

Jan. 2, 1951

L. A. O. MARTINEZ

2,536,650

PATTERN-CONTROLLED WALLBOARD ENGRAVING MACHINE

Filed Oct. 18, 1946

3 Sheets-Sheet 1

Fig. 1

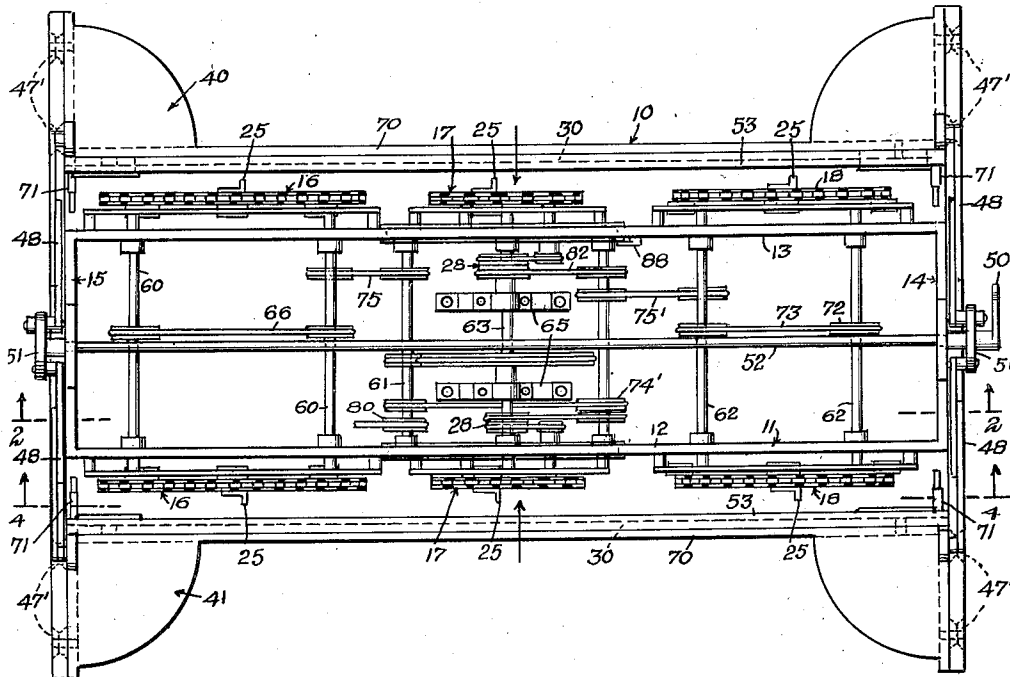
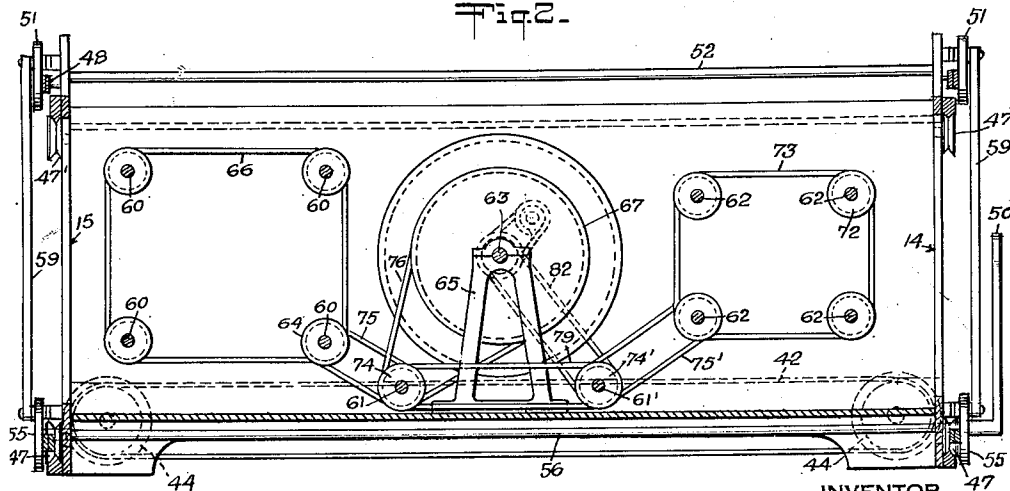


Fig. 2



INVENTOR
Luis Alberto Ortiz Martinez

BY
Munn, Liddy & Glaccum
ATTORNEYS

Jan. 2, 1951

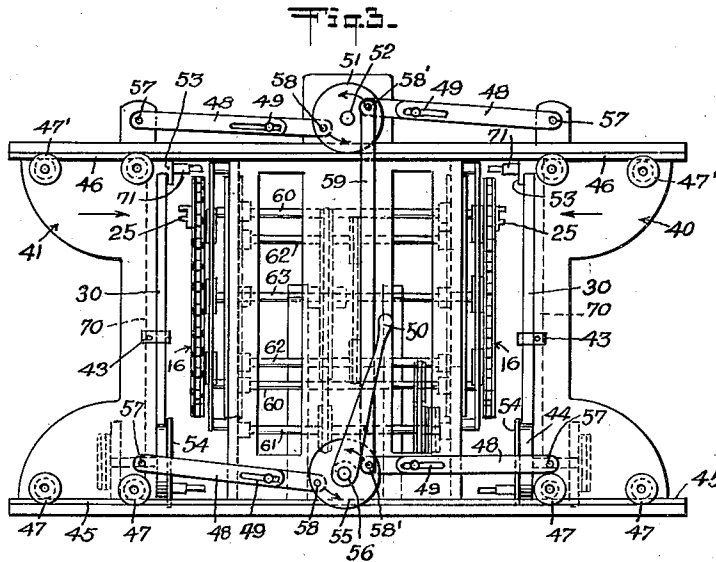
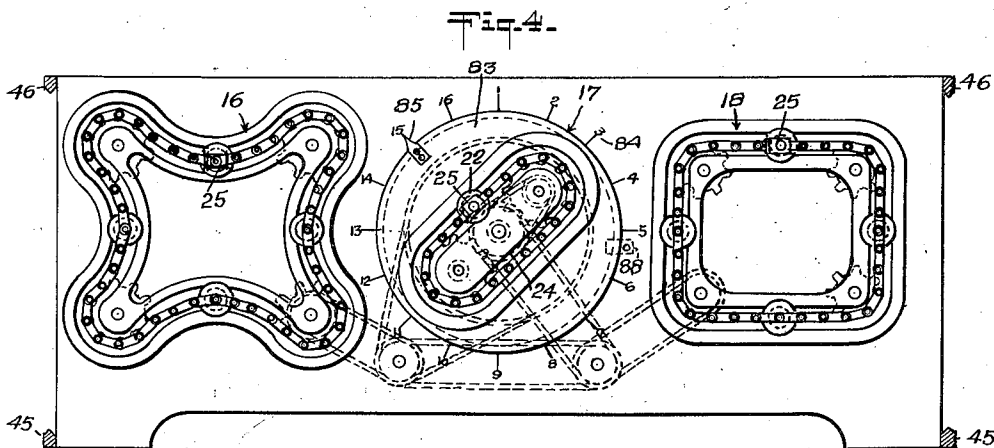
L. A. O. MARTINEZ

2,536,650

PATTERN-CONTROLLED WALLBOARD ENGRAVING MACHINE

Filed Oct. 18, 1946

3 Sheets-Sheet 2



INVENTOR
Luis Alberto Orta Martinez

BY
Mum, Liddy & Glacum
ATTORNEYS

Jan. 2, 1951

L. A. O. MARTINEZ

2,536,650

PATTERN-CONTROLLED WALLBOARD ENGRAVING MACHINE

Filed Oct. 18, 1946

3 Sheets-Sheet 3

Fig. 5.

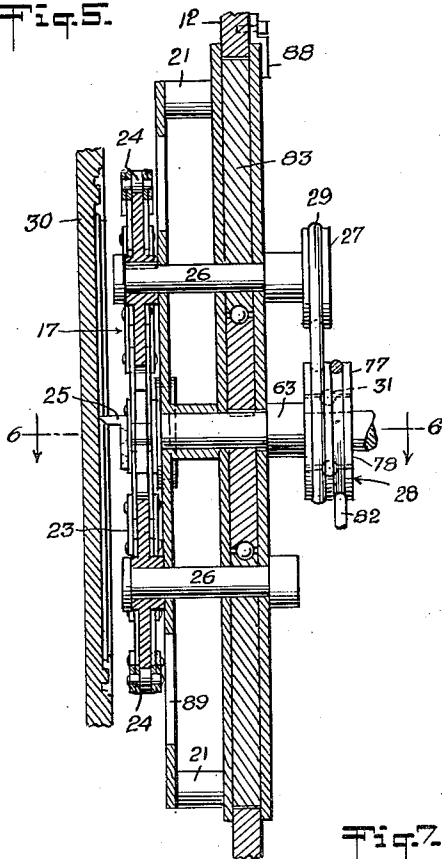


Fig. 5.

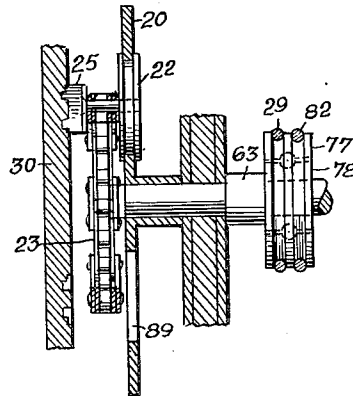


Fig. 7.

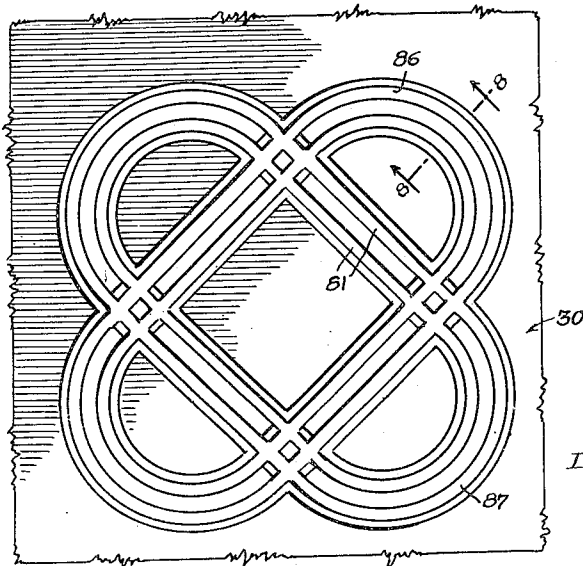
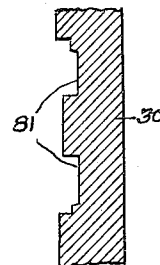


Fig. 6.



INVENTOR
Luis Alberto Orta Martinez
BY
Mum, Luddy & Glacum
ATTORNEYS

UNITED STATES PATENT OFFICE

2,536,650

PATTERN-CONTROLLED WALLBOARD
ENGRAVING MACHINE

Luis Alberto Orta Martinez, Caracas, Venezuela

Application October 18, 1946, Serial No. 704,185

3 Claims. (Cl. 144—144)

1

My invention relates to a machine for engraving unique designs in wall board, wood or other similar material.

The principal objective of my invention is to construct a machine that will quickly and efficiently engrave designs of many varied configurations in wall board. A further objective of my invention is to construct a machine that can handle more than one board at the same time and yet enable the work to be performed on all in one operation.

An additional advantage of my machine is that it performs the work for which it was designed easily and efficiently at an extremely low cost. It can be adapted to work either automatically or manually and, even when utilized manually, it only requires the services of one man.

A further feature of my invention is the cutters which engrave the designs into the wall board. These cutters are mounted on continuous chains and can be so designed that any desired contour may be secured. The result is a unique and artistic design that adds greatly to the beauty and utility of a room where such material is used in the construction.

Further advantages and features of my machine will be apparent as I proceed with the description:

Referring to the drawings—

Figure 1 shows a plan view of my machine.

Figure 2 shows a vertical longitudinal section on line 2—2 of Figure 1.

Figure 3 shows an end view of my machine.

Figure 4 shows a vertical longitudinal section of the engraving mechanisms on line 4—4 of Figure 1.

Figure 5 shows a plan elevation of one of the engraving mechanisms.

Figure 6 shows a cross section view on line 6—6 of Figure 5.

Figure 7 shows a typical design pattern engraved by my machine.

Figure 8 shows a cross section view on line 8—8 of Figure 7.

Figure 1 shows a plan view of my engraving machine 10 which consists of a stationary frame 11 with two movable tables 40 and 41 operating on either side of the stationary frame 11. This machine is also equipped with means consisting of a cam operated lever 50 which brings the wall board 30 that is positioned on the movable tables 40 and 41 in contact with the various cutting mechanisms 16, 17 and 18.

The stationary frame 11 is the central portion of my machine and it is roughly rectangular in

2

shape, with two long sides 12 and 13 and two end portions 14 and 15 respectively. Preferably this frame would be constructed of metal, however, other similar material that would serve the purpose may be utilized. The frame is sufficiently long enough on its sides 12 and 13 to handle 12 feet by 4 feet wall board which is the conventional size in which this material is manufactured. Mounted on the outer portion of sides 12 and 13 are duplicate cutting mechanisms 16, 17 and 18 which are positioned directly opposite each other. These duplicate cutting mechanisms are interconnected by shafts which in turn are driven by pulleys so that one or more shafts are common to two cutting mechanisms which are identical in every respect.

Positioned on either side of the stationary frame 11 are two movable tables 40 and 41. As the movable tables 40 and 41 are identical in every respect, the same character references will refer to corresponding parts of both tables. These movable tables are mounted in both upper and lower portions on wheels. The wheels in turn are guided by rails, the lower wheels 47 being guided by rail 45 and the upper wheels 47' being guided by rail 46. The upper and lower portions of the movable tables 40 and 41 are operatively connected to the upper and lower cams 51 and 55 respectively through adjustable arms 48. One end of the arms 48 is pivoted through pin 57 to the movable tables 40 and 41 while the opposite end of these arms are pivoted through pins 58 and 58' to the cams 55 and 51.

An additional feature of arms 48 is that they have adjusting device 49 by which their distance of movement may be varied. Connecting the upper cams 51 with the lower cams 55 are cam arms 59 which are pivoted at opposite ends of the stationary frame 11 to the upper and lower cams respectively through pins 58' that hold one end of the arms 48 extending from the movable table 40. This construction is duplicated at both ends of the stationary frame 11 and the upper cams 51 at opposite ends of the frame are connected through a cam shaft 52 while the lower cams 55 at opposite ends of the frame are connected through a cam shaft 56. The cam shafts 52 and 56 extend the entire length of the stationary frame 11.

At one end of the stationary frame 11, an operational lever 50 is connected to one of the lower cams 55 and movement of this lever in one direction will bring both movable tables 40 and 41 toward the cutting mechanisms 16, 17 and

18 which are mounted on the stationary frame 11 while operating the lever in the opposite direction, will move the tables 40 and 41 away from the cutting mechanisms. The movable tables 40 and 41 are also equipped with means to position the wallboard 30 during the cutting operation.

At the lower portion of both of the movable frames there are situated continuous supply belts 42. The supply belts 42 operate on rollers 44 and these rollers can be connected through pulley means to a motor so that the necessary driving force will be supplied to move the wallboard into position.

Positioned on the movable tables are upper and lower guide means 53 and 54 respectively which hold the wallboard and prevent any vertical movement of the board during cutting operations. At the upper portion of the movable frame, the guide means 53 consists of an angular shaped piece of metal with a downward flange that extends the length of the movable frames. On the lower portion of the movable frame is a similar shaped piece of metal with an upward flange that also extends the length of the movable frame. The space between the upper and lower flanges and the sides 70 of the movable tables 40 and 41 is slightly larger than the width of the wallboard 30 which allows free lateral movement of the wallboard when it is being placed in position for the engraving operation.

The movable frames 40 and 41 are also equipped with a locking device in the form of a clamp 43 at each end which prevents longitudinal movement of the wallboard 30 during the cutting operations.

As can be seen, through either the manual or automatic operation of lever 50, the mechanism can be so controlled that the wallboard 30 can be fed into position and then through the adjustable arms, a definite cutting depth can be set to control the cutting depth.

An adjustable finger gauge 71 is mounted on the movable frames in such a manner that it contacts the stationary frame 11 during the engraving operation preventing the movable frames 40 and 41 from approaching any closer to the stationary frame and in that manner control the depth of the cut in the wallboard 30.

As shown in Figure 1, the driving mechanism which consists of a series of shafts and pulleys, all inter-connected through belts, is contained in the central portion of the stationary frame 11.

Necessarily, due to the different types of designs, the positioning of the shafts and pulleys are different throughout. However, in view of the fact that identical cutting mechanisms are mounted on the opposite sides of the stationary frame, one set of shafts and pulleys is sufficient to operate two cutting mechanisms.

As shown in Figure 1, the shafts 60 of cutting mechanism 16 extend through the both sides of the stationary frame 11 and mounted on the opposite end of each shaft are sprocket gears 24 which drive the continuous sprocket chain 23 of the cutting mechanism. Positioned on the shafts 60 inside the stationary housing 11 are pulleys 64 which are connected by a driving belt 66.

Cutting mechanism 18 is similarly designed with the four shafts 62, driving sprocket gears 24 on both sides of the stationary frame 11 being inter-connected through pulleys 72 and belt 73.

Both of these mechanisms 16 and 18 in turn are driven by shafts 61 and 61' which are equipped with similar pulleys 74 and 74' and are

connected through belts 75 and 75' to the cutting mechanisms 16 and 18 respectively.

The center cutting mechanism 17 due to a different type of design has a frame 65 supporting its main shaft 63. This shaft 63 is equipped with a large pulley 67 which is connected to shaft 61 through belt 76 for its driving force. Also mounted on either side of the frame 65 and on shaft 63 are two double pulleys 28. Pulleys 28 in addition to being equipped to receive two belts, are also in two parts with the inner portion 78 being keyed to shaft 63 and supported from the outer portion 77 of the pulley by a ball bearing surface 31. This enables the outer and inner portions of the pulley to rotate freely with respect to each other.

Shafts 61 and 61' are connected through belt 79 and the motive means which can be supplied by a conventional motor is connected to shaft 61 through pulley 80.

It can be seen then by driving 61, all of the cutting mechanisms will be placed in operation and will move at the same time.

As shown in Figure 4, each side of the stationary frame 11 in its preferred form is equipped with three different cutting mechanisms which form different designs but are essentially the same in their mechanical construction and operation.

Figure 5 shows a closeup view of cutting mechanism 17 which consists of a continuous sprocket chain 23 which is driven by sprocket gears 24. At pre-determined intervals there is mounted on this sprocket chain several double flange guide rollers 22. These guide rollers follow the groove 89 in the track 20 which is shaped according to the design pattern desired.

Mounted on these guide rollers 22 are cutting blades 25 which cut tracks 81 in the wallboard when the wallboard 30 is brought in contact with the cutting mechanisms. The cutting blades 25 in their preferred form are made of steel or carborundum, however, they can be made of any other similar material that will serve the purpose.

Between the track 20 and the side 12 of the stationary frame 11 are spacers 21 which position and support the track a definite distance from the side 12 of the stationary frame 11. The gear shafts 26 driving the gears 24 extend through the side 12 of the stationary frame 11 and the track 20 and have pulleys 27 positioned on the end of the shafts which are connected by belts 29 to pulley 28 which in turn is connected to the driving mechanism in the manner previously described.

Cutting mechanism 17 is unique and differs from the other mechanisms in that the entire cutting mechanism including the track 20, sprocket gears 24 and sprocket chain 23 are mounted on a circular plate 83. This plate is keyed to the shaft 63 and when this shaft is driven through belt 76 which is connected to the large pulley 67, the entire plate rotates. Positioned on the plate 83 is an indicator 85 which can be set at any desired marking 84 which are placed on the side of the frame 11.

In the event it is desired to secure a certain design, plate 83 can be rotated until the indicator is set on the desired mark. The plate is then clamped in position through the operation of clamp 88 and belt 75 is disconnected from the large pulley 67. This will prevent the plate from rotating. However, through double pulley 28 which is connected through belt 82 to the driving mechanism and through belt 29 to the

5

gear pulleys 27, the cutting blade 25 which is mounted on a guide roller 22 will be caused to move in its groove 89 in the track 20.

Another possibility is to have the plate rotate with the cutting mechanism remaining inactive by dis-connecting belt 29 from the pulley 27.

It can be readily seen that a variety of designs may be secured from this one cutting mechanism through various combinations of the setting of the plate on various markers, also by controlling the movement of the cutting mechanism 17 and the plate 33. Due to the size of the pulley 67, the plate will rotate at a slower speed than the sprocket gears on the cutting mechanism.

Figure 7 illustrates a type of design that may be made by this machine utilizing the cutting mechanism 17. Loop 86, for example, will be cut when the indicator 85 is placed approximately on marker 15 of the mechanism while loop 87 will be cut when the indicator is set approximately at number three of the mechanism.

Figure 8 illustrates a cross section area through the cuts showing the depth of the tracks 81.

Cutting mechanisms 16 and 18 are essentially the same as mechanism 17 with the exception of the contour of the track and the increased number and location of the gear shafts and gear sprockets. By placing a series of holes in the side of the stationary frame 11, it will be possible to substitute various cutting mechanisms with the shafts being relocated in various holes according to the contour of the track to be used.

A variety of cuts in the wallboard or wood may be secured through the use of different cutting pulleys equipped with a variety of cutting edges. Also, when the machine is used on wood, it is contemplated to use a specially designed pulley to start the track and then substitute a finishing tool to complete the design.

It is also possible to mount a cutting tool on each of the guide rollers of the mechanism and, accordingly, either one cutting tool or plurality of cutting tools may be utilized, depending on the speed of operation desired.

A design which is engraved on wallboard or wood by this machine may be enhanced by superimposing or cutting one design on another. It is also possible to cut the finished design into sections and then re-assemble it into various new and different configurations.

It can be seen that by varying this procedure, innumerable designs and contours may be obtained from the use of a few basic cutting mechanisms.

Whereas I have discussed the preferred form of my device, it is realized that minor changes may be made without departing from the principal scope of my invention.

I claim:

1. A wall board engraving mechanism which in-

6

cludes a stationary frame, an engraving mechanism on the side of said stationary frame, a movable frame disposed alongside of said engraving mechanism, means on said movable frame for adjustably supporting a sheet of wall board thereon in a plane parallel to the side of the stationary frame, manually operable connected cams at the top and bottom of said stationary frame, links connecting the cams with the top and bottom of the movable frame whereby the movement of the cams in one or the other direction will move the movable frame to and from the stationary frame and the engraving mechanism thereon.

2. A wall board engraving machine which includes a stationary frame, a disk journaled at the side of said frame and having a groove of predetermined shape therein, a roller riding in said groove, an endless chain to which said roller is connected, an engraving tool mounted on said roller, sprocket gears on said disk and operatively connected to said chain, said disk being angularly rotatable to selective positions of adjustment about its journal axis for varying the position of said engraving tool, and means to drive said sprocket gears.

3. A wall board engraving machine which includes a stationary frame, a disk journaled at the side of said frame and having a groove of predetermined shape therein, a roller riding in said groove, an endless chain to which said roller is connected, an engraving tool mounted on said roller, sprocket gears on said disk and operatively connected to said chain, said disk being angularly rotatable to selective positions of adjustment about its journal axis for varying the position of said engraving tool, means on said disk and frame cooperating to indicate said selective positions, and means to drive said sprocket gears.

LUIS ALBERTO ORTA MARTINEZ.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
141,214	Frantze et al. -----	July 29, 1873
431,525	Mattison -----	July 1, 1890
436,078	Evans -----	Sept. 9, 1890
765,744	Mahar -----	July 26, 1904
843,322	Bontenakels -----	Feb. 5, 1907
879,571	Neill -----	Feb. 18, 1908
989,480	Blood -----	Apr. 11, 1911
1,050,198	Allen et al. -----	Jan. 14, 1913
1,084,460	Marstall -----	Jan. 13, 1914
1,255,935	Sabin -----	Feb. 12, 1918
1,281,004	Herman -----	Oct. 8, 1918
1,554,497	Goff -----	Sept. 22, 1925
2,026,109	Walters -----	Dec. 31, 1935
2,378,017	Hubkey -----	June 12, 1945