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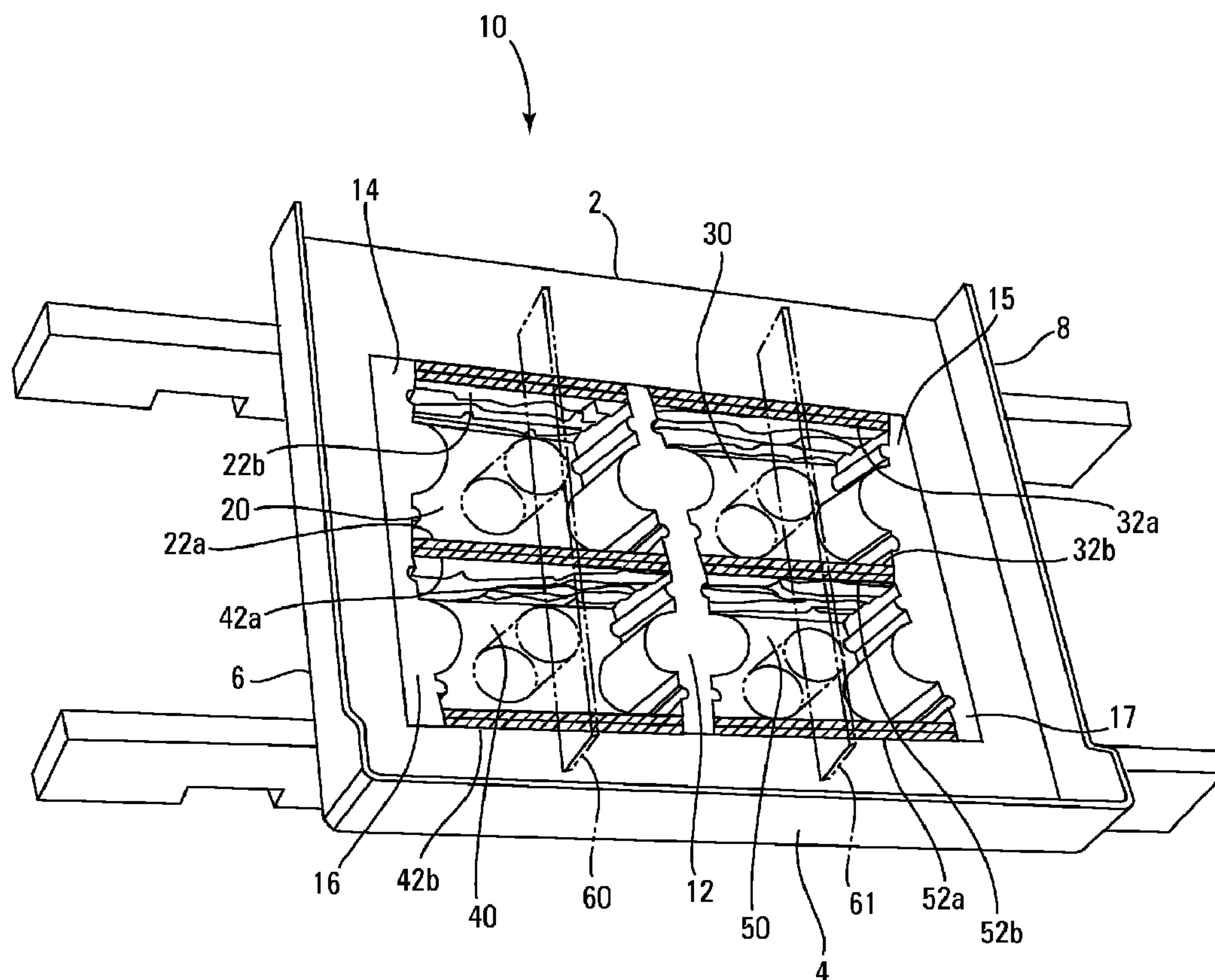


FIG. 1

(57) **Abrégé/Abstract:**

The present invention relates a mold box (10), a method of manufacturing a block (100), and a wall block with a stepped-back strata and ledges imprinted on one or more faces (106) of the block. A mold box is provided with a block face liner (22a/b, 32a/b,

(57) **Abrégé(suite)/Abstract(continued):**

42a/b, 52a/b) that is machine cut to create a particular strata and ledge pattern that is widest at the top of the liner and steps back over a plurality of planes to a narrower width at the bottom of the liner. Masonry material is allowed to form in the mold box around the liner to produce the strata and ledges imprint onto one or more faces of the block. The invention also relates to the mold box, multiple embodiments of the block face liner with differing strata and ledge patterns, and to blocks formed in the mold box and methods of constructing walls with the blocks.

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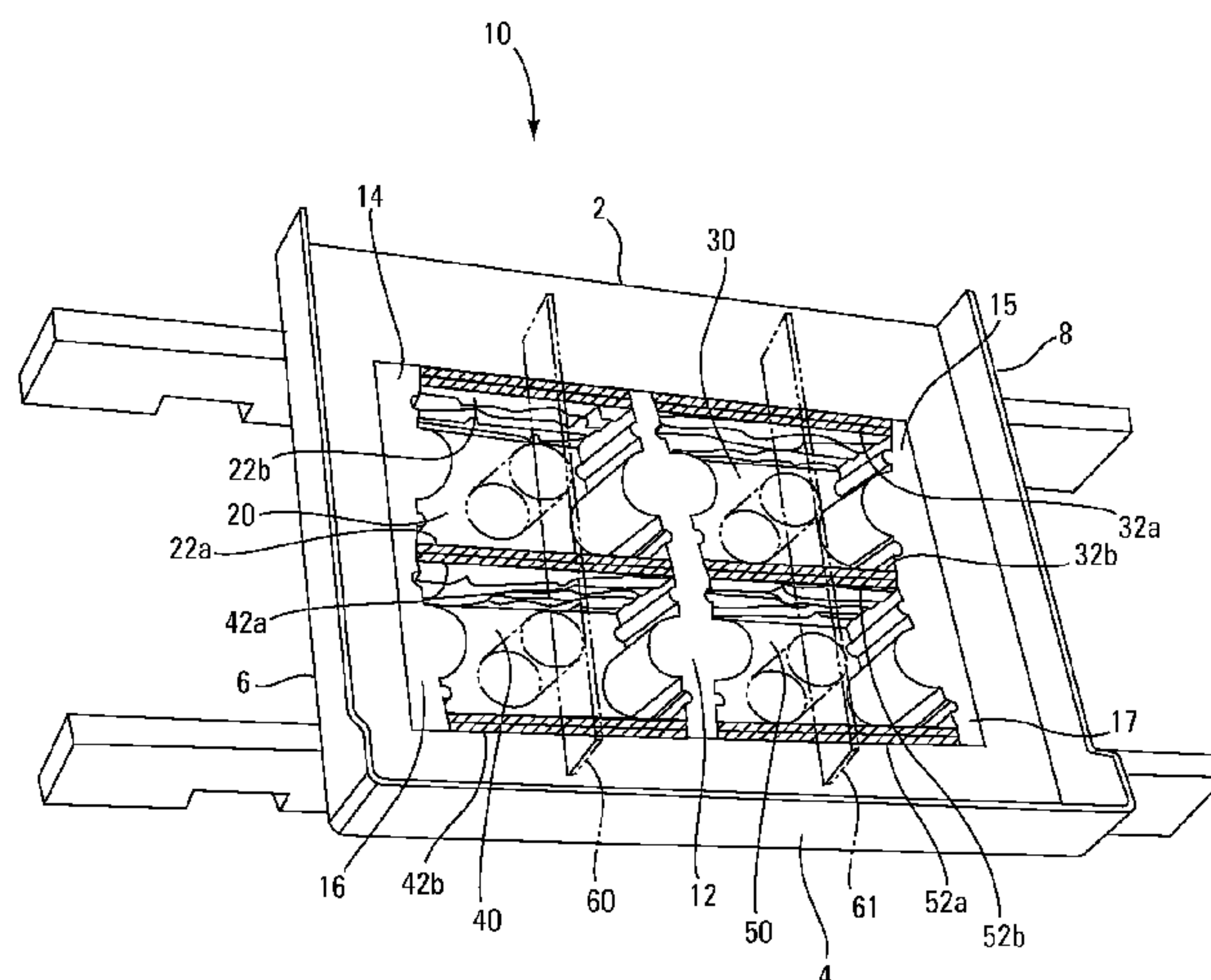


FIG. 1

(57) Abstract: The present invention relates a mold box (10), a method of manufacturing a block (100), and a wall block with a stepped-back strata and ledges imprinted on one or more faces (106) of the block. A mold box is provided with a block face liner (22a/b, 32a/b, 42a/b, 52a/b) that is machine cut to create a particular strata and ledge pattern that is widest at the top of the liner and steps back over a plurality of planes to a narrower width at the bottom of the liner. Masonry material is allowed to form in the mold box around the liner to produce the strata and ledges imprint onto one or more faces of the block. The invention also relates to the mold box, multiple embodiments of the block face liner with differing strata and ledge patterns, and to blocks formed in the mold box and methods of constructing walls with the blocks.

WO 2008/157276 A3

MOLD BOX AND METHOD OF MANUFACTURING A BLOCK

This application claims the benefit of U.S. Provisional Application No. 60/944,177, filed June 15, 2007, entitled “Method of Manufacturing a Block”,
5 the contents of which are hereby incorporated by reference herein.

Field of the Invention

This invention relates generally to a method of manufacturing a block, the block and walls constructed from such blocks. In particular, this invention
10 relates to a block manufactured with a one or more faces that have a plurality of irregularly contoured strata and ledges on a plurality of planes.

Background of the Invention

In the manufacture of retaining wall blocks and other kinds of blocks
15 made from concrete, it is common to use a mold that forms a block module which is then split to form two or more blocks. When a block module is split, the split surface has an irregular appearance, which is desirable if the desired look is one of natural stone. A split block appearance has a desirable appearance for many applications, such as retaining walls and landscaping
20 products.

A typical retaining wall block has substantially parallel top and bottom surfaces and substantially parallel front and back surfaces. Side surfaces may have various angles or contours relative to the front and back surfaces, or could also be substantially parallel. In forming block modules of such blocks, it is
25 often standard practice to split a block module on a plane coincident with the front faces of two blocks, thus giving the front faces of two opposing blocks an irregular (i.e., roughened) appearance.

U.S. Pat. No. 5,827,015 describes the conventional dry cast manufacturing process used to manufacture concrete wall blocks. In such
30 process, a mold box is used to form a block module or slab that is subsequently

split into two wall blocks. It is also known to provide mold boxes which can simultaneously form multiple slabs of identical size and shape.

Another important feature of retaining wall blocks and blocks used in free standing walls is the appearance of the block. The look of weathered
5 natural stone is very appealing for walls. There are several methods in the art to produce concrete wall blocks having an appearance that to varying degrees mimics the look of natural stone. One well known method is to split the block during the manufacturing process so that the front face of the block has a fractured concrete surface that looks like a natural split rock. This is done by
10 forming a slab in a mold and providing one or more grooves in the slab to function as one or more splitting planes. The slab is then split apart to form two or more blocks. Another method is wherein blocks are individually formed in a mold and the surfaces are textured by removal of the mold. Additional machine texturing processes can then be applied. Many
15 manufacturers also vary the color and the texture or pattern on the front face of the block. It might be desirable for the face of the block to be smooth, serrated, or grooved or to have an aggregate appearance.

Another method to create a weathered stone appearance is to tumble the blocks together with other blocks in a large rotating canister. The collisions of
20 the blocks in the tumbler chips off random pieces of the blocks, rounding the edges and creating a look that can be quite close to the appearance of a natural stone. This is a labor intensive undertaking that also can result in undesirable damage to the blocks and high overall costs of production.

Another known method of creating a block having an irregular or
25 textured surface is to form the block in a mold box that has been provided with a sidewall liner shaped to impart the irregular or textured surface on the block during the block molding process. The block is formed in a cavity bounded by a pallet upon which the mold box rests and the sidewalls of the mold box. After the material which forms the block has set enough to retain its shape a
30 compression head having a stripper shoe positioned above the top of the mold box is used to compress the material and urge it out through the bottom of the

mold box. The block remains on the pallet and is moved to a curing station. Since the block material is removed out the bottom of the mold box the side walls of the mold box are typically angled outwardly towards the bottom of the mold box at a slight angle which may be between about 1 to 5 degrees. This
5 reduces the possibility that the material will hang up in the mold box during removal due to either vacuum or suctional forces caused by remaining liquid in the material or undercut areas in the side wall.

Creating a random, or ashlar, pattern in the face of a wall is highly desirable. This gives the appearance of a mortared or dry-stacked natural stone
10 wall, which is a traditional and well accepted look. Some current wall blocks are intended to create an ashlar pattern. However, the creation of a truly random appearance requires the production of multiple block shapes for use in a single retaining wall. This is inefficient from a production standpoint because this requires multiple molds and more kinds of blocks to inventory. If
15 only one face of the block is intended to be the front face, then the block system will suffer a trade-off between having enough face sizes to create a random, natural appearance and the cost and inefficiency of using multiple molds and creating multiple inventory items.

It would be desirable to have a method of manufacturing blocks for a
20 wall that provides for an attractive appearance of a natural ledge or ashlar stone wall with a cost-effective and easy to install construction.

It would be further desirable to provide the face of the block with irregular contours of multiple strata and ledges on a plurality of different planes to enhance the dimension and depth of the block face and thus the wall
25 constructed with such blocks.

It would be further desirable to create such blocks from a single mold with multiple different strata and ledges patterns to increase the variability and randomness of the block wall.

Summary of the Invention

The present invention relates a method of manufacturing a block that has a stepped-back strata and ledges imprinted on one or more faces of the block. A mold box is provided with a block face liner that is machine cut to create a particular strata and ledge pattern that is widest at the top of the liner and steps
5 back over a plurality of planes to a narrower width at the bottom of the liner. Masonry material is allowed to form in the mold box around the liner to produce the strata and ledges imprint onto one or more faces of the block. The invention also relates to the mold box and to blocks formed in the mold box
10 and methods of constructing walls with the blocks. Multiple embodiments of the block face liner for the mold box are disclosed for enabling blocks with differing strata and ledges formed on the faces of the blocks to be formed in a single mold box by changing the liner.

In one aspect the present invention is a wall block mold including first
15 and second opposing side forming surfaces and first and second opposing face forming surfaces, the first and second side forming surfaces and first and second face forming surfaces being positioned to form a perimeter of a mold cavity in the shape of a wall block. The wall block mold also includes at least one of the face forming surfaces having a stepped surface contour which steps
20 outwardly from a top of the mold cavity to a bottom of the mold cavity, the stepped surface contour defining a plurality of planar surfaces, each planar surface having a non-linear edge, each non-linear edge of a planar surface being joined to a non-linear edge of an adjacent planar surface by a ledge, each planar surface being angled outwardly from vertical in the direction of the
25 bottom of the mold cavity by an angle α which is greater than 0° .

The wall block mold may also have a frame including first and second opposing side walls and first and second opposing end walls and wherein the at least one face forming surface having a stepped surface contour has a face forming liner attached to one of the side walls. The face forming liner may
30 have a thickness at the top of the mold cavity which is greater than a thickness

at the bottom of the mold cavity to thereby provide the outwardly stepped contour.

The wall block mold may further include first and second face forming surfaces having a stepped surface contour. Additionally, angle α of the wall
5 block mold may be in the range of about 1° to 10° . The plurality of planar surfaces of the mold may be substantially parallel and the mold may have a plate which forms the bottom surface of the mold cavity.

Each ledge of the wall block mold may include a ledge surface that is angled downwardly from horizontal in a direction away from the mold cavity at
10 an angle β which is greater than 0° . Additionally, angle β may be in the range of about 1° to 10° and may more specifically be about 4° .

In another aspect the present invention is a method of making a wall block by providing a mold having first and second opposing side forming surfaces and first and second opposing face forming surfaces, the first and
15 second side forming surfaces and first and second face forming surfaces being positioned to form a perimeter of a mold cavity in the shape of a wall block, at least one of the face forming surfaces having a stepped surface contour which steps outwardly from a top of the mold cavity to a bottom of the mold cavity, the stepped surface contour defining a plurality of planar surfaces, each planar
20 surface having a non-linear edge, each non-linear edge of a planar surface being joined to a non-linear edge of an adjacent planar surface by a ledge, each planar surface being angled outwardly from vertical in the direction of the bottom of the mold cavity by an angle α which is greater than 0° , the mold further having a plate forming a bottom of the mold cavity. The method further
25 including filling the mold cavity with a moldable material and removing the moldable material from the bottom of the mold cavity with the moldable material resting on the plate.

The method of making a wall block where the mold may also have a frame including first and second opposing side walls and first and second
30 opposing end walls and wherein the at least one face forming surface having a stepped surface contour has a face forming liner attached to one of the side

walls. The face forming liner may have a thickness at the top of the mold cavity which is greater than a thickness at the bottom of the mold cavity to thereby provide the outwardly stepped contour.

The method may further have a mold including first and second face
5 forming surfaces having a stepped surface contour. Additionally, angle α of the mold may be in the range of about 1° to 10° . The plurality of planar surfaces of the mold may be substantially parallel. The method may additionally have each ledge of the mold include a ledge surface that is angled downwardly from horizontal in a direction away from the mold cavity at an
10 angle β which is greater than 0° . Additionally, angle β may be in the range of about 1° to 10° and may more specifically be about 4° .

In another aspect the invention is a wall block comprising first and second opposing side surfaces, first and second opposing face surfaces, and opposing upper and lower surfaces, the side surfaces, face surfaces and upper
15 and lower surfaces together defining a block body. The wall block having at least one of the face surfaces having a stepped surface contour which steps inwardly from one of the upper surface and lower surface of the block to the other of the upper surface and lower surface of the block, the stepped surface contour defining a plurality of planar surfaces, each planar surface having a
20 non-linear edge, each non-linear edge of a planar surface being joined to a non-linear edge of an adjacent planar surface by a ledge, each planar surface being angled inwardly from vertical by an angle α which is greater than 0° .

The wall block may include at least one face surface having a stepped surface contour stepping inwardly from the upper surface of the block to the
25 lower surface of the block and additionally may have both the first and second face surfaces having a stepped surface contour that may step inwardly from the upper surface of the block to the lower surface of the block. The wall block may have the plurality of planar surfaces substantially parallel. Each planar surface of the wall block may have angle α being in the range of about 1° to
30 10° . Each ledge of the wall block may have a ledge surface that is angled downwardly from horizontal at an angle β which is greater than 0° .

Additionally, angle β may be in the range of about 1° to 10° and may more specifically be about 4° .

Brief Description of the Drawings

5 A preferred form of the present invention will now be described by way of example with reference to the accompanying drawings, wherein:

FIG. 1 is a perspective view of a mold of the present invention illustrating first, second, third and fourth mold block cavities.

10 FIG. 2A is a front view of a first block face liner from the second mold block cavity.

FIGS. 2B and 2C are cross-sectional views of the first liner from the second cavity taken along lines 2B and 2C, respectively.

FIG. 2D is a front view of a second block face liner from the second mold block cavity.

15 FIG. 2E is a cross-sectional view of the second liner taken along line 2E.

FIGS. 3A to 3D are front views of alternate embodiments of block face liners of the present invention. FIG. 3E is a cross-sectional view of the embodiment of FIG. 3D taken along line 3E. FIG. 3F is an additional front view of an alternate embodiment of a block face liner of the present invention.

20 FIGS. 4A and 4B are perspective and bottom views, respectively, of a block of the present invention.

FIGS. 5A and 5B are perspective and side views of a wall made with the manufactured block of the present invention.

25 FIGS. 6A to 6H are alternating front and back views, respectively, of first and second block faces of the wall of FIGS. 5A and 5B.

FIG. 7 is a perspective view of a wall made with the manufactured block of the present invention.

FIGS. 8A to 8H are alternating front and back views, respectively, of first and second block faces of the wall of FIG. 7.

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Detailed Description of Preferred Embodiments

The present invention is a method of manufacturing a unique block face appearance using block face liners in a mold box. The block face liners in addition with other side liners and the mold box in which the liners are inserted
5 are used to form multiple blocks at one time. The mold consisting of the mold box, the liners, and a lower plate (production pallet), forms cavities for the formation of blocks. Moldable material is placed into the mold and consolidated by vibration for a time sufficient to allow the material to retain the desired block shape when it is stripped or removed from the mold. In a
10 manufacturing process, it is desirable to use one mold to form many blocks and for each block face to be unique and different from each other. The block face liner forms a block with a strata and/or ledge imprint resulting in the appearance of natural stone such as ledgerstone or ashlar stone. The product (first set of blocks or slabs) is removed from the mold and moved to a curing
15 station while resting on its production pallet. Another production pallet is positioned under the mold to receive the moldable material which again fills the mold. In this way, many sets of multiple blocks are formed with one mold and many lower plates (production pallets).

This invention further comprises blocks with faces that have been
20 formed with the strata and ledges imprint. The invention further includes the construction of walls with blocks made in accordance with the invention. It is to be understood that the strata and ledge imprint could be formed on a vast assortment of blocks of different shapes and sizes and the block disclosed herein is merely one example which should not be considered limiting as to the
25 scope of the invention. An embodiment of the block disclosed herein is further described in commonly assigned and co-pending U.S. Patent Application Serial No. 12/124,311 entitled "Wall Block and Wall Block System for Constructing Walls" hereby incorporated herein by reference. These blocks are configured to be compatible with each other in the construction of a retaining wall, a
30 parapet wall, and a free-standing wall. Such walls may be straight, curved, or circular. The wall system is designed to be structurally sound and easy to

install. The wall system is especially useful in constructing smaller walls having a height of about 3 feet or less. Blocks may also be provided with a side connection system wherein a side of the block is provided with a channel or slot that is configured to engage a corresponding projection on an adjacent
5 block. There may be one or more channels or slots (and corresponding projections) on the block. Typically, and preferably, the side connection system is used on a smooth, un-textured side of the block. The side connection system is a particular advantage in the construction of free-standing walls. This is because the side connection further stabilizes the wall and because the
10 slots and projections prevent light from showing through the wall and together provide for a close fit of the blocks in the wall.

Referring to FIG. 1, there can be seen a multi-block mold box 10 according to an embodiment of the present invention. Mold box 10 generally includes opposing first and second side frame walls 2 and 4 and opposing first
15 and second end frame walls 6 and 8. Block mold cavities 20, 30, 40 and 50 are formed by divisional liner 12 which spans side frame walls 2 and 4, side liners 14, 15, 16 and 17 which are positioned adjacent to end frame walls 6 and 8, and block face liners 22a, 22b, 32a, 32b, 42a, 42b, 52a and 52b. Core bars 60 and cores 61 (shown in dash) may also span side frame walls 2 and 4 and are used
20 to support core forms which create vertical voids in the blocks produced in the mold cavities. The space between the mold box frame walls and liners is either covered or comprises a solid material to ensure that material entering the mold box cannot be captured between the frames and liners. As known in the art the side and end space liners may be separate parts bolted or affixed to the side
25 and/or end frame walls. Though mold box 10 may have various dimensions, typical dimensions of this mold box are about 18.5 inches (47.0 cm) wide (i.e., the width of both the first and second end walls), 26.0 inches (66.0 cm) long (i.e., the length of both the first and second side walls), and 4 inches (10.2 cm) thick.

Block face liners 22a, 22b, 32a, 32b, 42a, 42b, 52a, and 52b may be machine cut to create a particular irregular contoured strata and ledge pattern that is widest at the top of the liner adjacent the top of the mold cavity and steps back gradually over a plurality of planes to a narrower width at the bottom of the liner adjacent the bottom of the mold cavity. Block face liners 22a, 32a, 42a, and 52a may have the same dimensions (heights of 4 inches and lengths of 12 inches) and block face liners 22b, 32b, 42b and 52b may have the same dimensions (heights of 4 inches, lengths of $9 \frac{3}{16}$ inches) according to the present embodiment and each liner of similar dimension may have the same or different machine cut strata and ledges pattern. It will be appreciated that these dimensions will be adjusted according to the size of the mold box and mold cavities with which they are used.

FIG. 2A to 2E illustrate block face liner 32a (FIG. 2A) and 32b (FIG. 2D) of the present invention. It should be noted that the features described with respect to face liners 32a and 32b are equally applicable to face liners 22a, 42a, 52a and 22b, 42b, and 52b, respectively, except that the strata and ledge patterns may be varied as desired. Block face liner 32a (which can have a height of 4 inches and a length of 12 inches) has a greater surface area than block face liner 32b (which can have a height of 4 inches and a length of $9 \frac{3}{16}$ inches). Each stratum S or plane of the liner is preferably positioned at a tilt of angle α which equals about 1° to 10° and may more specifically be about 1° from vertical and each ledge L of the stratum is preferably positioned with an angle β which equals about 1° to 10° and may more specifically be about 4° from horizontal. These angles and the decreasing width of the liner from top to bottom help to ensure that the liner imprints the texture onto the block while creating enough draft in order for the block to be properly stripped from the mold box, and thus the liner, while retaining the imprint of the liner. However, the degree of angles can be changed or varied as desired and the stated angles or ranges should not be considered limiting as to the scope of the invention. The angle should be chosen to overcome any suctional or vacuum forces created by liquid in the mold material which would act to resist removal of the

material from the mold cavity. Optional heat may also be added to the liners which functions to evaporate moisture to additionally help eliminate any vacuum or suctional forces created by the moisture in the mold material. Cross sectional views 2B and 2C of FIGS. 2B and 2C illustrate the variations in irregularity of the contours of the strata S of liner 32a. The width of ledge L of each strata may be variable as desired and may be, for example, 1/8 of an inch per ledge. FIG. 2E illustrates cross sectional view 2E of the embodiment FIG. 2D illustrate the variations in width and length of the strata S and ledges L of liner 32b.

FIGS. 3A to 3F illustrate alternate embodiments of the strata and ledges texture for a block face liner. Peak P of the liner of FIG. 3B imparts a valley or trench onto the face of the block which is formed from the liner. The valley/trench of the block face is meant to give the appearance that the face of the block is separated to appear as a left and right side, or multiple random stones thereby adding to the randomness and variability of the block and thus the wall formed from the block. FIG. 3D illustrates an embodiment wherein the contours of wider second, fourth and sixth terraces or strata 71, 73, and 75 are preceded by substantially similar narrower first, third and fifth terraces or strata 70, 72, and 74, respectively. FIG. 3E illustrates cross sectional view 3E of the embodiment of FIG. 3D and illustrates first, third and fifth ledges 80, 82 and 84 of the first, third and fifth terraces being wider than second and fourth ledges 81 and 83 of the second and fourth terraces (there is no ledge after the sixth terrace as the sixth terrace is at the bottom of the liner). This embodiment may also have peaks to imprint valleys onto the face of the block and together with the imprinted wider terraces with similar narrower terraces gives the block face the appearance of multiple individual stones on three separate levels of the block face. The imprint of the wider and narrower ledges onto the block face will also cast more shadows onto some terraces and less onto other terraces. It should be noted that these are just a few of the possibilities that could be formed onto the liner due to the immense amount of variations possible for the placement of the irregularly contoured strata and ledges. For example, the face

liners will be made to form a plurality of strata on the block faces. The strata will comprise planes that are substantially parallel to one another. Each stratum is bound by at least one ledge which may be non-linear as shown in the drawings or, if desired, may be partially or entirely linear. The blocks are
5 formed in the mold cavity in inverted fashion with their bottom surfaces at the top of the mold box and their top surfaces resting on the pallet at the bottom of the mold cavity. The strata on the blocks are formed to step outwardly from the top of the mold cavity to the bottom of the mold cavity so that the contour of any section along the face of the block steps outwardly to follow the contour
10 of the face liner such as shown in FIGS. 2B, 2C and 2E in order to avoid the formation of pockets, grooves, or channels which would retain material when the block is removed from the mold box. Thus, in their position of use the strata on the block faces step inwardly from the top of the block to the bottom of the block as best seen in FIG. 5B. It should be further noted that the block
15 face liners could be used to imprint a block face on differing styles and sizes of blocks and therefore the dimensions of the liner could vary greatly.

FIG. 3F illustrates an alternate embodiment for a block face liner which shows a strata layer with a more wave-like pattern and smoother horizontal curvilinear contour between each ledge.

20 As with conventional mold boxes, the mold box of the present invention are configured to rest upon a pallet to form cavities. Masonry material is deposited into block mold cavities 20, 30, 40 and 50 and later removed by stripper shoes on a head assembly that contact the masonry material from above, compress it, and then push it through the mold while the mold is held
25 firmly in a stationary position in the mold machine in accordance with procedures well known to those of skill in the art. The draft created by angles α and β and the narrowing width of the block face liners allow the masonry material to be properly stripped from the liner, thus releasing cleanly from the liner face. Prior to the masonry material being removed from the mold cavity
30 heat may be introduced to help ensure that the masonry material strips cleanly from the mold cavity and the strata and ledge imprint on the face/faces of the

block keeps their shape and do not fragment. The masonry material typically is a rugged, weather resistant material, preferably (and typically) zero-slump molded concrete. Other suitable materials include wet cast concrete, plastic, reinforced fibers, wood, metal and stone. Vibratory action compresses the material contained within the mold cavities. Stripper shoes which help push the molded block out of the mold cavity do not touch the mold liners, division plates or division plate liners. The blocks are formed in the mold box with their bottom surfaces facing upward, thus the block face liner which imparts the strata and ledge imprint to the block face will be thicker towards the bottom surface of the block in the mold cavity (i.e., the top surface when in the mold), and then step back and narrow toward the top surface of the block (i.e., the bottom surface when in the mold). This step-back imprint of the strata and ledges imparted by the face liner to the block face helps to create shadows and dimension as light hits each plane on the face of the block when it is inverted from how it is made in the mold and placed in a wall assembly, giving the block a more natural and visually pleasing appearance. It should be noted that the block could also be used bottom side up as desired, but in this case the sunlight will not create shadows from the textured imprint.

FIGS. 4A and 4B illustrate a first embodiment of a first block 100 of this invention. Block 100 could be produced from any one or all of cavities 20, 30, 40 and 50 of mold box 10. Block 100 comprises lower surface 104 opposed and substantially parallel to upper surface 102, and opposing and substantially parallel first and second (also referred to as front and back) faces 106 and 108, respectively. The upper and lower surfaces are separated by the thickness of the block. For the purposes of this description, first face 106 is shown facing the viewer in FIG. 4A, however, it is to be understood that the first faces of some blocks and second faces of other blocks are in some situations exposed on the same side when the blocks are used in a wall. Thus, the textured pattern of strata and ledges is formed in both faces as described above. The block also comprises opposing and converging side surfaces 110 and 112 (i.e., imaginary lines coincident with side surfaces 110 and 112 will

eventually converge at some distance away from the second face or back of block 100) and are separated by the width of the block. The converging side surfaces result in first face 106 having a larger surface area than second face 108. First face 106 and second face 108 have been molded with the strata and ledge imprint of the present invention. It should be noted that just one of the sides may have been imprinted if so desired. Side surfaces 110 and 112 have curvilinear recesses 114. Block 100 is preferably used with upper surface 102 facing up when constructing a wall to enhance the visual appearance of the wall and to allow the plurality of stepped-back planes to cast shadow and add dimension to the block and wall as shown in FIG. 5B. It should be noted however that lower surface 104 could also be placed facing up if so desired. Block 100 is provided with core 116 that extends through the thickness of the block. Preferably core 116 is circular.

Block 100 can be sized to desired dimensions. For example, the thickness of the block can be 4 inches (10.2 cm), the width of the block can be 12 inches (30.5 cm) along a first face 106a and 9 3/8 inches (23.8 cm) along the second face 108a and the depth of the block between the first and second faces can be 7 3/4 inches (19.7 cm).

FIGS. 5A and 5B illustrate a wall made with multiple wall blocks having multiple different faces of strata and ledges imprints. The multiple different strata and ledge imprints give the wall a more random and natural appearance enhancing the wall's visual appearance. Generally, when constructing a wall, a trench is excavated to a pre-selected depth and lined with a level base of granular material such as crushed stone. A base layer is then placed and leveled onto the crushed stone. The blocks are placed side to side with a first face facing outward and the bottom surface facing downward. Optionally a "D" can be molded onto the bottom surface of the block (top surface when in the mold) to facilitate orientation (the "D" standing for down). A straight wall is produced by alternating the placement of the first and second faces of blocks relative to each adjacent block (i.e. first face 106 of a block is placed projecting outward and then the second face 108 of an adjacent block is

placed projecting outward). The adjacent block is placed and the projection and slot of the side of one block fits securely into the slot and projection of the adjacent block. This interlocks adjacent blocks in a course giving the wall more stability without the use of pins and pin receiving apertures typically found in prior art block systems. Once the base layer is laid, subsequent layers are placed one on top of the next until the desired height is reached. Once the desired height is reached a capping layer may be added. Typically, the placement of blocks are vertically offset in adjacent courses in a running bond pattern. Curvilinear recesses (i.e. 114) of the side surfaces (i.e. 110 and 112) form substantially circular cavities when laid side to side and are substantially similar in size and shape to the core (i.e. 116). The cores and cavities overlap one another in adjacent courses producing vertical columnar cavities inside the wall structure. The circular shape of the cores and cavities helps to maximize the alignment and functional volume of the vertical cavity. These columnar cavities may be filled with a stabilizing material such as sand, gravel, sheer resistant fill (i.e. crushed stone), concrete, cement or the like, to give the wall added stability. The interlocking projections and slots along with the stabilizing material added to the vertical columnar cavities stabilize the wall making it structurally sound without the use of traditional stabilizing systems such as pins and the like. Optionally, construction adhesive may be used to lock blocks and/or courses together with or without the use of stabilizing materials.

FIGS. 6A to 6H illustrates the wall of FIGS. 5A and 5B made with multiple wall blocks having multiple embodiments of the strata and ledges texture for the block faces. FIGS. 6A, 6C, 6E and 6G illustrate first or front faces of blocks used in the construction of the wall while FIGS. 6B, 6D, 6F and 6H are the second or back faces of the blocks with first faces of FIGS. 6A, 6C, 6E and 6G, respectively. It should be noted that the first and second faces could have any combination of surface textures imprinted on them and could even have the same texture. It should also be noted that other types of wall

blocks could be imprinted with the strata and ledge texture and that the block shown in the drawings is just an example.

FIG. 7 illustrates a wall made with multiple wall blocks having multiple different faces of strata and ledges imprints. The multiple different strata and ledge imprints shows a strata layer with a more wave-like pattern and smoother horizontal curvilinear contour between each ledge and gives the wall a more random and natural appearance.

FIGS. 8A to 8H illustrates the wall of FIG. 7 made with multiple wall blocks having multiple embodiments of the strata and ledges texture for the block faces. FIGS. 8A, 8C, 8E and 8G illustrate first faces of blocks used in the construction of the wall while FIGS. 8B, 8D, 8F and 8H are second faces of the blocks with first faces of FIGS. 8A, 8C, 8E and 8G, respectively. It should be noted that the first and second faces could have any combination of surface textures imprinted on them and could even have the same texture. It should also be noted that other types of wall blocks could be imprinted with the strata and ledge texture and that the block shown in the drawings is just an example.

Although particular embodiments have been disclosed herein in detail, this has been done for purposes of illustration only, and is not intended to be limiting with respect to the scope of the claims. In particular, it is contemplated that various substitutions, alterations, and modifications may be made to the invention without departing from the spirit and scope of the invention as defined by the claims. For instance, the choice of materials or variations in the shape or angles at which some of the surfaces intersect are believed to be a matter of routine for a person of ordinary skill in the art with knowledge of the embodiments disclosed herein.

What is claimed is:

1. A wall block mold comprising first and second opposing side forming surfaces and first and second opposing face forming surfaces, the first and
5 second side forming surfaces and first and second face forming surfaces being positioned to form a perimeter of a mold cavity in the shape of a wall block, at least one of the face forming surfaces having a stepped surface contour which steps outwardly from a top of the mold cavity to a bottom of the mold cavity, the stepped surface contour defining a plurality of planar surfaces, each planar
10 surface having a non-linear edge, each non-linear edge of a planar surface being joined to a non-linear edge of an adjacent planar surface by a ledge, each planar surface being angled outwardly from vertical in the direction of the bottom of the mold cavity by an angle α which is greater than 0° .
- 15 2. The wall block mold of claim 1 further comprising a frame including first and second opposing side walls and first and second opposing end walls and wherein the at least one face forming surface having a stepped surface contour comprises a face forming liner attached to one of the side walls.
- 20 3. The wall block mold of claim 2 wherein the face forming liner has a thickness at the top of the mold cavity which is greater than a thickness at the bottom of the mold cavity to thereby provide the outwardly stepped contour.
4. The wall block mold of claim 1 wherein both the first and second face
25 forming surfaces have a stepped surface contour.
5. The wall block mold of claim 1 wherein angle α is in the range of about 1° to 10° .

6. The wall block mold of claim 1 wherein each ledge comprises a ledge surface that is angled downwardly from horizontal in a direction away from the mold cavity at an angle β which is greater than 0° .

5 7. The wall block mold of claim 6 wherein angle β is in the range of about 1° to 10° .

8. The wall block mold of claim 7 wherein angle β is about 4° .

10 9. The wall block mold of claim 1 wherein the plurality of planar surfaces are substantially parallel.

10. The wall block mold of claim 1 further comprising a plate which forms the bottom surface of the mold cavity.

15

11. A method of making a wall block comprising:

providing a mold having first and second opposing side forming surfaces and first and second opposing face forming surfaces, the first and second side forming surfaces and first and second face forming surfaces being positioned to form a perimeter of a mold cavity in the shape of a wall block, at least one of the face forming surfaces having a stepped surface contour which steps outwardly from a top of the mold cavity to a bottom of the mold cavity, the stepped surface contour defining a plurality of planar surfaces, each planar surface having a non-linear edge, each non-linear edge of a planar surface being joined to a non-linear edge of an adjacent planar surface by a ledge, each planar surface being angled outwardly from vertical in the direction of the bottom of the mold cavity by an angle α which is greater than 0° , the mold further having a plate forming a bottom of the mold cavity;

filling the mold cavity with a moldable material; and

30 removing the moldable material from the bottom of the mold cavity with the moldable material resting on the plate.

12. The method of claim 11 wherein the mold has a frame including first and second opposing side walls and first and second opposing end walls and wherein the at least one face forming surface having a stepped surface contour
5 comprises a face forming liner attached to one of the side walls.

13. The method of claim 12 wherein the face forming liner has a thickness at the top of the mold cavity which is greater than a thickness at the bottom of the mold cavity to thereby provide the outwardly stepped contour.
10

14. The method of claim 11 wherein both the first and second face forming surfaces have a stepped surface contour.

15. The method of claim 11 wherein angle α is in the range of about 1° to
15 10° .

16. The method of claim 11 wherein each ledge comprises a ledge surface that is angled downwardly from horizontal in a direction away from the mold cavity at an angle β which is greater than 0° .
20

17. The method of claim 16 wherein angle β is in the range of about 1° to
 10° .

18. The method of claim 17 wherein angle β is about 4° .
25

19. The method of claim 11 wherein the plurality of planar surfaces are substantially parallel.

20. A wall block comprising first and second opposing side surfaces, first
30 and second opposing face surfaces, and opposing upper and lower surfaces, the side surfaces, face surfaces and upper and lower surfaces together defining a

block body, at least one of the face surfaces having a stepped surface contour which steps inwardly from one of the upper surface and lower surface of the block to the other of the upper surface and lower surface of the block, the stepped surface contour defining a plurality of planar surfaces, each planar surface having a non-linear edge, each non-linear edge of a planar surface being joined to a non-linear edge of an adjacent planar surface by a ledge, each planar surface being angled inwardly from vertical by an angle α which is greater than 0° .

21. The wall block of claim 20 wherein the at least one face surface having a stepped surface contour steps inwardly from the upper surface of the block to the lower surface of the block.

22. The wall block of claim 20 wherein both the first and second face surfaces have a stepped surface contour.

23. The wall block of claim 22 wherein the first and second face surfaces are stepped inwardly from the upper surface of the block to the lower surface of the block.

20

24. The wall block of claim 20 wherein angle α is in the range of about 1° to 10° .

25. The wall block of claim 20 wherein each ledge comprises a ledge surface that is angled downwardly from horizontal at an angle β which is greater than 0° .

25

26. The wall block of claim 25 wherein angle β is in the range of about 1° to 10° .

30

27. The wall block of claim 26 wherein angle β is about 4° .

28. The wall block of claim 20 wherein the plurality of planar surfaces are substantially parallel.

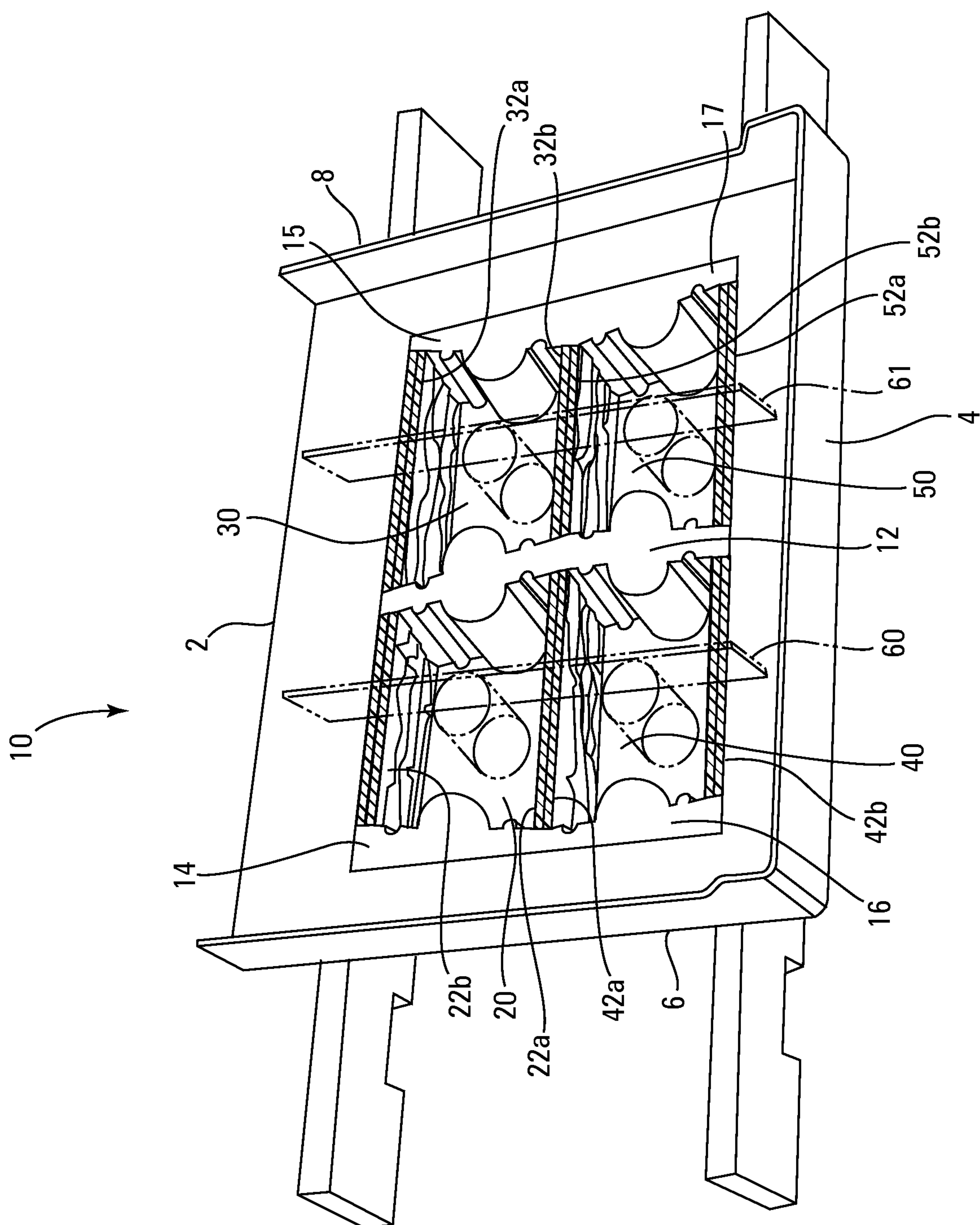
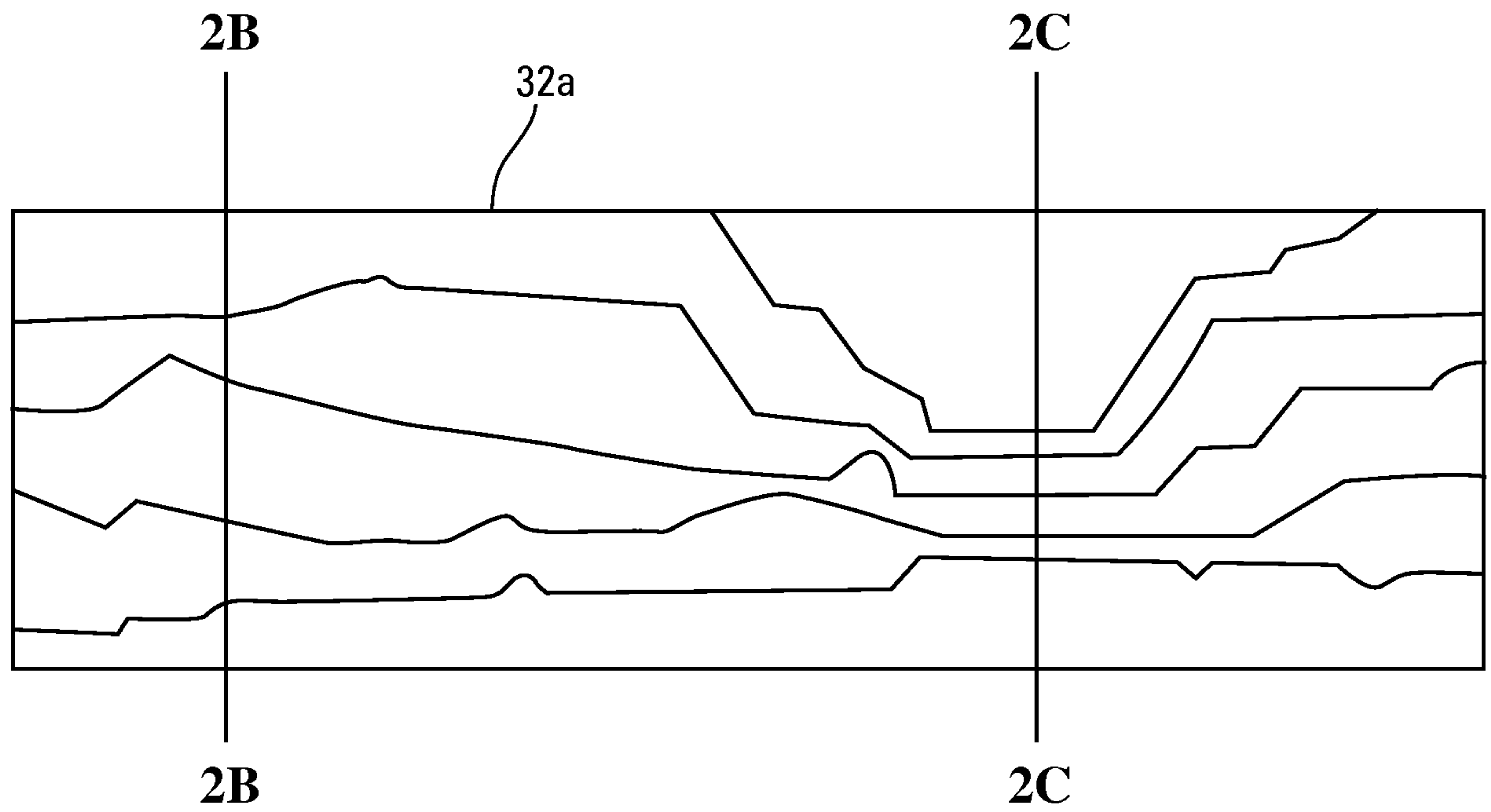
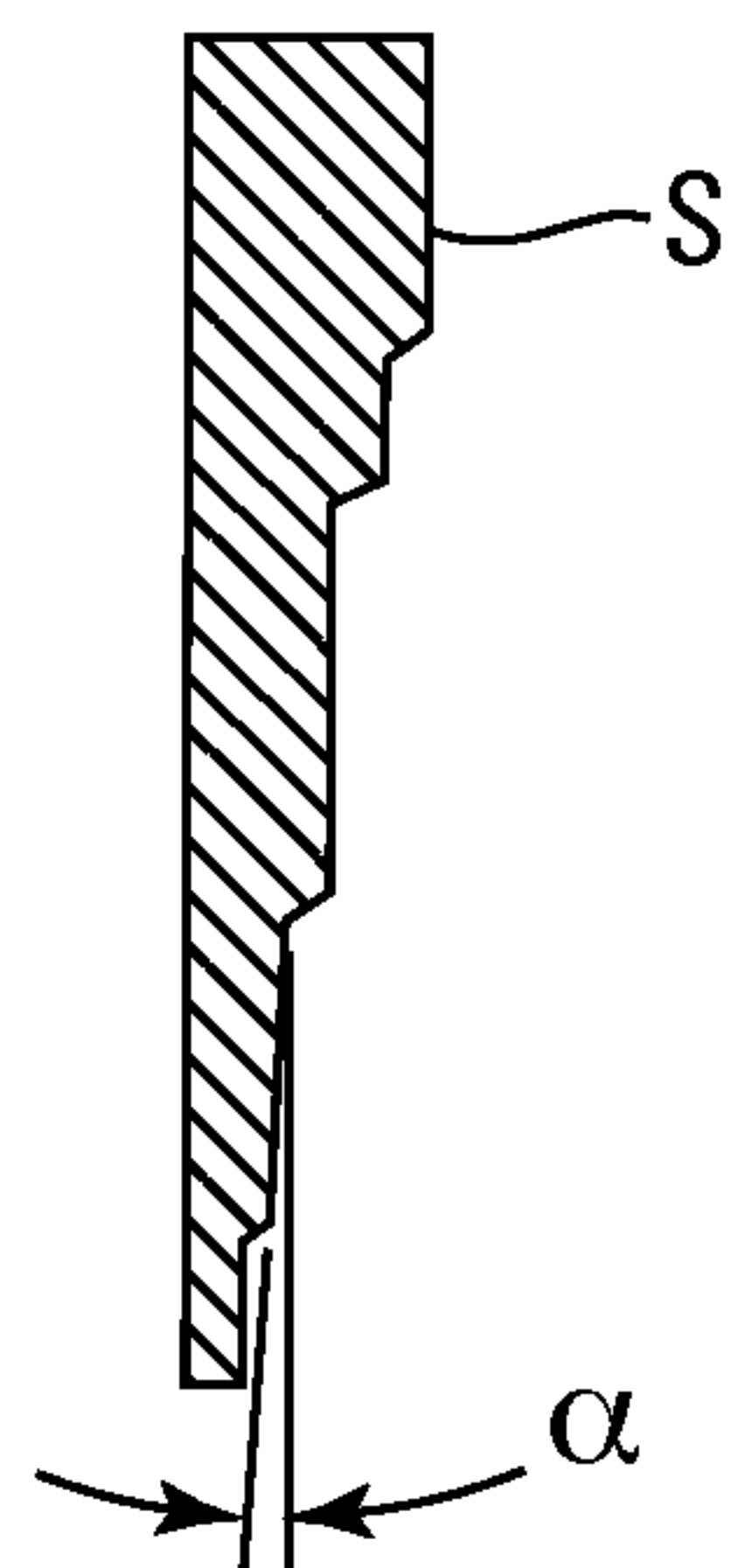
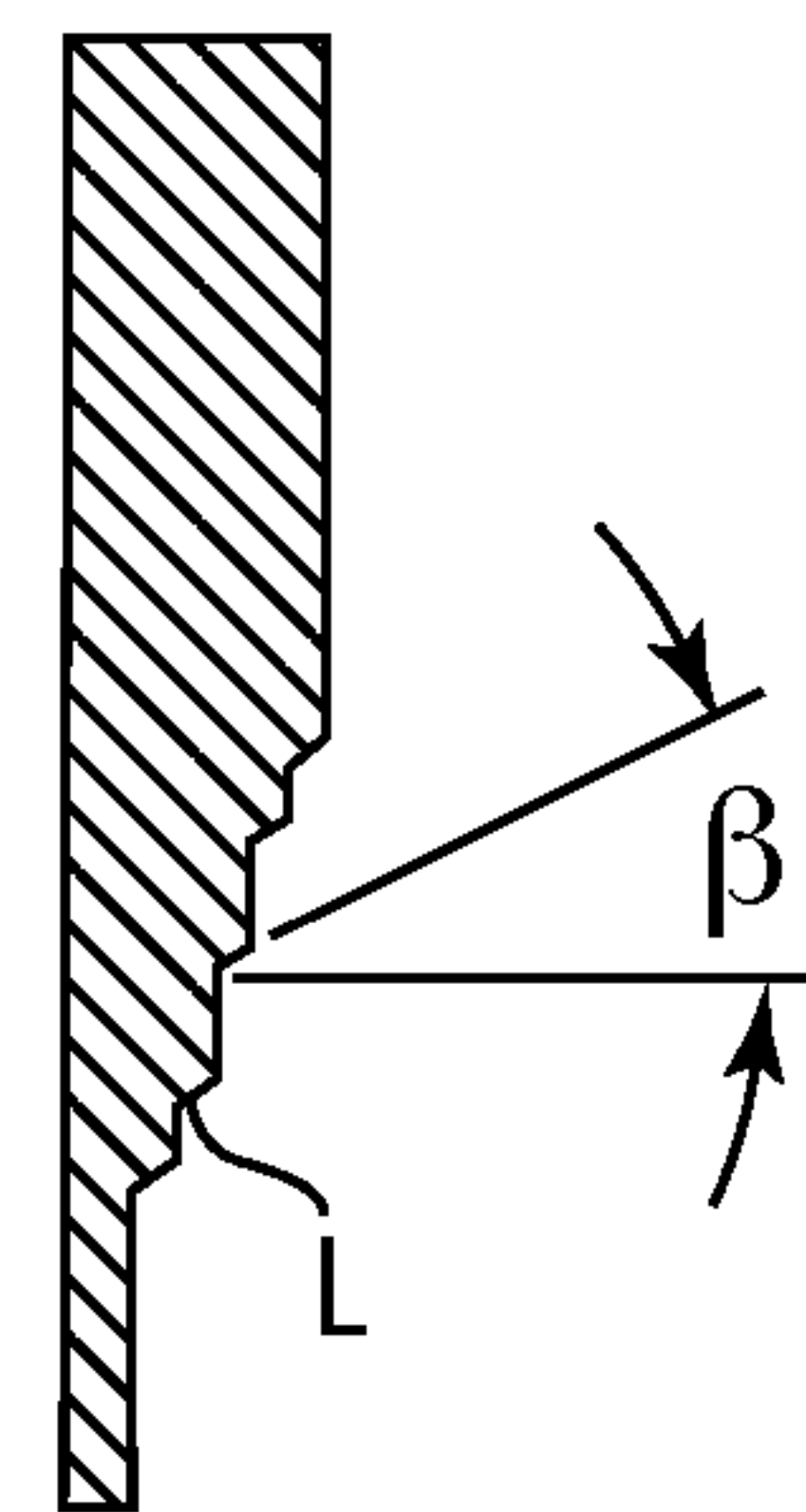
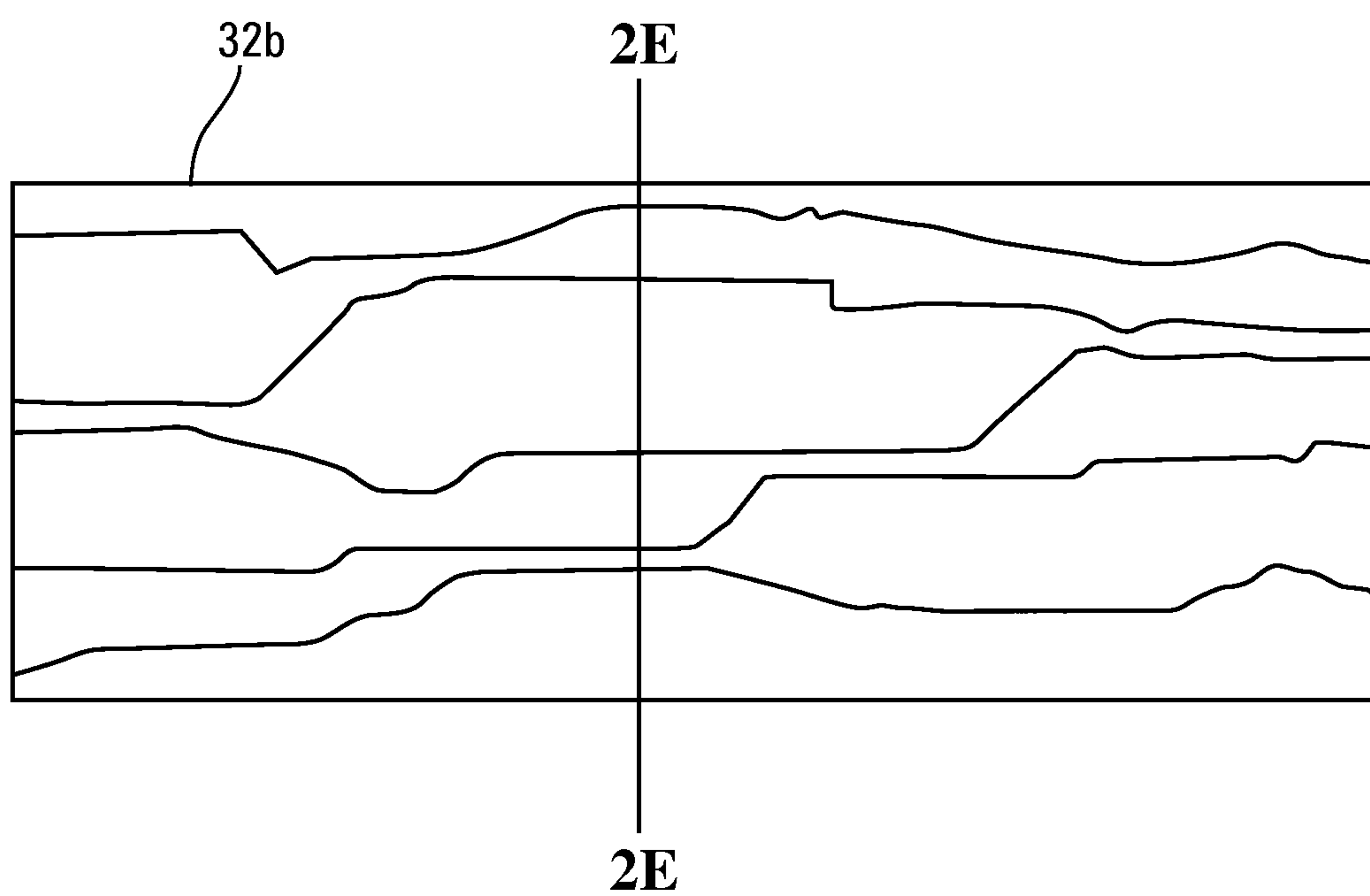
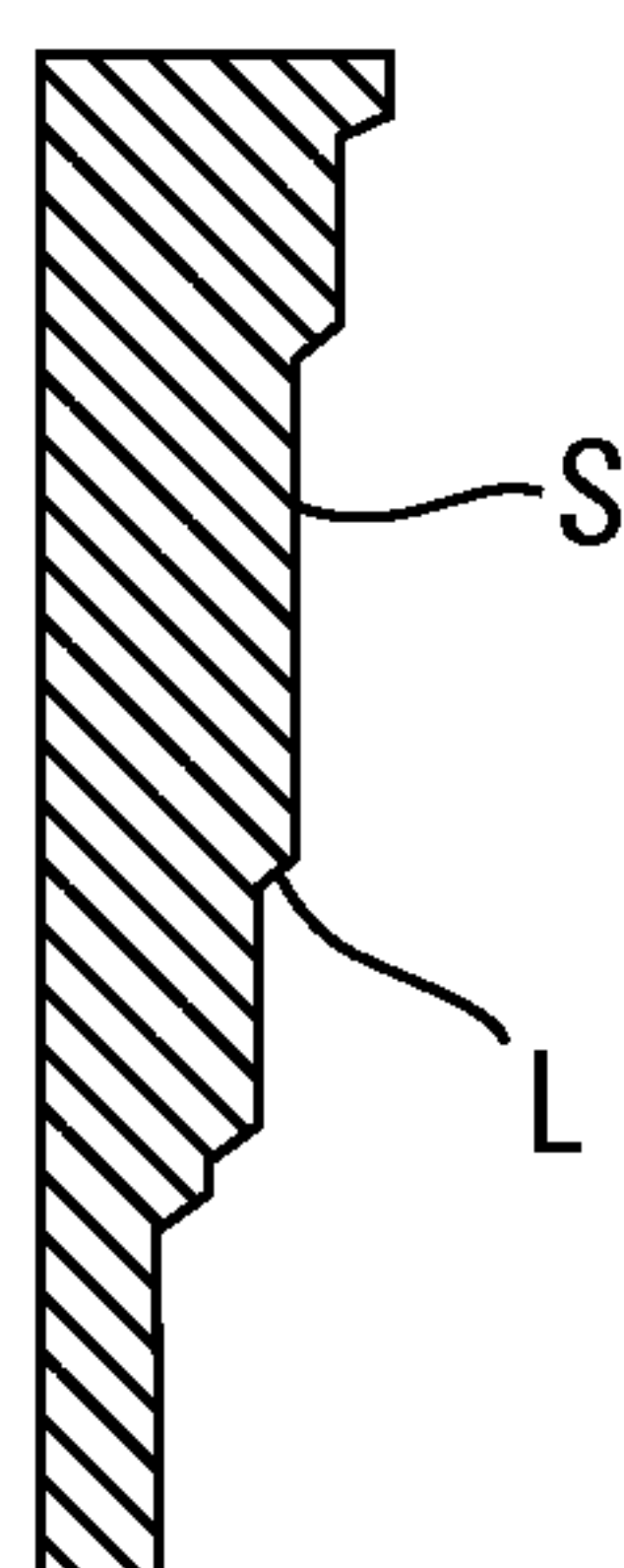
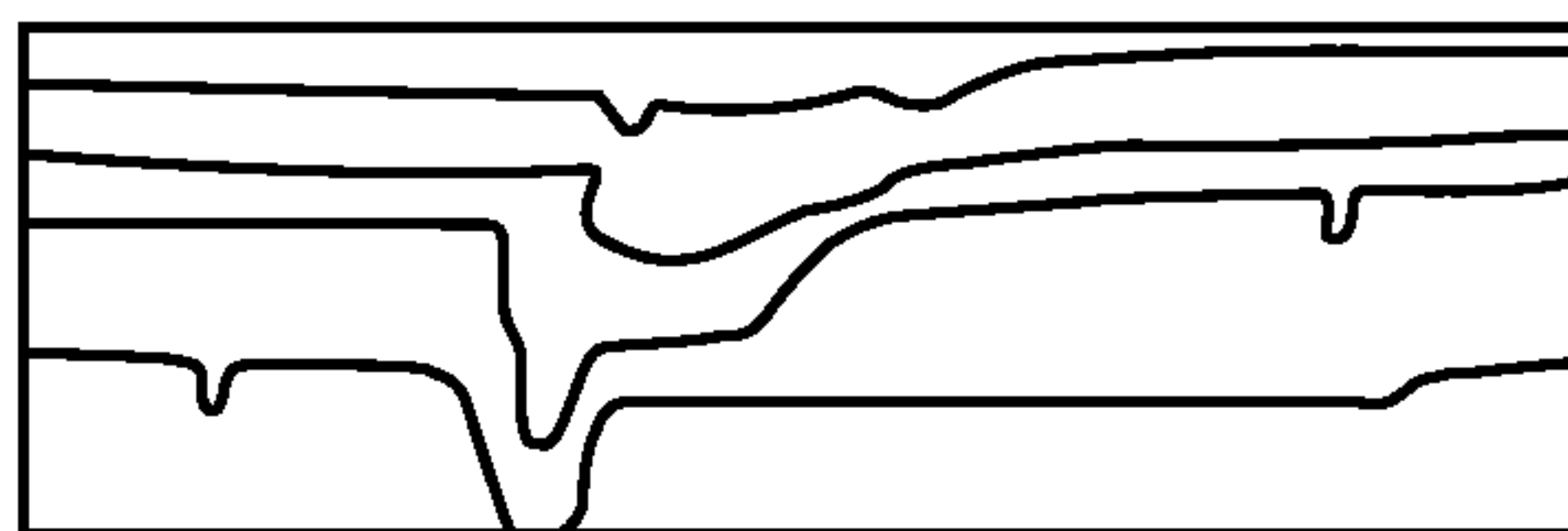
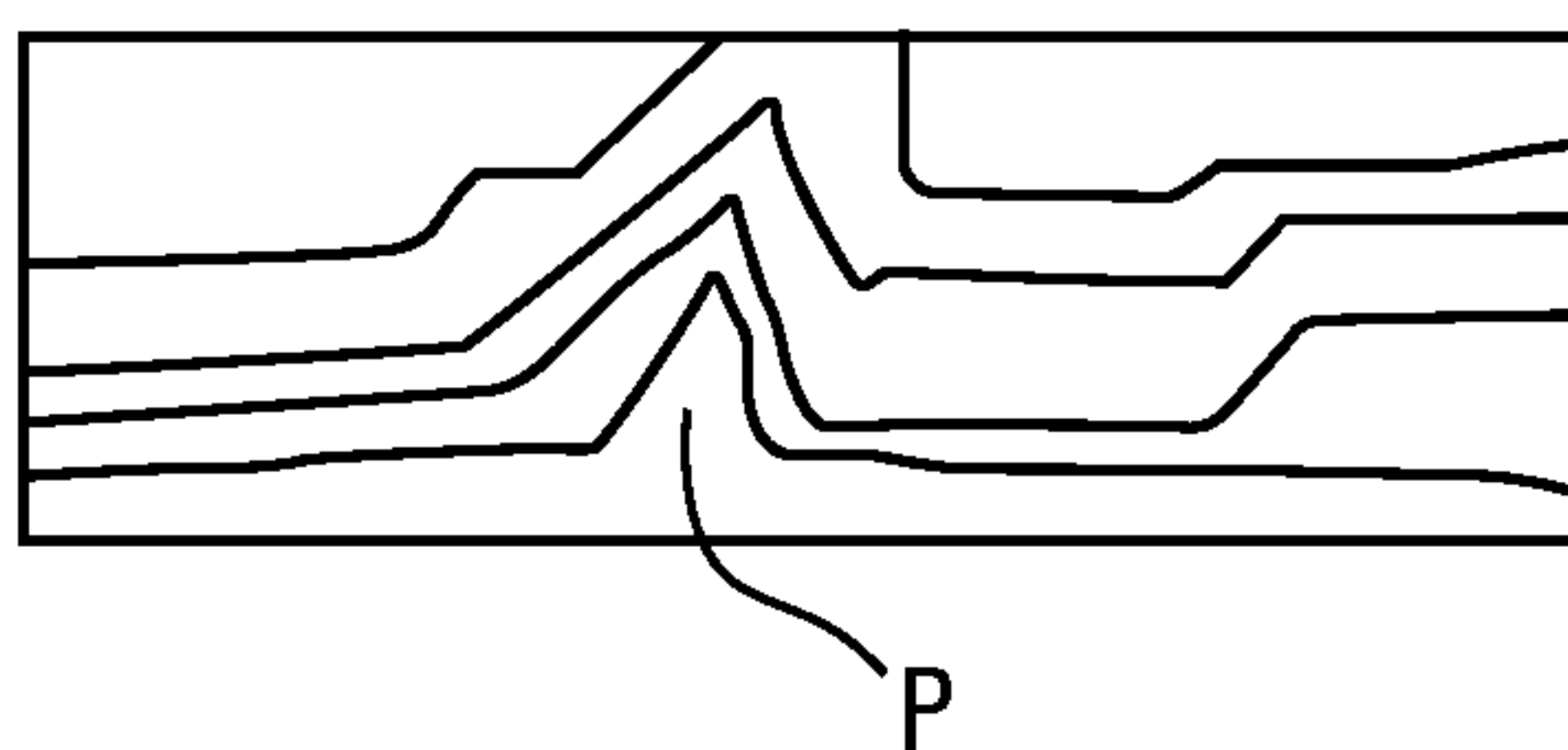
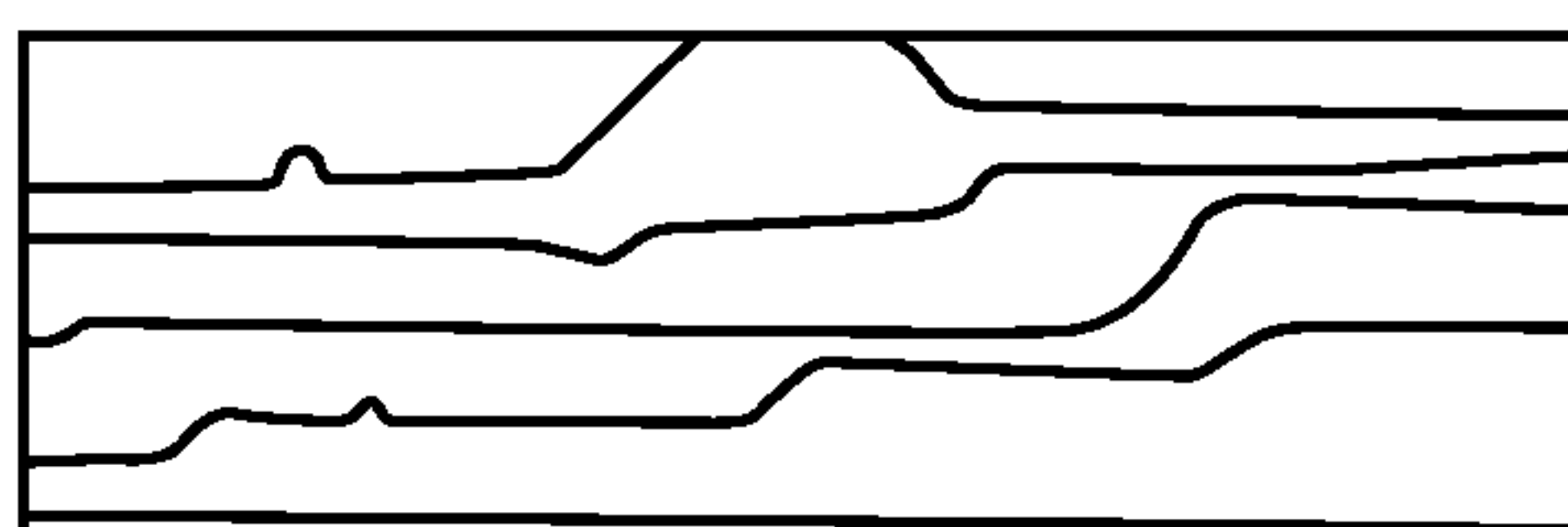
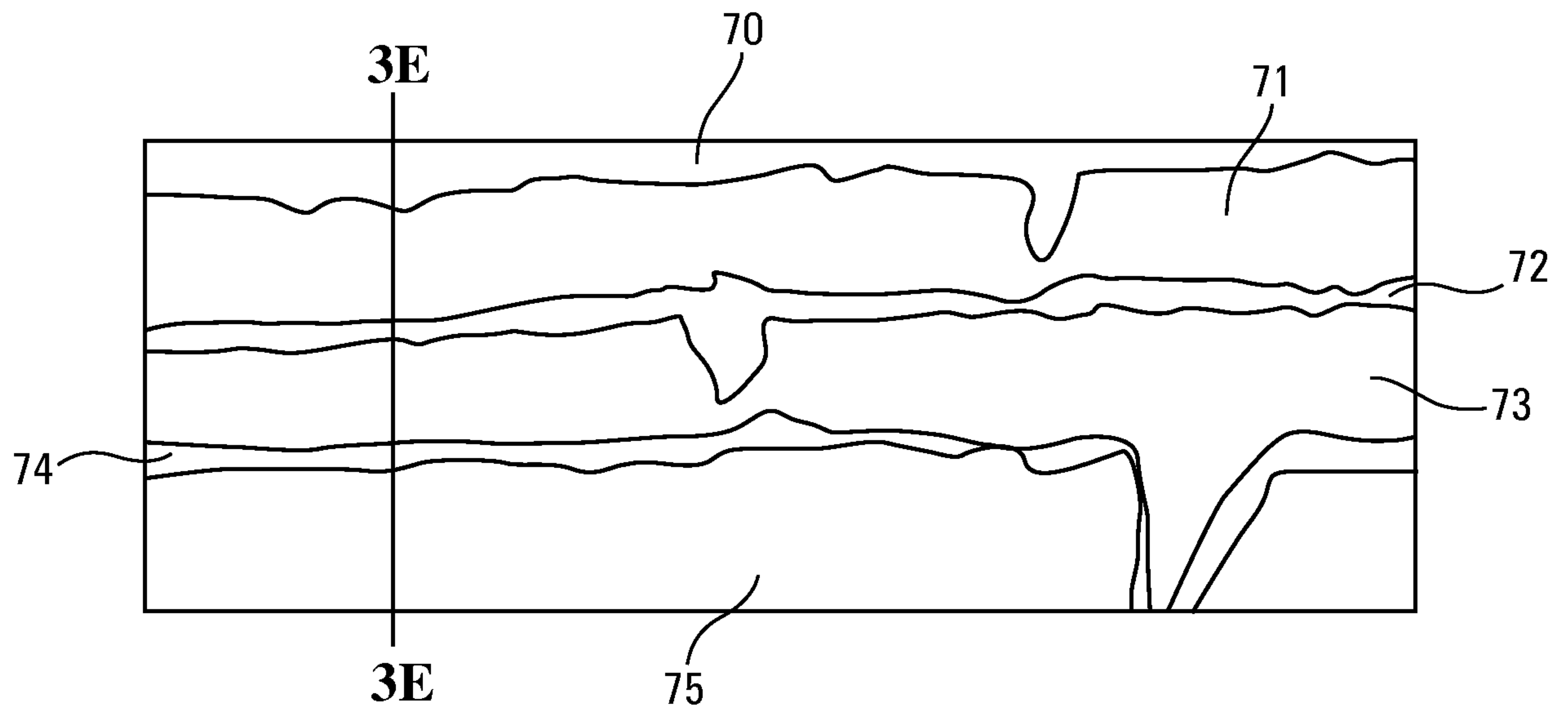
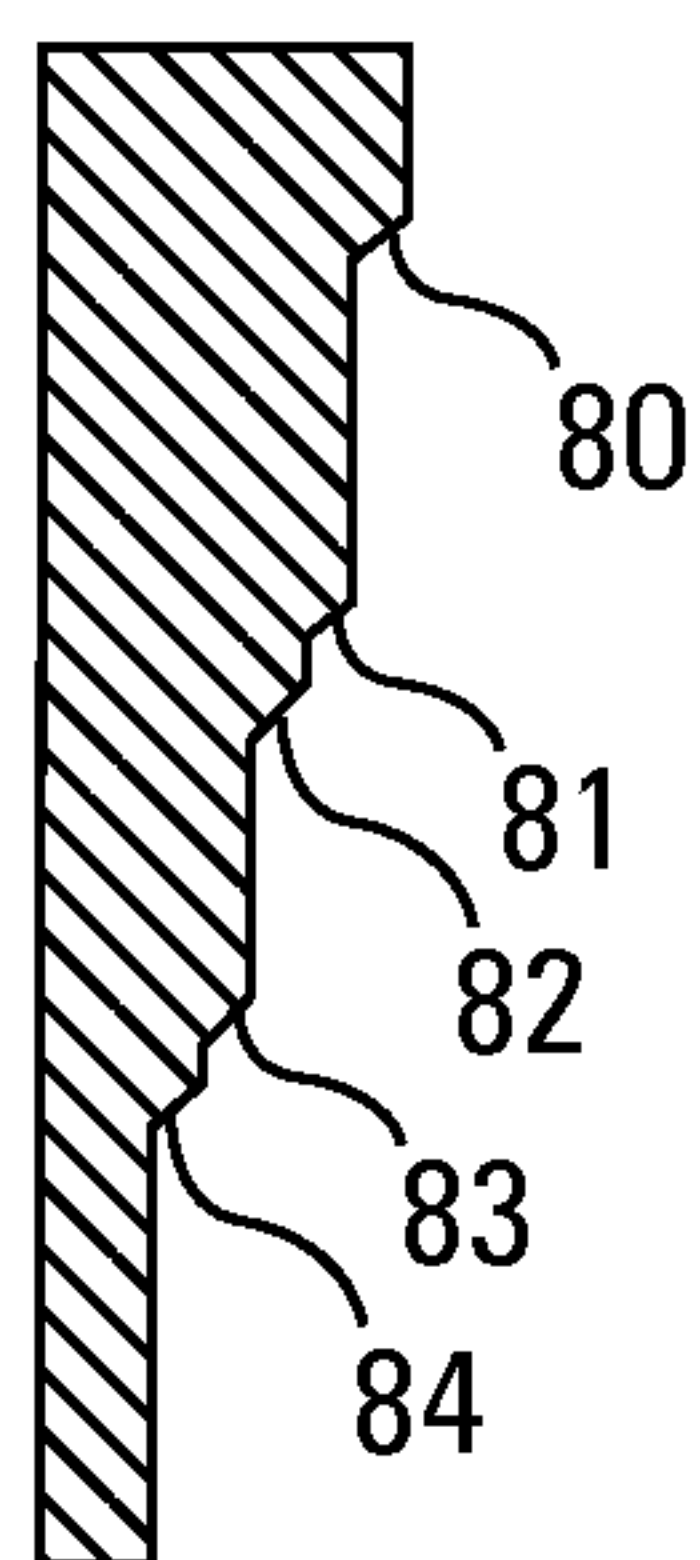
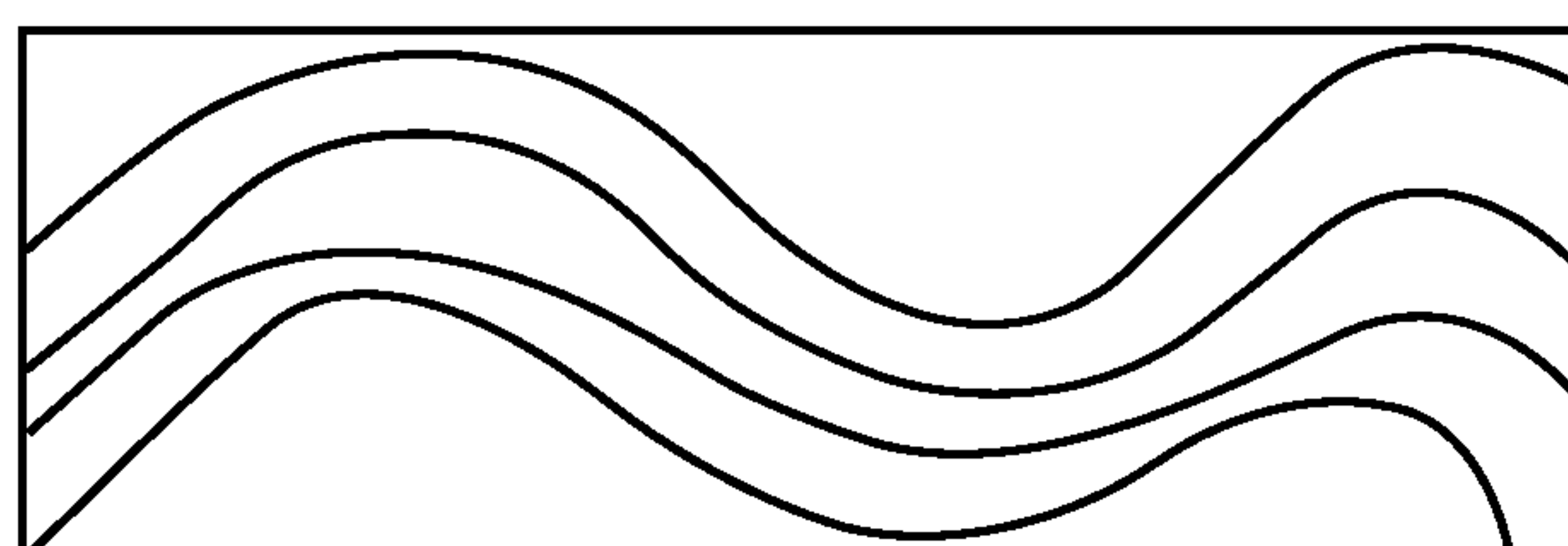


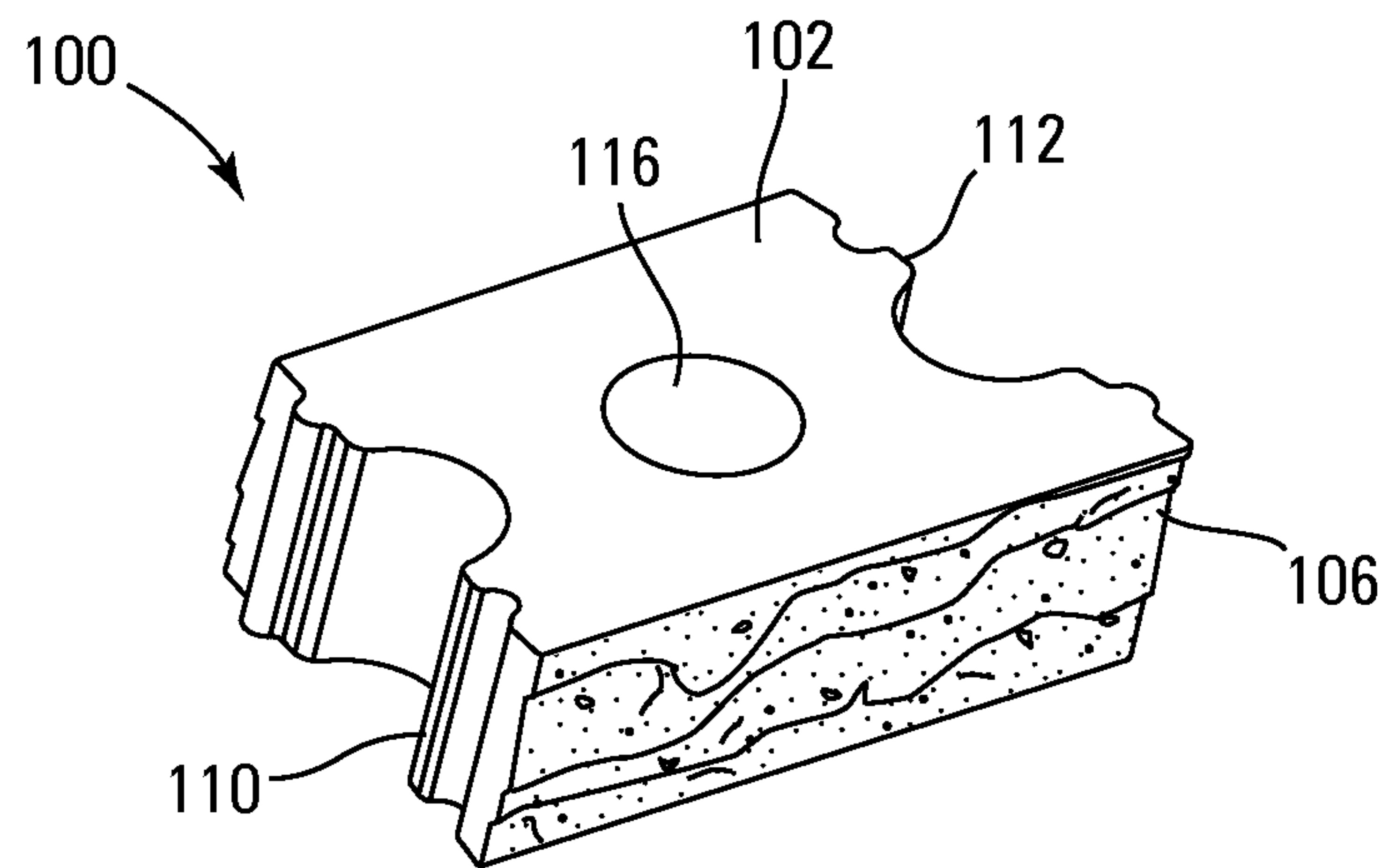
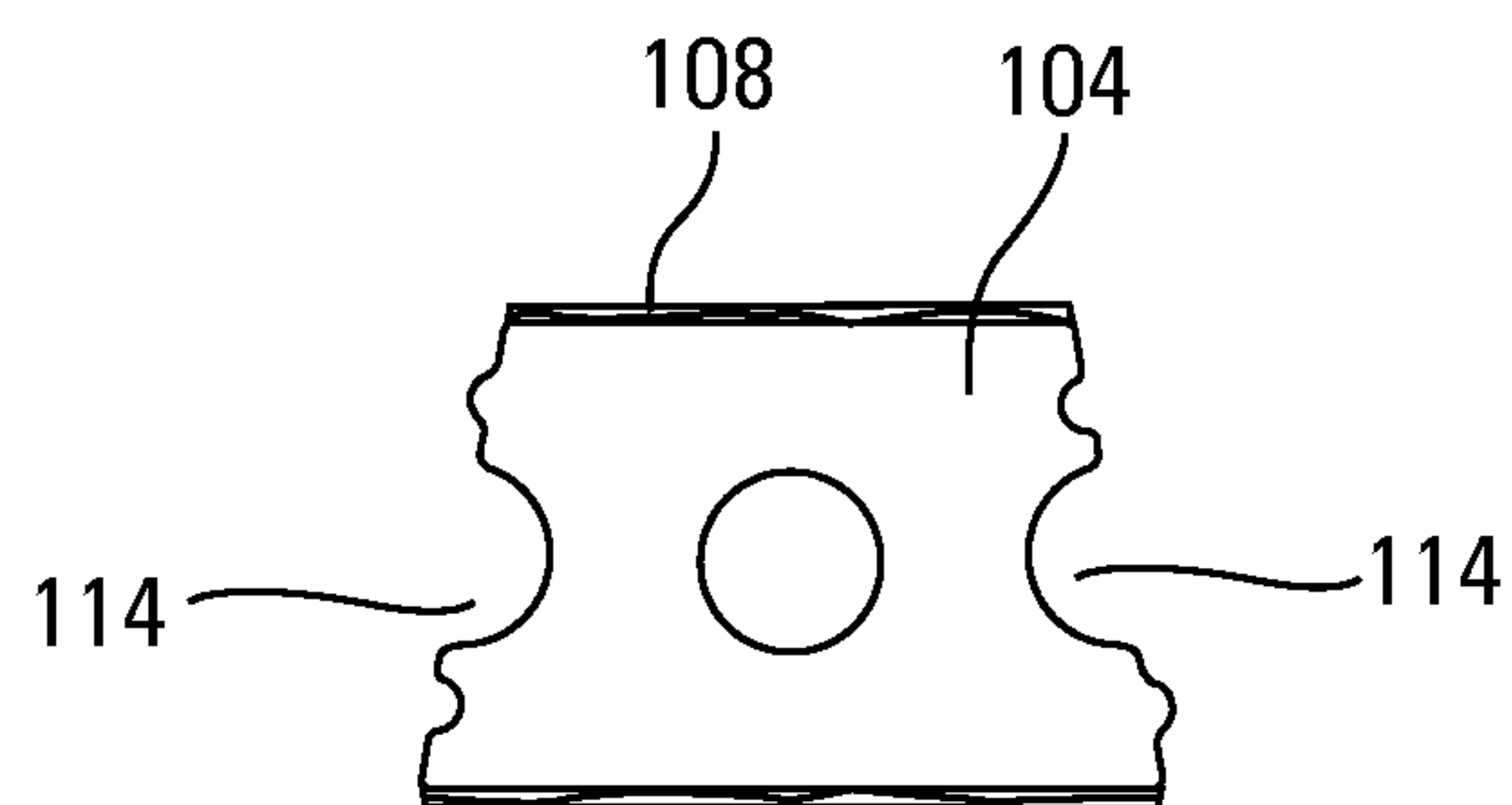
FIG. 1

**FIG. 2A****FIG. 2B****FIG. 2C**

**FIG. 2D****FIG. 2E**

**FIG. 3A****FIG. 3B****FIG. 3C**

**FIG. 3D****FIG. 3E****FIG. 3F**

**FIG. 4A****FIG. 4B**

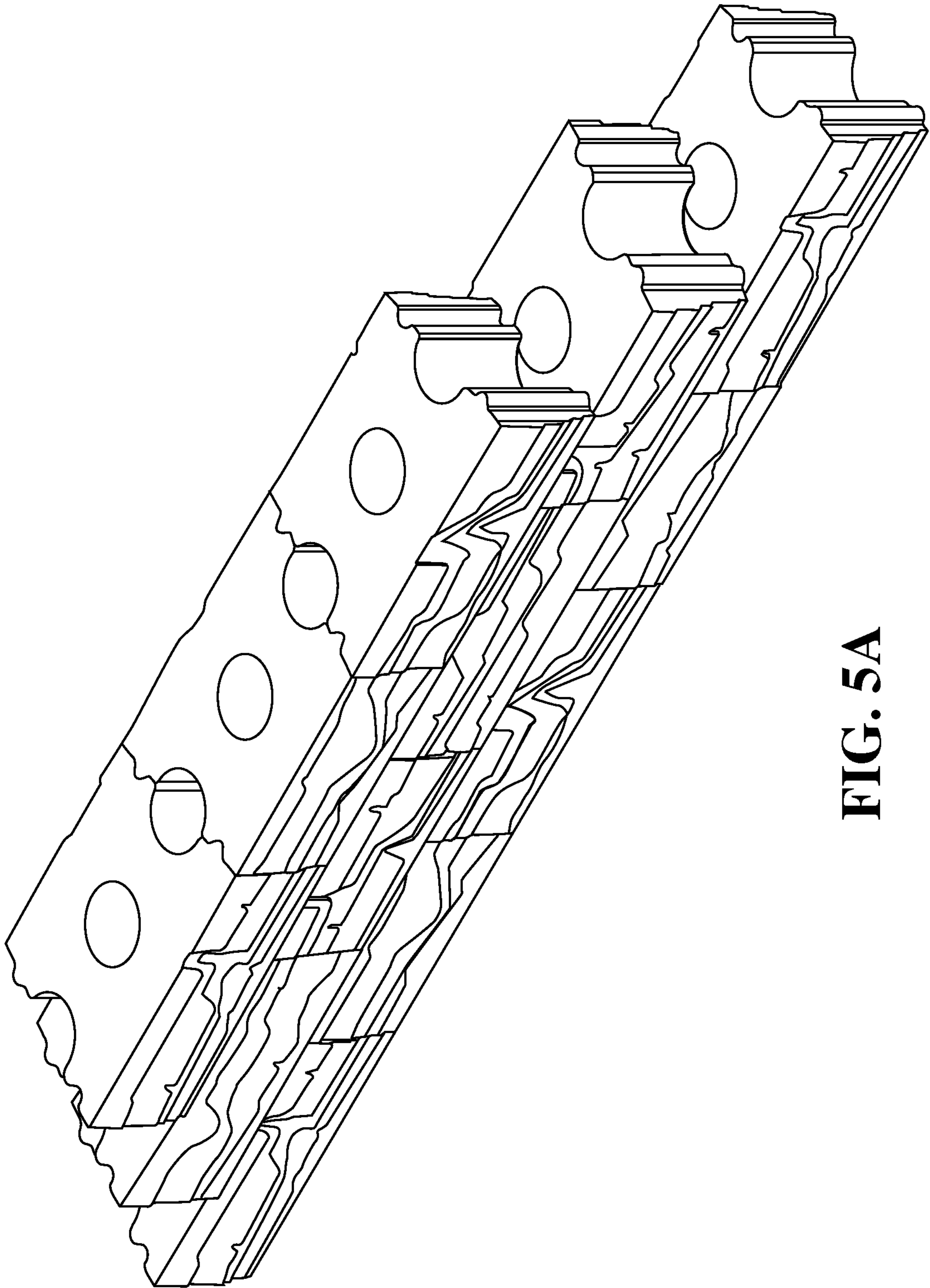


FIG. 5A

FIG. 5B

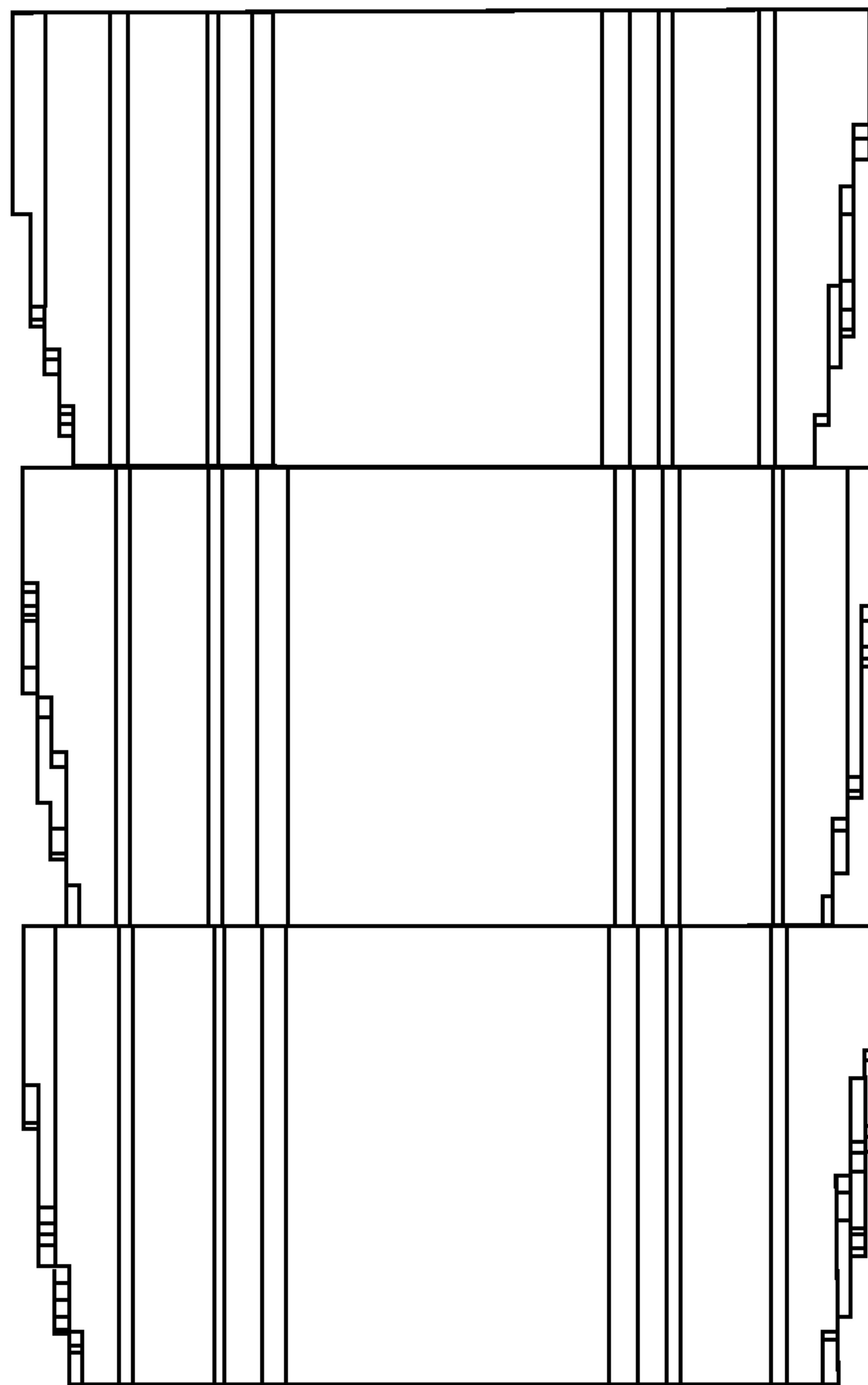
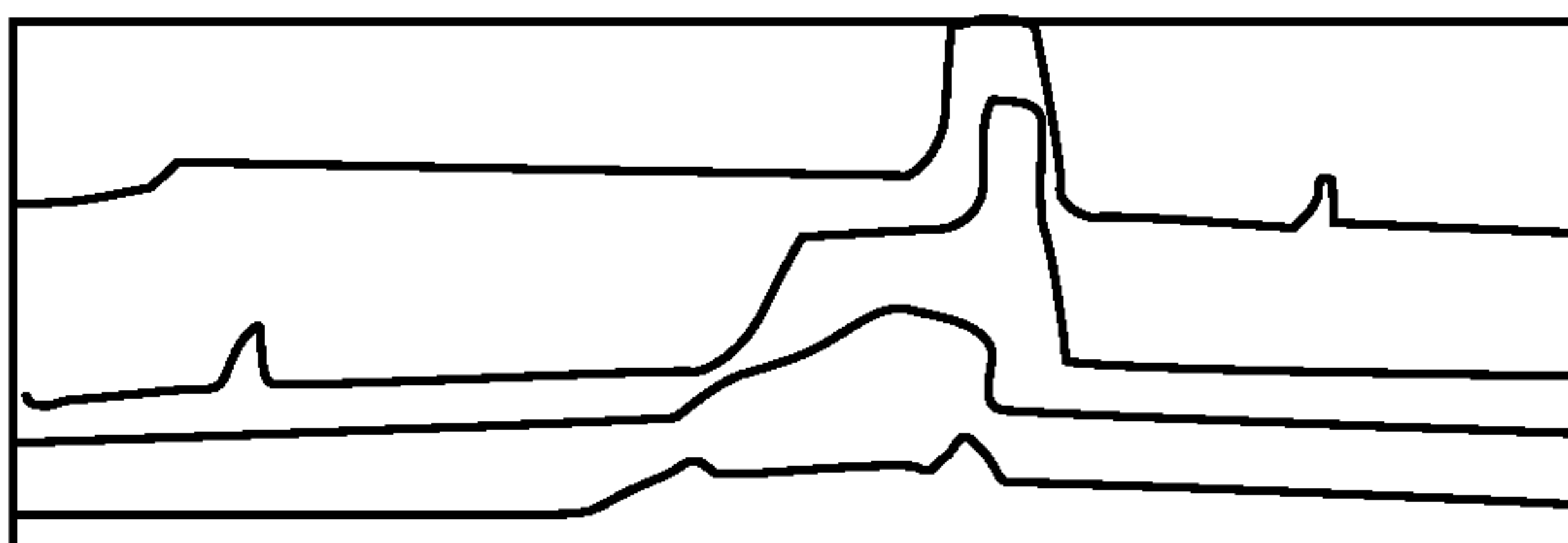
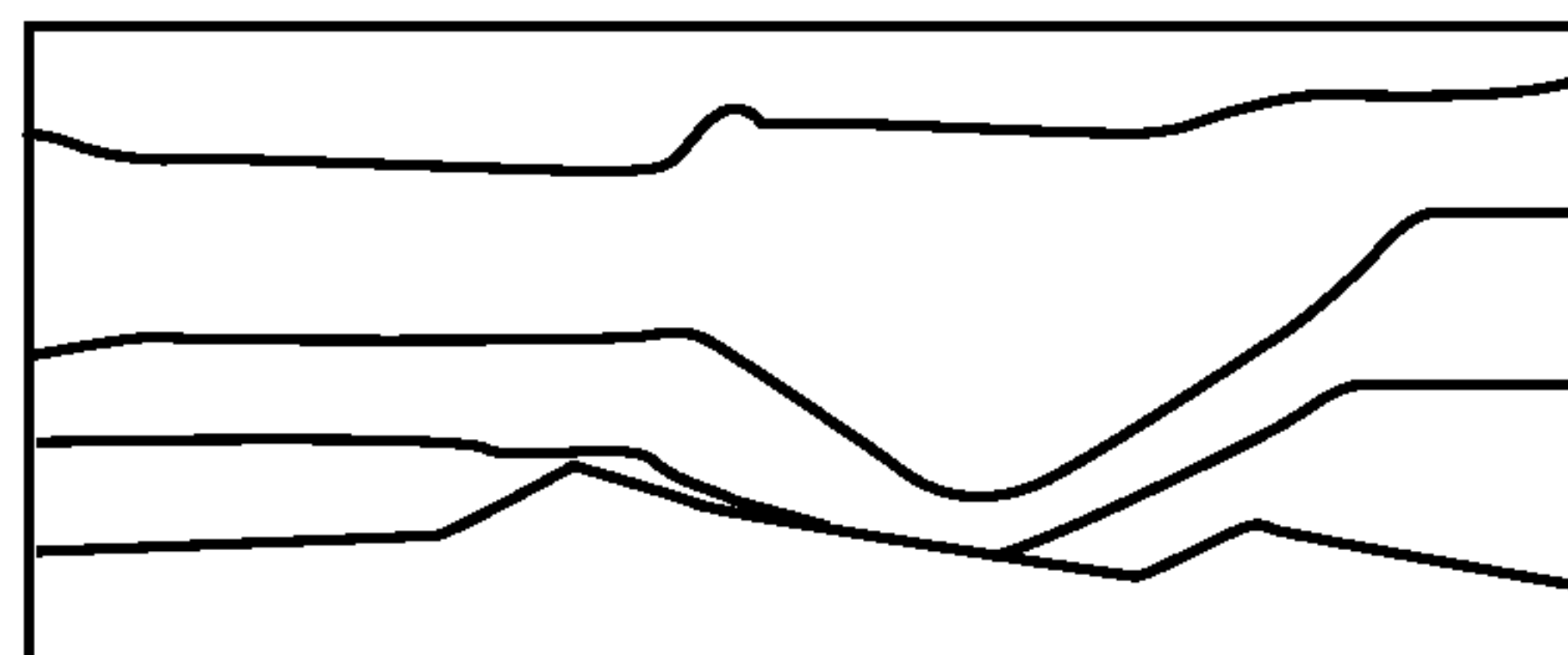
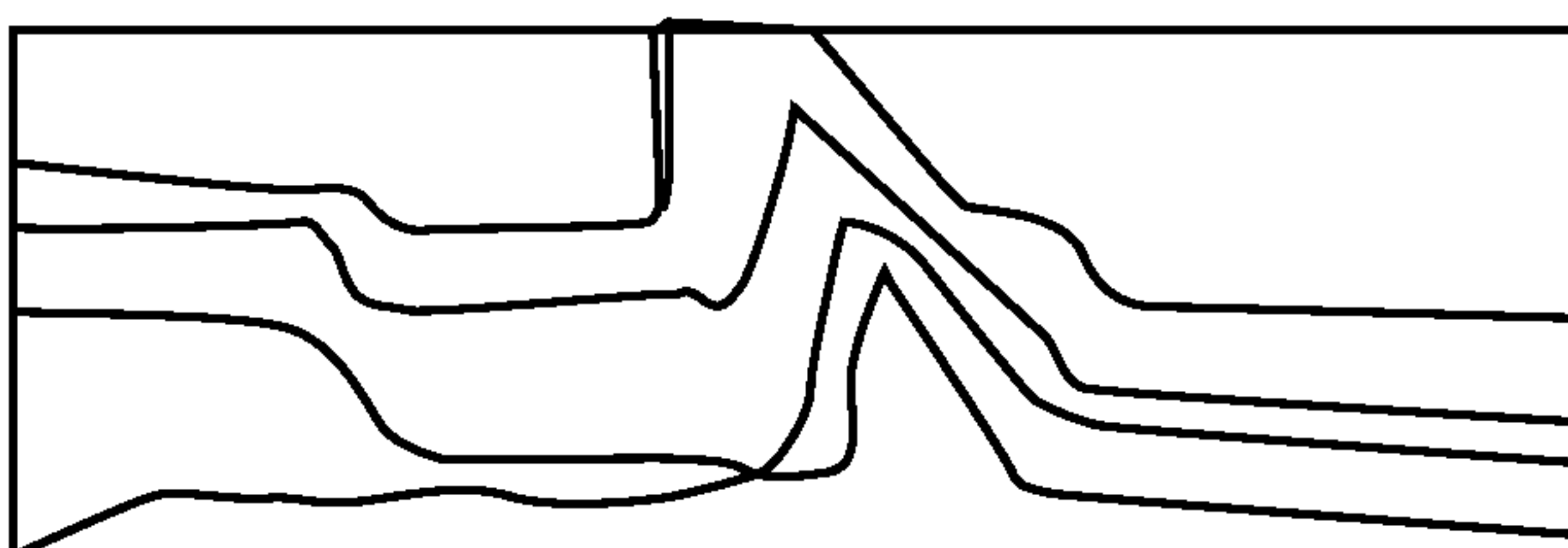
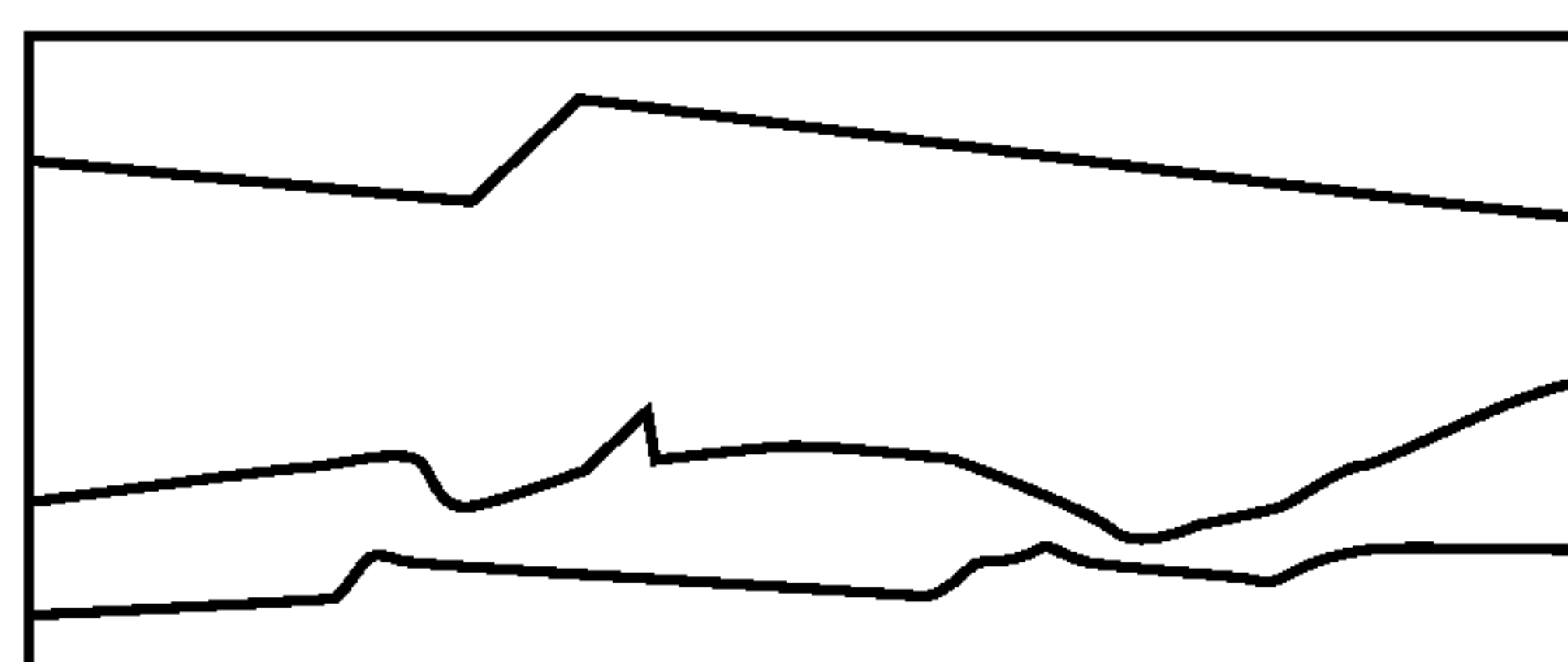
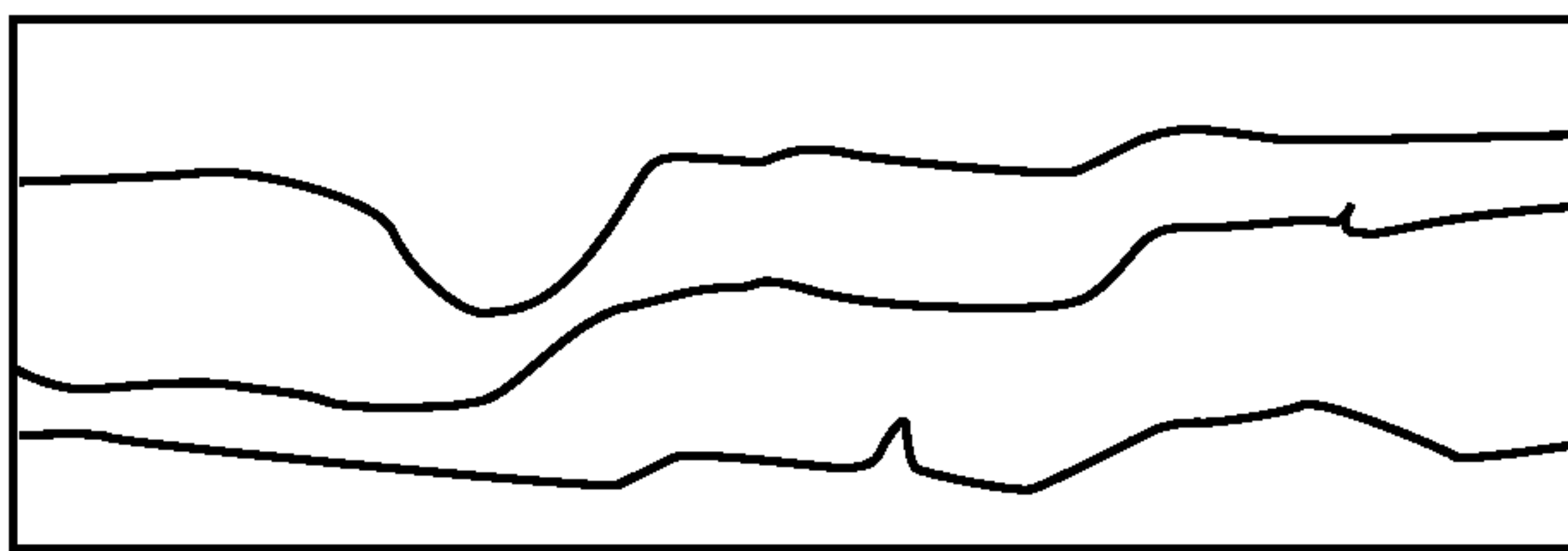
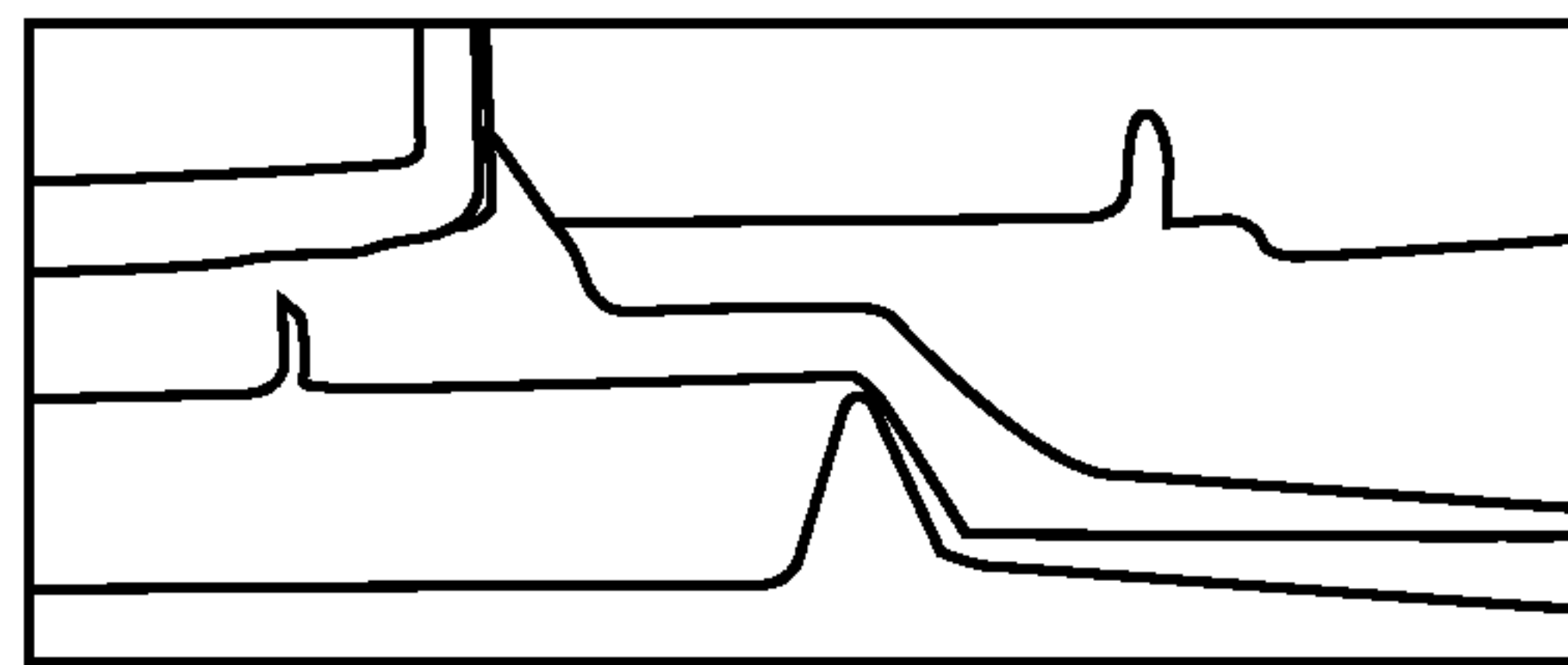
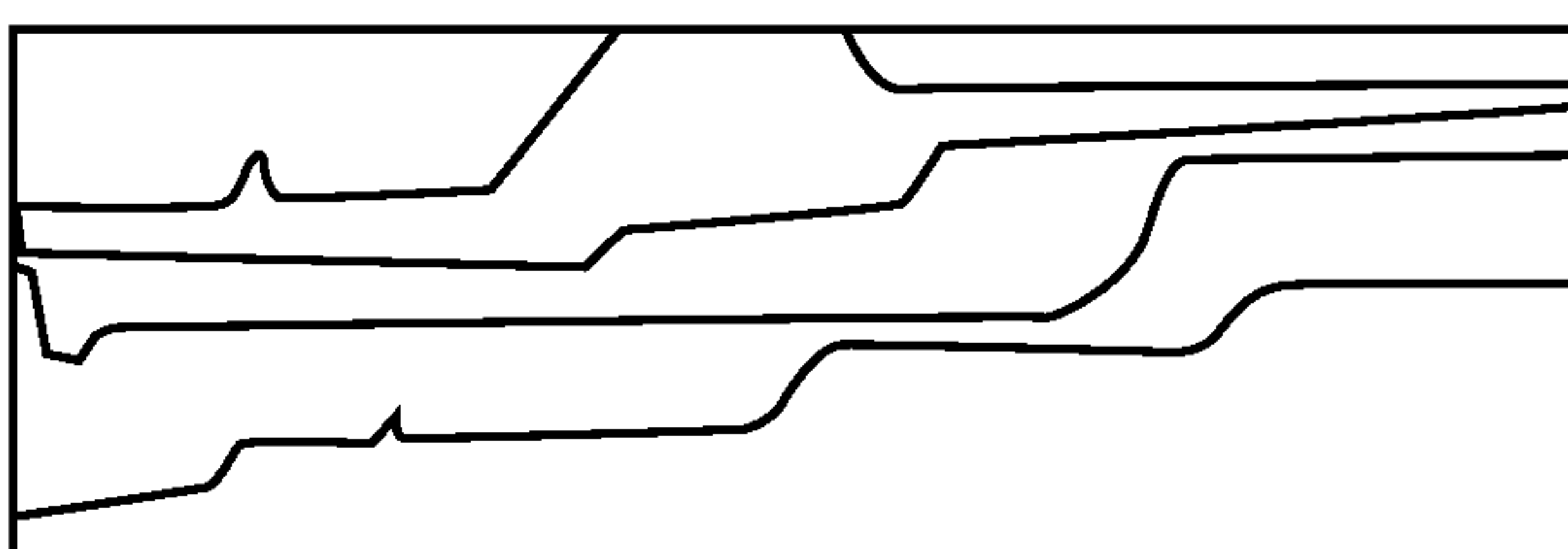
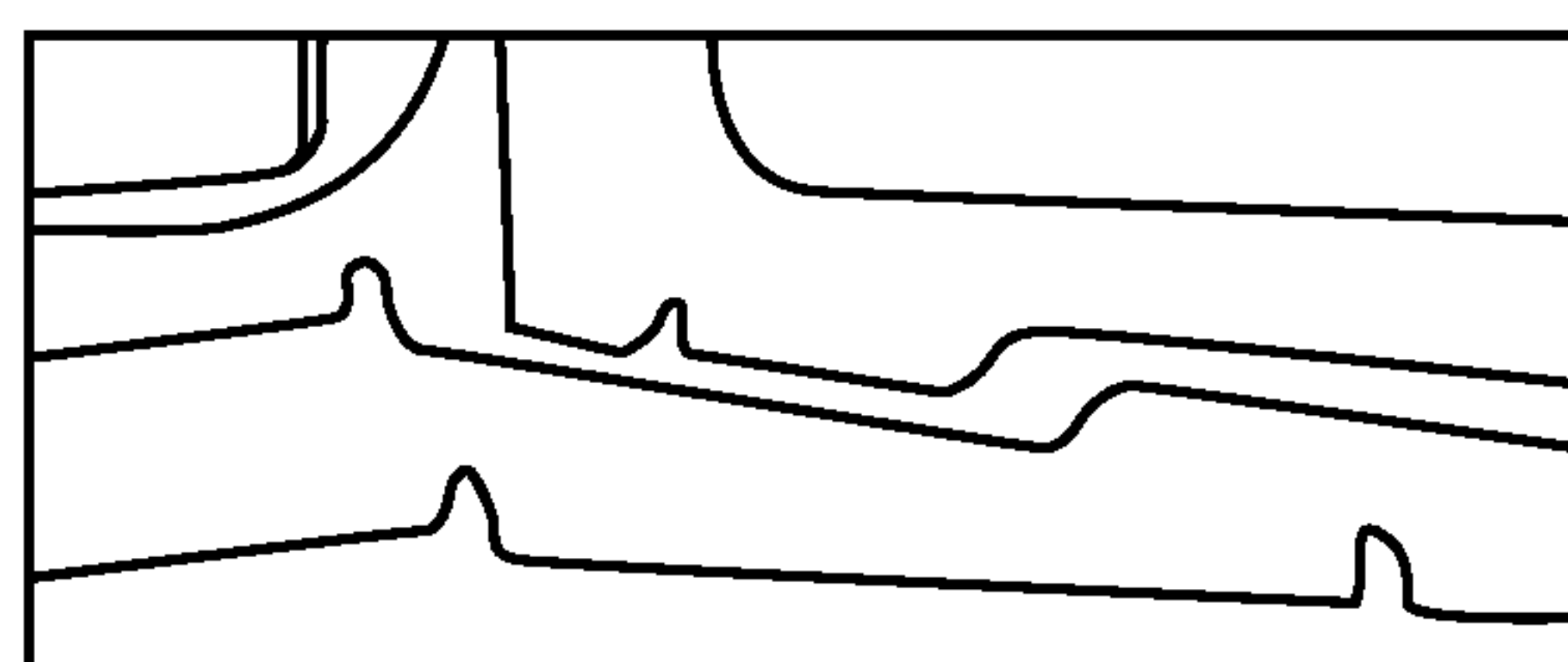


FIG. 6A**FIG. 6B****FIG. 6C****FIG. 6D****FIG. 6E****FIG. 6F****FIG. 6G****FIG. 6H**

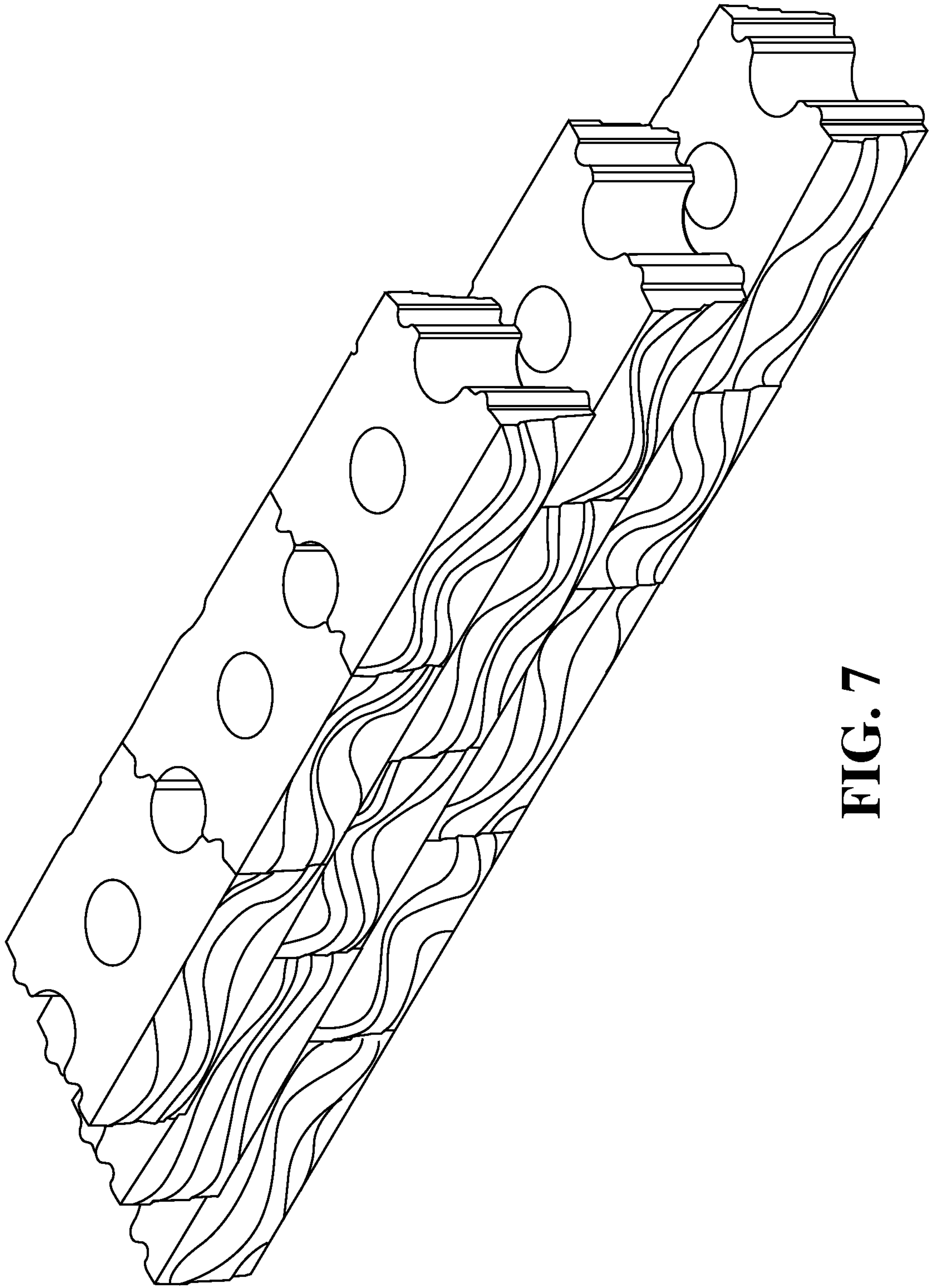
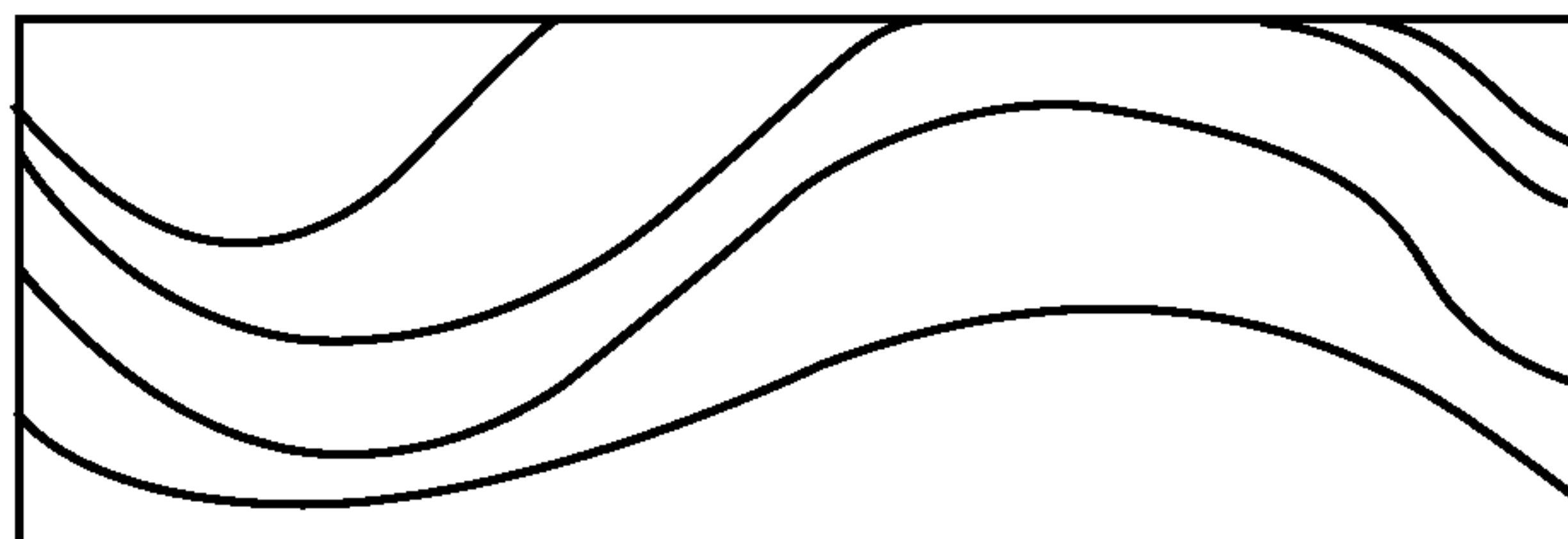
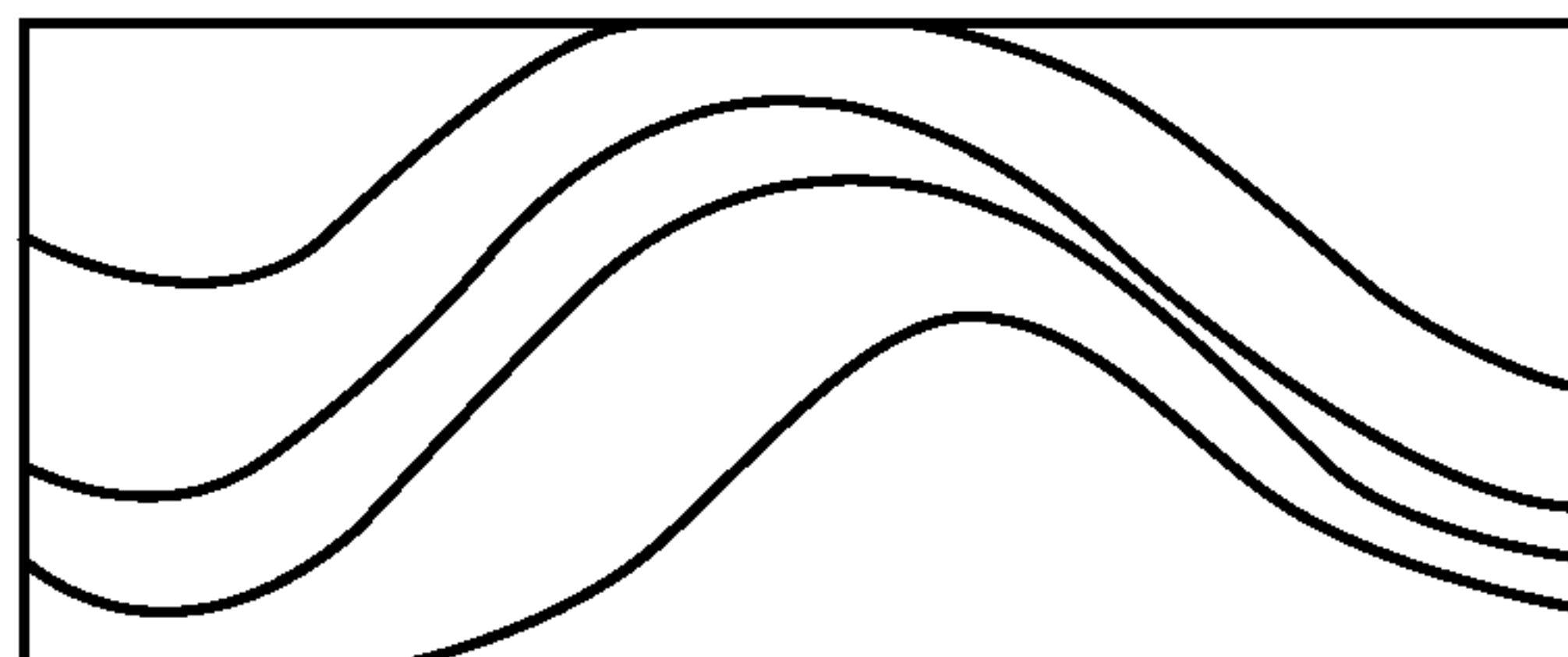
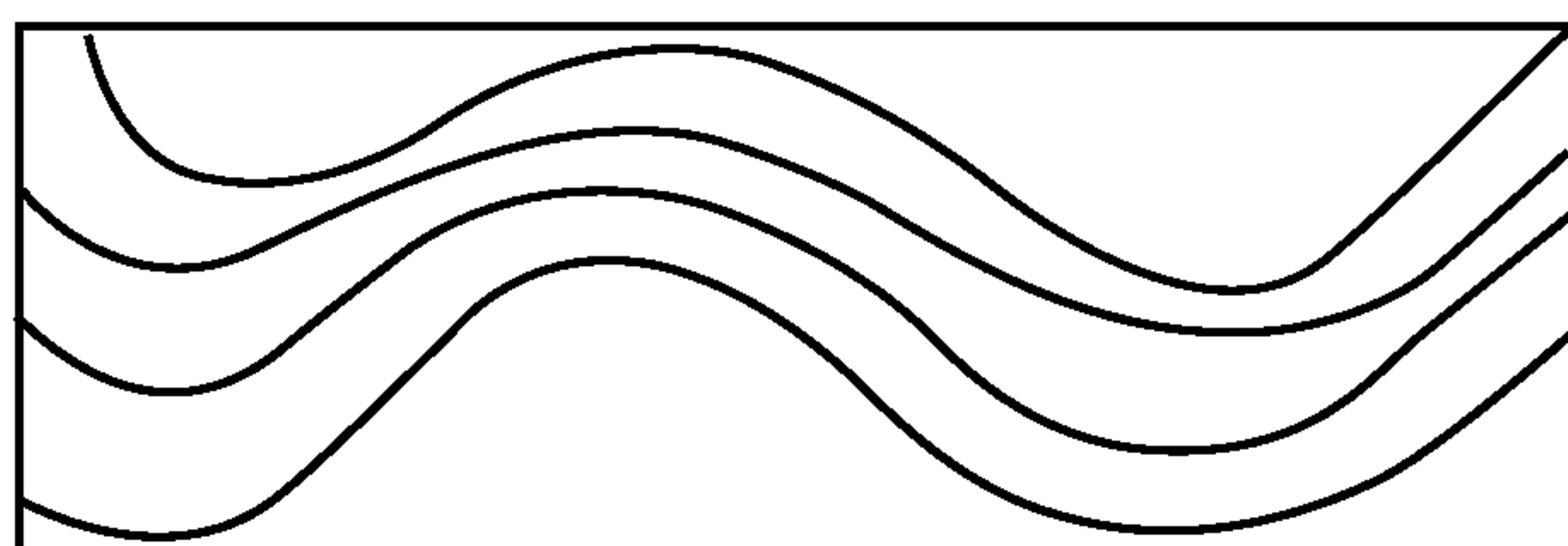
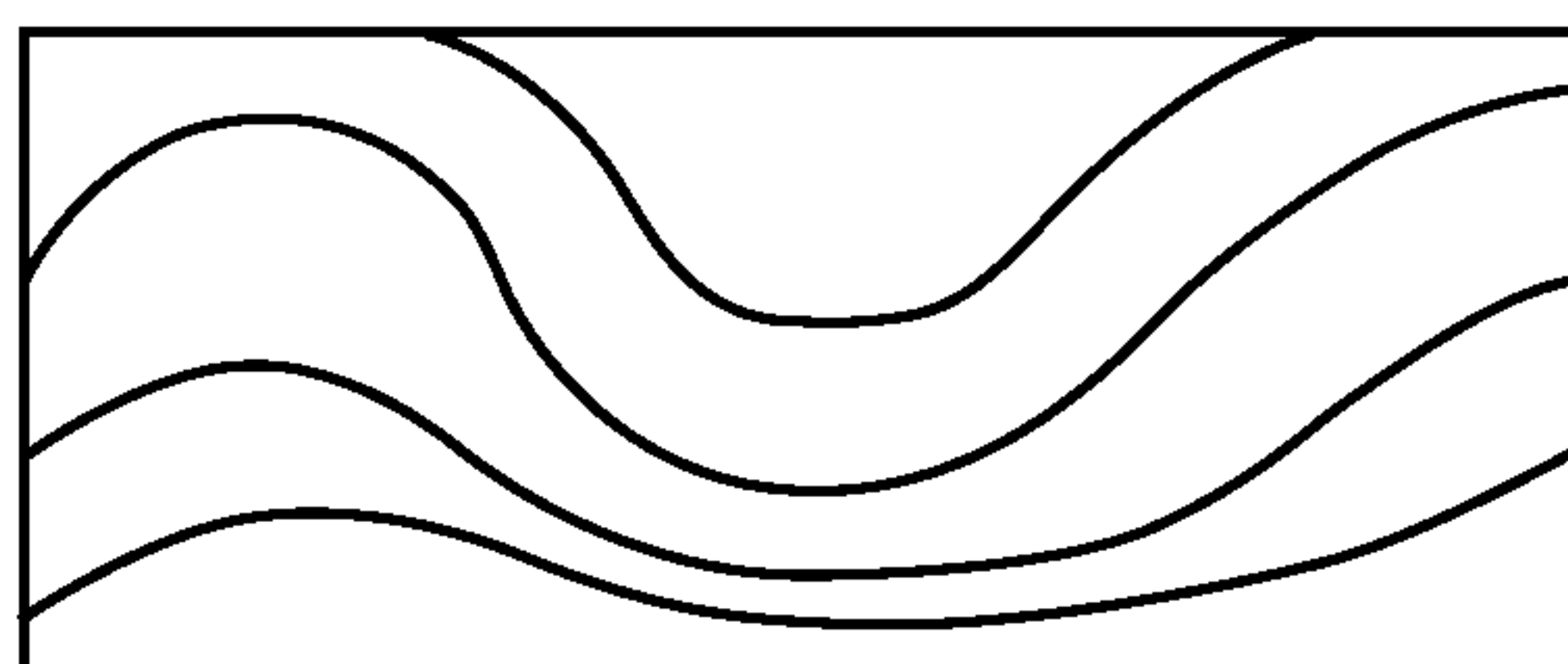
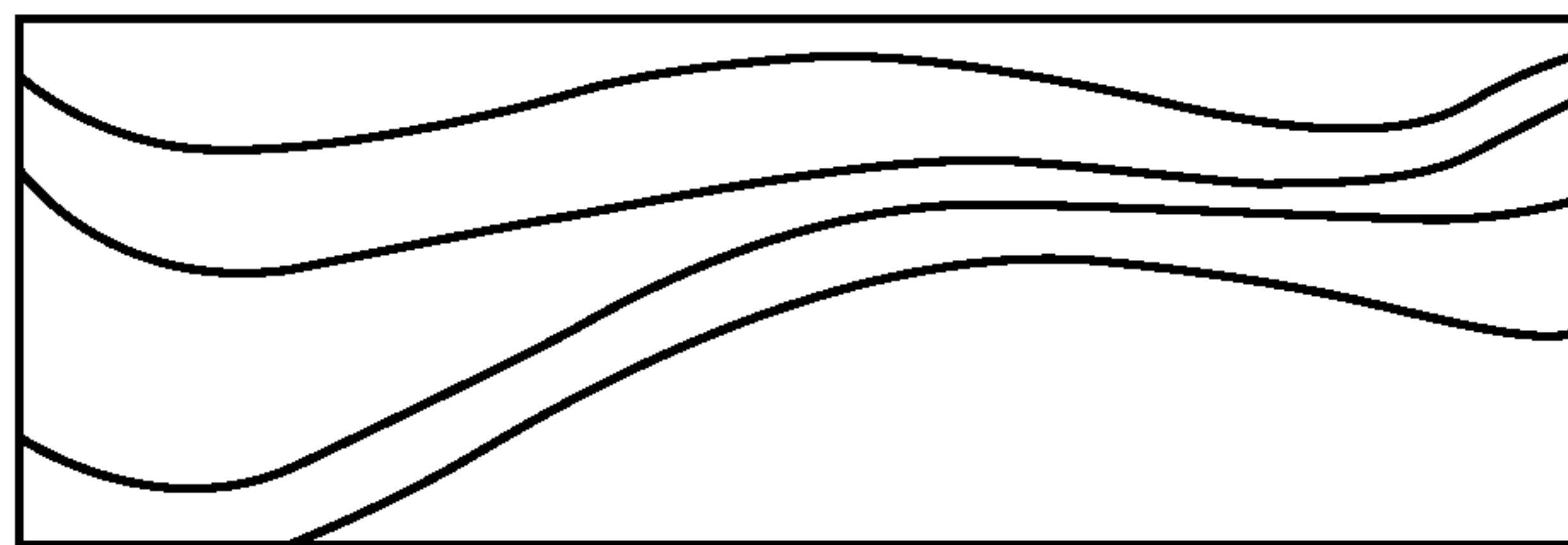
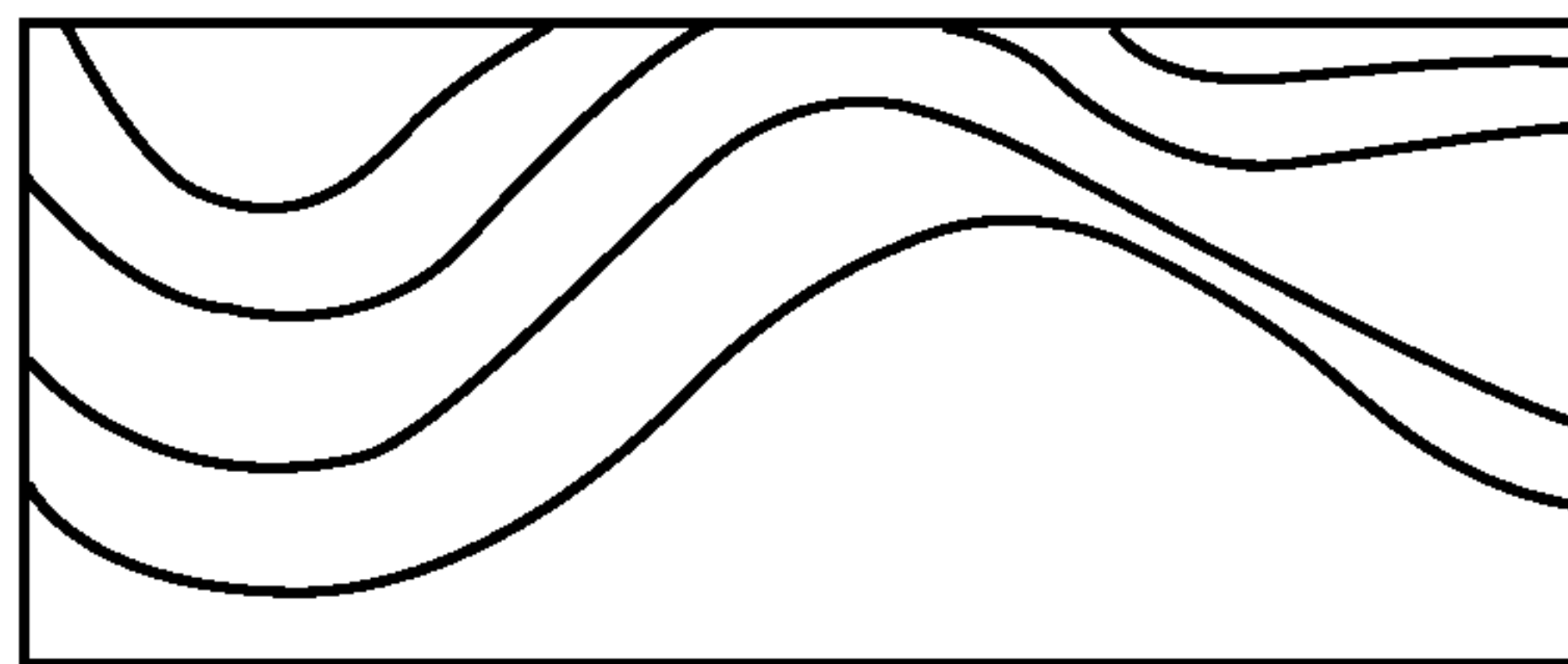
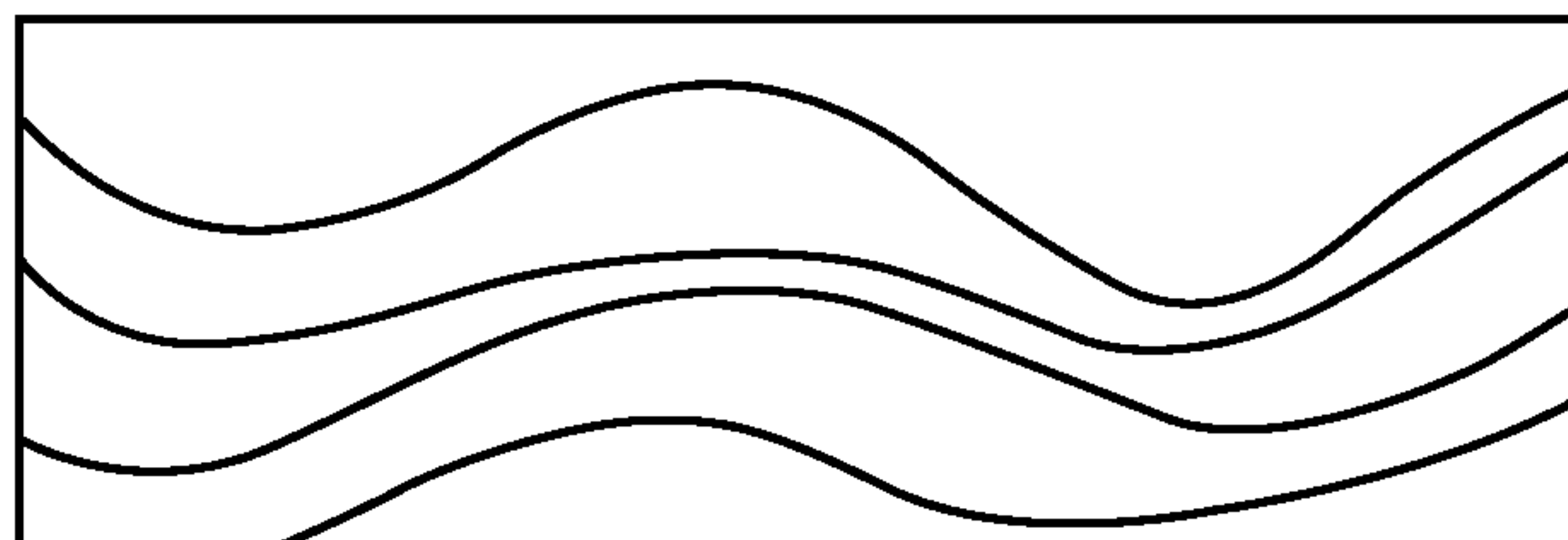
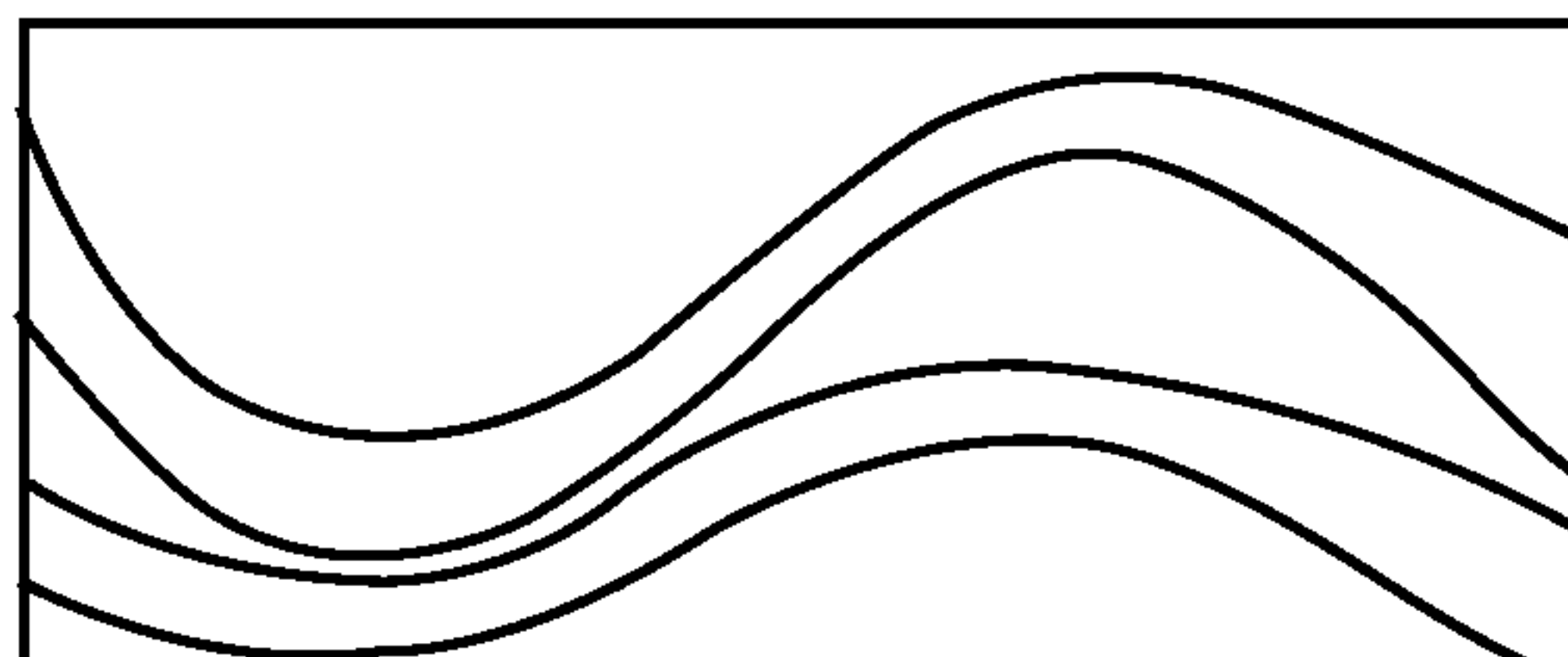


FIG. 7

FIG. 8A**FIG. 8B****FIG. 8C****FIG. 8D****FIG. 8E****FIG. 8F****FIG. 8G****FIG. 8H**

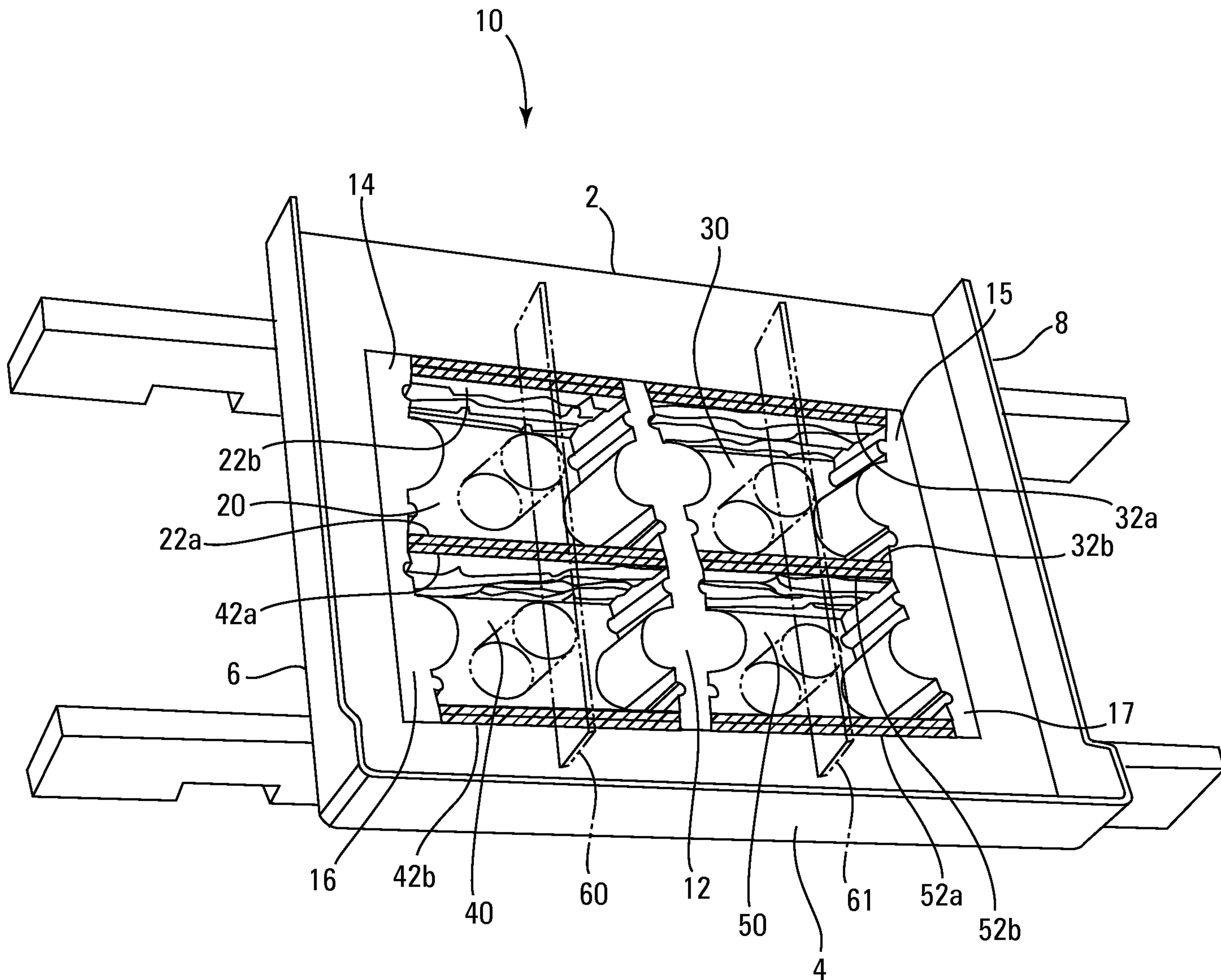


FIG. 1