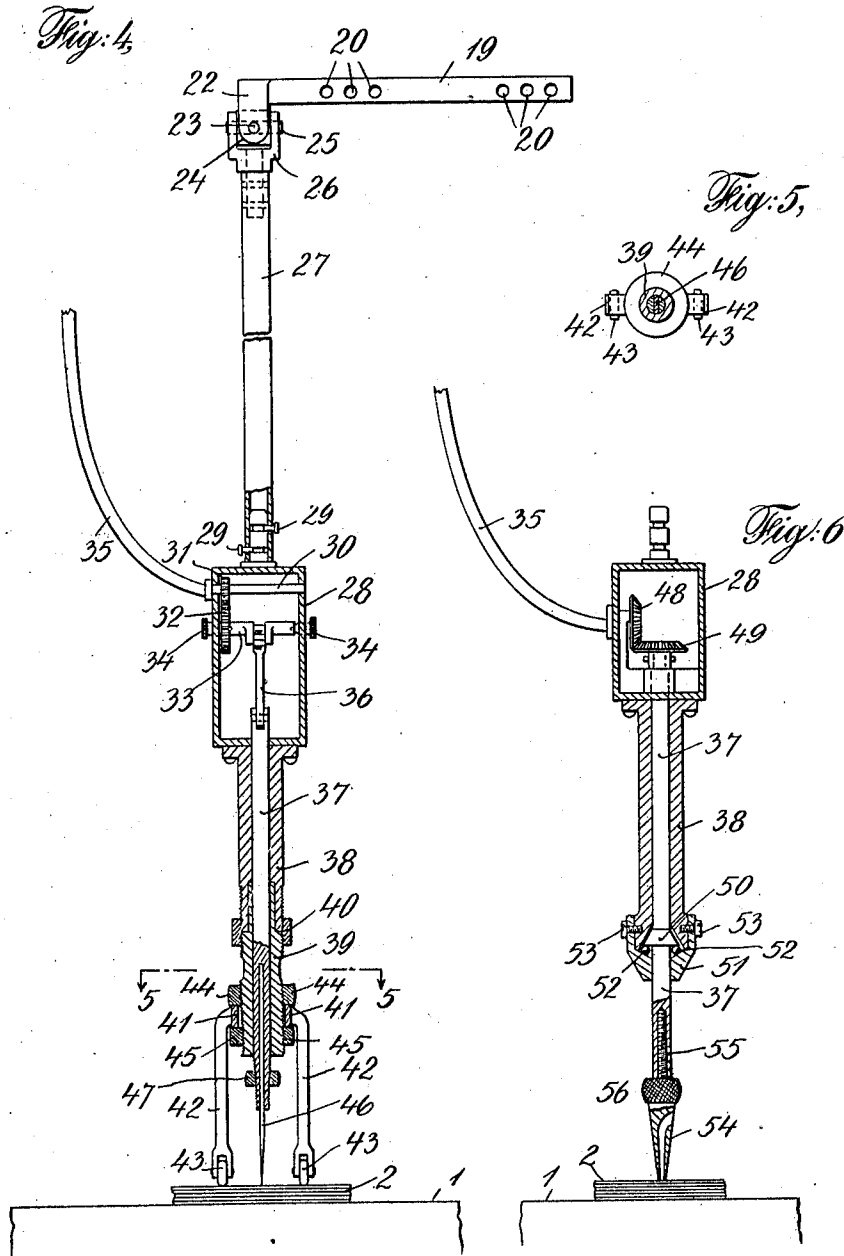
Inventor  
*Emanuel Pignone*  
 By his Attorney *Phillips Abbott*

E. PIGNONE.  
 APPARATUS FOR CUTTING PAPER, CLOTH, OR SIMILAR PATTERNS.  
 APPLICATION FILED MAY 12, 1910.

974,293.

Patented Nov. 1, 1910.

2 SHEETS—SHEET 2.



Witnesses:  
*Max P. A. Doring*  
*F. W. Droubach*

Inventor  
*Emanuel Pignone*  
 By his Attorney *Phillips Abbott*

# UNITED STATES PATENT OFFICE.

EMANUEL PIGNONE, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO GEORGE M. LAUB, OF NEWARK, NEW JERSEY.

## APPARATUS FOR CUTTING PAPER, CLOTH, OR SIMILAR PATTERNS.

974,293.

Specification of Letters Patent.

Patented Nov. 1, 1910.

Application filed May 12, 1910. Serial No. 560,776.

*To all whom it may concern:*

Be it known that I, EMANUEL PIGNONE, a subject of the King of Italy, and a resident of the borough of Bronx, county of Westchester, city and State of New York, have invented a new and useful Apparatus for Cutting Paper, Cloth, or Similar Patterns, Adapted also to other Uses, of which the following is a specification, reference being had to the accompanying drawings.

Apparatus adapted to do the same general kind of work for which my improved apparatus is designed has been known and in use for many years, but all such of which I have knowledge have been so constructed that in use they present a series of objections or undesirable features which, however, need not be here enumerated. It is the purpose of this present invention to perfect such apparatus whereby the users thereof will be relieved from the objectionable features incident to the use of such apparatus as heretofore made.

Figure 1 illustrates a sidewise elevation of the apparatus; Fig. 2 illustrates an endwise elevation, partly in section, of what I term the carriage of the apparatus and the immediately adjacent parts; Fig. 3 illustrates a plan view of the supporting arm of the device; Fig. 4 illustrates a view similar to Fig. 1, showing many of the operative parts in vertical section; Fig. 5 illustrates a detail of construction taken on the line 5—5 of Fig. 4 and looking downwardly in the direction of the arrows; Fig. 6 illustrates in vertical sectional view, a modification of the apparatus adapted to cut circular holes in the pattern material.

Referring now to the drawings, 1 represents a table, or suitable support, upon which the material 2 to be cut is placed. In the drawings hereof I show a few thicknesses only of this material which may be paper, cloth, veneer, leather, or any such substance, but in practice a great many thicknesses or layers of the material may be cut, or otherwise shaped, all at the same time.

3, 3 are hangers supported either from the ceiling 4 of the room in which the apparatus is placed, or from any other suitable frame or support.

5, 5 are two bars or tracks supported upon the hangers 3, upon which the carriage 6 of

the apparatus moves longitudinally upon 55 rollers or wheels 7, 7 which suitably engage with the tracks 5, as shown, or otherwise, as preferred.

8 is a hanger bar supported upon the axle of the carriage and which, in the example shown, projects downwardly through the longitudinally extending slot separating the two tracks 5, 5. At the lower end of this hanger bar 8, there is a journal block 9 supported by ball bearings 10 upon a ball bearing raceway 11 which is held to the lower end of the hanger bar by a screw bolt 12, or in any other preferred manner.

13, 13 are two side pieces which together constitute the supporting arm. They are pivotally connected to the journal block 9 by pivots 14, 14, and are rigidly connected together by a series of bolts 15, 15, etc., as shown.

16 is a counterpoise or weight which is attached to the end of a spindle 17 which has a series of perforations 18 in it, through which two of the bolts 15 pass. I provide a series of these holes so that the counterpoise 16 may be adjusted farther from or nearer to the center of the supporting arm 13 to compensate for the increased or diminished weight of the pendent parts of the structure. At the other end of the arm 13 there is located a similar structure, that is to say, a spindle 19 having a series of holes similar to the holes 18 in the counterpoise spindle, and upon its left-hand end as shown in the drawings there is a universal movement journal 21. This device is constituted as shown best in Fig. 4, that is to say, there is a depending portion 22 which has pivotally connected to it by a cross pivot 23 a block 24 and to this block is pivoted by a cross pivot 25, extending at right angles to the pivot 23, the bifurcated end 26 of a vertical bar 27, upon the lower end of which is supported the gear casing 28 by means of set screws 29, 29, or in any other preferred manner. The gear casing 28 is preferably, as shown in the drawings, an inclosed box or structure through which only such openings are made as are necessary for the passage of the adjoining parts and they fit somewhat snugly in such openings so that dust, lint, and other foreign material, will be practically excluded from the interior of the casing. Suitable dust-proof means, not shown,

which may be of any usual construction, is provided, whereby the parts within the casing may be lubricated.

The devices within the casing are, or may be of two kinds, depending upon the special form of cutter employed. Where the cutter is a knife blade operated by reciprocating vertical movement, the mechanism within the casing may beneficially be such as shown in Fig. 4; when, on the other hand, the cutter is of tubular or equivalent construction, operating by rotation about its axis, the parts within the casing may be as shown in Fig. 6. Referring first to that which is shown in Fig. 4, 30 is a countershaft upon which is a pinion 31 which meshes into a larger pinion or gear 32 which is upon the crank shaft 33 of the apparatus. The crank shaft in the form shown is supported upon point bearings 34, 34, which are made in the usual manner. The device which drives this mechanism is shown at 35 in the form of a flexible twisting strand or equivalent construction such as is frequently used in connection with dental engines, drilling machines and the like, such devices being operated primarily by an electric motor, or equivalent source of power. 36 is a connecting rod which connects the crank with a vertically reciprocating cutter bar 37 which slides through a guideway 38 which in the present instance is made in the form of a tube rigidly attached to the lower surface of the casing 28. Below the slideway 38 is a part 39 which is in effect nothing more than an extension of the slideway 38. These parts are connected together by threading their adjoining surfaces and connecting them together by a suitably threaded collar 40 or in any other preferred manner. I provide this extension piece 39 in order that if it should become worn so as not to afford a perfect bearing for the reciprocating cutter bar 37, a new extension piece may be readily added. In this way I am enabled always to maintain a suitable bearing for the lower end of the reciprocating cutter bar 37 and thus I secure good, smooth and uniform action on the part of the cutter and likewise avoid chattering which, owing to the rapidity with which the cutters are driven, is apt to occur. At the lower end of the extension piece 39 I attach a suitable presser foot. I prefer to make it in the form shown in Fig. 4 in which a collar 41 encircles the extension piece and from the collar depend two arms 42, 42 upon the lower ends of which are presser foot rollers 43, 43. This entire structure is held to the extension piece 39 by threaded rings 44 and 45 by the proper adjustment of which the presser foot rollers 43, 43 may be vertically adjusted to correspond with the thickness or bulk of the material being operated upon. The knife 46 is held in the lower end of the

reciprocating cutter bar 37 which is split or recessed for its reception and the extreme lower end of which is tapered and threaded and provided with a clamping ring 47 as usual.

For cutting holes in the material, the construction as heretofore stated is such as shown in Fig. 6. In this case a bevel gear 48 engages with a similar bevel gear 49 which rotates the cutter bar horizontally instead of reciprocating it vertically, and upon this rod I place a ball bearing composed of a ledge or ring 50 beneath which is a raceway for the ball bearings 51, the ball bearings themselves being numbered 52. The raceway is connected to the exterior guideway by screws 53, or equivalent devices. At the end of the cutter bar 37 a tubular cutter 54 is connected by a threaded stem 55 with set nut 56.

The operation is as follows: As many thicknesses of the material to be operated upon as desired being placed upon the table, and the pattern to be cut having been laid upon or produced upon the uppermost layer, the presser foot of the machine is brought down upon the goods and the machine started. The operator controls the movements of the cutter by grasping the structure at or near the extension piece 39 and the roughness given to this part of the structure by reason of the presence of the clamping rings 40, 44 and 45, and the presence of the depending arms 42 which form part of the presser foot, affords a good grip for the hand of the operator, whereby he may reliably and without cramping his fingers or hand by reason of long retention of his hold, guide the device with accuracy and comfort. As will be at once understood the cutter, owing to the ample provision that has been made for universal movement in all directions and also because of the presence of the antifriction or ball bearings and the presence of the counterpoise, may be moved with great ease, perfect accuracy and with the exercise of a uniform degree of pressure throughout the entire area or surface where the cutting is to be performed, and also owing to the special construction of the parts, the operation of the machine is practically noiseless, since the gearing which is practically the only part which will generate noise is located within the inclosed casing; also owing to the fact that all the rapidly moving parts are inclosed, and dust and grit proof, the life of the apparatus is of long duration.

Another important feature which although not new is nevertheless present in my construction, is that all the operative parts of the apparatus are located in the upper part of the space or room in which the apparatus is located, higher than the heads of the operators. The only part which is lower

than this is the depending cutter proper which is located directly over the table with which it co-acts and therefore affords no obstruction to factory space because the space 5 is already inevitably occupied by the table itself.

It will be obvious to those who are familiar with such matters that modifications may be made in the details of construction 10 of the apparatus and yet the essentials of the invention be retained. I therefore do not limit myself to the details as described.

I claim:

1. In an apparatus of the class stated, a 15 support for the work, a horizontal arm pivotally suspended at its center above the work, a suspension bar connected with one end of the arm, a universal joint connecting the suspension bar with the arm, a gear casing 20 supported by the suspension bar and which incloses and protects the gears, a cutter bar, mechanism within the casing for actuating the cutter bar, power devices which connect direct with the gears and do not make contact 25 with either the arm or the suspension bar, and a presser foot.

2. In an apparatus of the class stated, a support for the work, a horizontal arm suspended above the work, means whereby the 30 arm may move bodily across the work, other means whereby it may be swung laterally to the right and left, a suspension bar supported by the arm, a universal joint interposed between the suspension bar and the 35 arm, a gear casing supported by the suspension bar and which incloses the gears in a dust-proof manner, a cutter bar, mechanism within the casing for actuating the cutter bar, driving devices connected direct 40 with the gears without making contact with any of the other parts stated, and a cutter at the lower end of the cutter bar.

3. In an apparatus of the class stated, a support for the work, a track suspended 45 above the work, a carriage adapted to longitudinal movement along the track, a hori-

zontal arm pivotally supported at its center from the carriage, a counterpoise at one end of the arm, means whereby the counterpoise may be adjusted, a suspension bar pivotally 50 connected to the other end of the arm, means whereby the suspension bar may be adjusted, a gear casing supported by the suspension bar, which incloses and protects the gears, a cutter bar, mechanism within the casing 55 for actuating the cutter bar, a cutter upon the lower end of the cutter bar, and a presser foot.

4. In an apparatus of the class stated, a support for the work, a track above the 60 support, a carriage adapted to longitudinal movement along the track, a horizontal arm pivotally supported from the carriage, an antifriction bearing for the arm, an adjustable counterpoise at one end of the arm, a 65 suspension bar connected to the other end of the arm by an adjustable universal joint, a gear casing supported by the suspension bar, a cutter bar, mechanism within the casing for actuating the cutter bar, and a cutter 70 upon the lower end of the cutter bar.

5. In an apparatus of the class stated, a support for the work, a track above the support, a carriage adapted to longitudinal movement along the track, a horizontal arm 75 pivotally supported from the carriage, an antifriction bearing for the arm, an adjustable counterpoise at one end of the arm, a suspension bar connected to the other end of the arm by an adjustable universal joint, a 80 casing which incloses the gears in a dust-proof manner supported by the suspension bar, a cutter bar, mechanism within the casing for actuating the cutter bar, and a cutter 85 upon the lower end of the cutter bar.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMANUEL PIGNONE.

Witnesses:

PHILLIPS ABBOTT,  
F. M. DOUSBACH.