C. A. WEIRICH.

SHEET METAL TILE.

APPLICATION FILED NOV. 6, 1911.

1,041,924.

Patented Oct. 22, 1912.

3 SHEETS—SHEET 1.

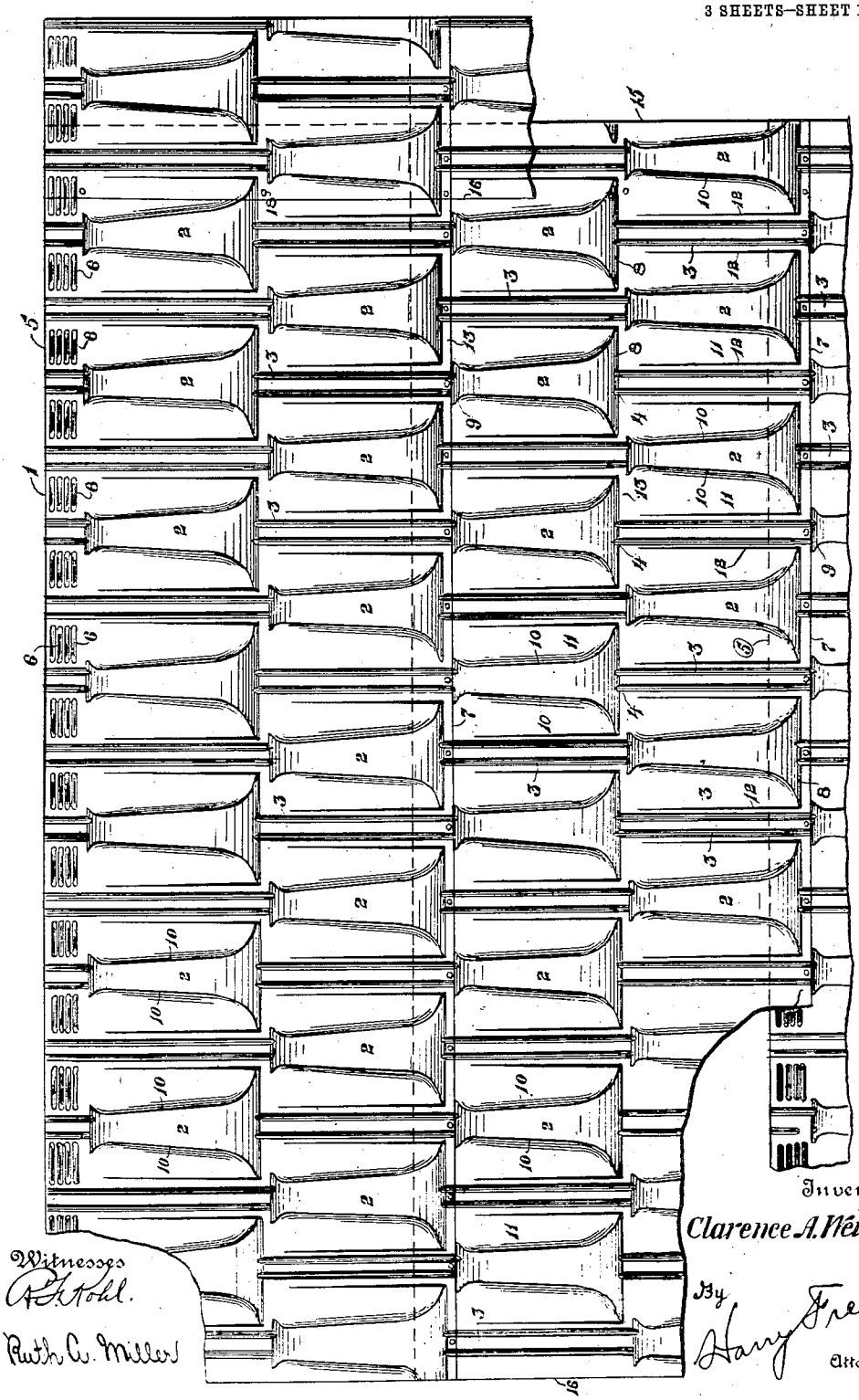

Fig 1

Witnesses
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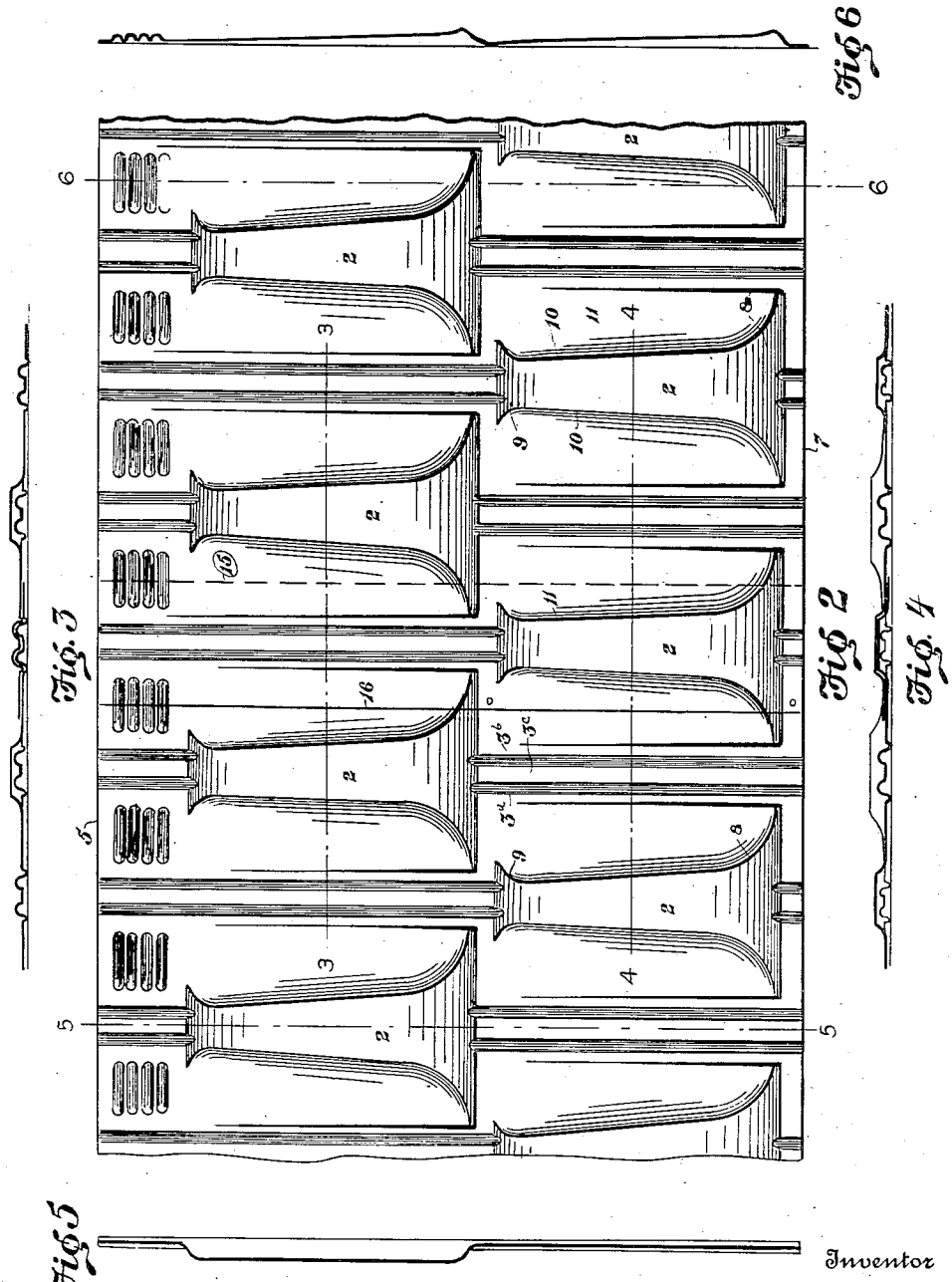

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3 SHEETS—SHEET 3.

Fig. 9

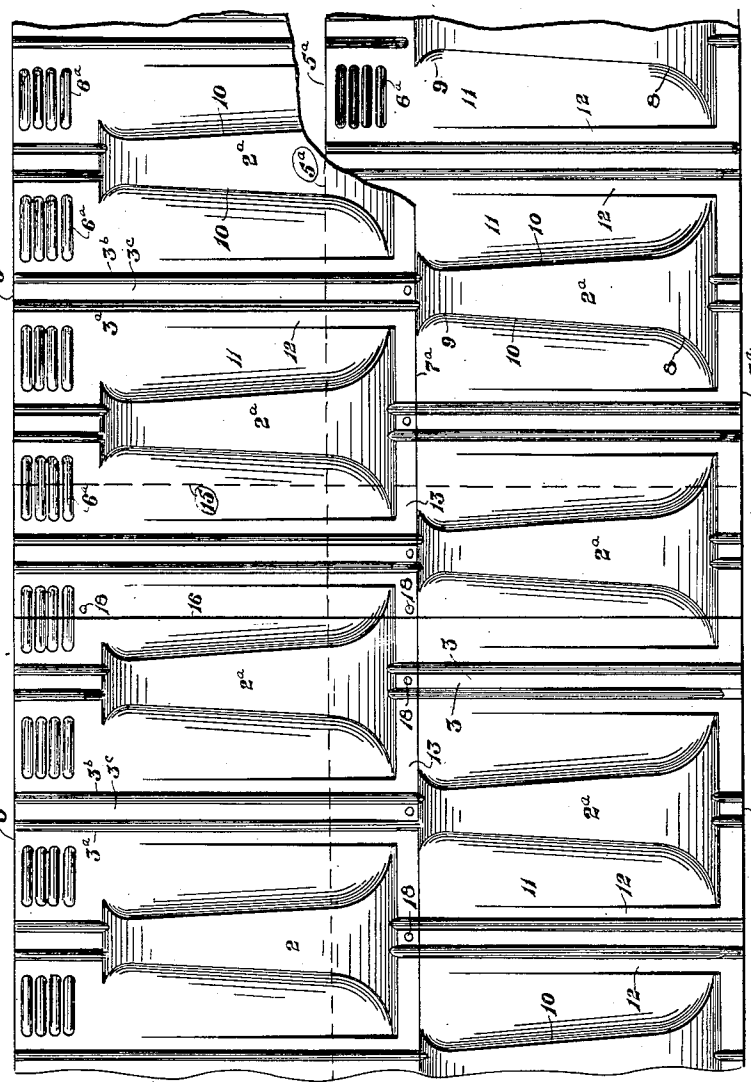

Fig. 7

Fig. 8

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UNITED STATES PATENT OFFICE.

CLARENCE A. WEIRICH, OF CANTON, OHIO.

SHEET-METAL TILE.

1,041,924. Specification of Letters Patent. Patented Oct. 22, 1912.

Application filed November 6, 1911. Serial No. 656,833.

To all whom it may concern:

Be it known that I, CLARENCE A. WEIRICH, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Sheet-Metal Tiles, of which the following is a specification.

The invention relates to metal sheets shaped or stamped in simulation of tiles as laid upon a roof. Such tiles are frequently designed with a raised or protruding middle or body portion and ribbed overlapping or jointed lateral edges, and are laid so that the lower end of one tile overlaps the upper end of adjacent tiles astride the lateral joint between the same, thus staggering or alternating the raised or protruding body portion of the tiles in one lateral row between the corresponding portions of the tiles in the next adjoining row. In imitating such a design of tiling, it has been customary to make a separate metal shingle to represent each tile, and to connect such shingles laterally by some form of flanged or locked joint. The manufacture of such metal shingles or metal tiles requires many mechanical operations and considerable loss of material because of the accuracy in shape necessary for properly jointing the tiles together, and because the stamping of the irregular design tends to distort the shape of the shingle and frequently requires trimming for truing the shingles. Further difficulty arises in the use of such metal shingles growing out of the imperfections and multiplicity of the lateral joints through which it is quite difficult to avoid some leakage from water, snow or slush on the roof covered by the same. These difficulties, together with the added expense of crating, handling and placing metal shingles made in simulation of individual tiles, are avoided by stamping an elongated metal sheet with two or more continuous rows of designs of individual tiles, the individual tile designs in each row being arranged side by side lengthwise of the sheet, and the individual tile designs in one row being alternately staggered in intervening relation with respect to the individual tile designs in the other row; and, by so arranging the individual tile designs with reference to the ends of the sheets that alternate parts of the individual designs in the several rows at the end of one sheet will overlap corresponding parts of the individual designs at the end of another sheet, to make a water-tight joint therewith, and that the design of the lower edge of one sheet will overlap the upper edge of another sheet to make a water-shedding joint therewith.

A preferred embodiment of the invention, thus set forth in general terms, and also a modified embodiment thereof, are illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a plan view of portions of several sheets of metal as laid upon a roof with the end and side edge portions overlapped, with certain parts broken away to show the underlapping edge portions; Fig. 2, a fragmentary plan view showing the joint formed by the overlapping end portions of two adjoining metal sheets; Fig. 3, a section of the metal sheets on line 3—3, Fig. 2; Fig. 4, a section of the metal sheets on line 4—4, Fig. 2; Fig. 5, a section of the metal sheet on line 5—5, Fig. 2; Fig. 6, a section of the metal sheet on line 6—6, Fig. 2; Fig. 7, a plan view of portions of several sheets of metal as laid upon a roof, embodying a modified form of the invention with only one row of laterally adjoining individual designs on each sheet; Fig. 8, a section of the metal sheets on line 8—8, Fig. 7; and Fig. 9, a section of the metal sheets on line 9—9, Fig. 7.

Similar numerals refer to similar parts throughout the drawings.

Each elongated sheet 1 of the preferred embodiment of the invention is formed or stamped with two rows of individual tile designs, each design including a raised portion 2 forming a ridge in simulation of the body portion of the tile, and a corrugated raised portion 3 in simulation of the lateral joints between two tiles also forming a ridge across the sheet; and these raised portions in each row of designs are staggered with respect to the raised portions of the other row so as to alternately merge at 4 in axial alinement therewith, and thus form a continuous ridge entirely across the sheet.

One edge of each sheet, being the upper edge 5 as laid upon a roof, is extended beyond the tile-design portion of the sheet, and this edge is provided with a series of laterally extended raised ribs 6 which are adapted to be overlapped by the opposite or

lower edge 7 of the next adjoining sheet above to make a water-shedding joint therewith.

The raised body portion 2 in the middle of each individual tile design preferably tapers from a wider lower end 8 to a narrower upper end 9, and the side edges of this raised portion are bent acutely downward to form the well defined edges 10 and are thence curved laterally in each direction to form the side faces 11 of each individual design, which side faces are again bent slightly downward to form the grooves 12 along the sides of the raised joint portion 3; which grooves 12 are located in the bottom or base plane of the sheet, that is to say, the plane of the sheet which rests upon the surface of the roof.

The upper and lower ends of the raised body portion 2 of each indivdual design are curved downward, excepting at the merger 4 of the alined raised rib portion, to the base plane of the sheet, thus forming the intermittently defined grooves 13 along the sheet and across each end of the raised body portions of each individual design; which grooves merge with the corresponding grooves 12 alongside the raised joint portions of the several designs, and are located in the same base plane therewith. And the side faces 11 of each design are slightly inclined upward from the upper groove 13 to the laterally extended portion 14 of each body portion, so that the raised portions of these side faces nearest the lower edge of the sheet will overlie the lateral ribs 6 along the extended upper edge portion 5 of the adjoining overlapping sheet.

Each raised joint portion 3 is common to two laterally adjoining tile designs and is preferably composed of two well defined corrugations or ribs 3^a and 3^b along the base plane grooves 11, between which ribs or corrugations is formed the depression 3^c, which may, as shown, be elevated above the base plane of the sheet, although such elevation is not essential.

One end of each sheet is preferably cut to form an edge 15 on one side of the ridge formed by two alined raised body and joint portions, while the other end of each sheet is preferably cut to form an edge 16 on the opposite side of a corresponding ridge; so that, when the end portions of two sheets are laid to overlap each other, the joint thus formed will include one raised joint portion of the design and the raised body portion of the design which merges and is in alinement with said raised joint portion. By this arrangement of the overlapping end portions of the sheets, it is evident that any water which may find its way under the overlapping edge 16 in one row of designs will be caught in the base groove 12 along the side of the nearest rib 3^a of the overlapped raised joint portion, and, instead of tending to flow over said rib, will naturally flow downward along the base groove 12 and thence backward toward the edge 16 in one row of designs along the lateral base groove 13 below the raised body portion of the corresponding individual design; and that any water which may find its way under the edge 16 in the other row of designs will be stopped by the overlapped raised body portion 2 of the individual design and will flow downward along the side of the same to find its way outward from the lower edge of the sheet along the corresponding base grooves. And finally, it is evident that any water which may find its way over the nearest corrugation or rib 3^a of a raised joint portion will not pass over the farthest corrugation or rib 3^b, but will find its way downward along the depression 3^c between the ribs to an outlet through the notch 17 which is formed by shortening the nearest rib 3^a so that the corresponding base channel 12 communicates with the depression 3^c between the two ribs.

It will be understood that the invention is not limited to a sheet having two rows of individual tile designs, for it is evident on one hand that a sheet can be made with three or more rows of designs without departing from the spirit of the invention; and, on the other hand, that a sheet can be made with a single row of individual designs, as shown for the modified form of the invention illustrated in Figs. 7, 8 and 9, wherein the lower edge portion 7^a of each sheet 1^a is laid to overlap the extended upper edge portion 5^a of the next adjoining sheet, and the ends of each sheet are overlapped as before.

When a sheet is made with only one row of individual designs thereon, and the raised body portion 2^a formed wider at one end 8^a than at the other end 9^a, the narrower end is preferably raised higher than the wider end, as shown in Fig. 8, to prevent the sheet from curving laterally when the designs are being stamped thereon. And in all cases it is preferred to secure the overlapping edges of the joints by nails as 18 driven through the overlapping and underlapping portions of the sheets into the roof; and, by locating these nails in the depressions in the joint ridges, it is only necessary to drive one row of nails along the lower edge of each sheet, together with an extra nail in the base grooves adjacent to the overlapping edge 16 or 16^a in each individual design.

I claim:

1. A metal sheet having a plurality of rows of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, and the

several designs in each row being staggered so that the raised body portions of one row are alined and merged with the raised joint portions of another row to form a continuous ridge across the sheet.

2. A metal sheet having a row of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet, and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet.

3. A metal sheet having a row of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet, and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, the joint ridge being composed of two raised ribs with an intervening depression and a groove on each side in the base plane of the sheet.

4. A metal sheet having a row of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, the raised body portion having well defined side edges bent acutely downward and thence curved laterally in each direction to form the side faces of the individual design.

5. A metal sheet having a row of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet, and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, one side of the sheet being extended beyond the tile-design portion thereof.

6. A metal sheet having a row of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet, and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, one side of the sheet being extended beyond the tile-design portion thereof, and having a series of laterally extended raised ribs therein intervening between the raised joint portions.

7. A metal sheet having a row of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet, and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, there being a base-plane groove along each side of the raised joint portions, and a base-plane groove along each end of the raised body portions between the raised joint portions.

8. A metal sheet having a row of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet, and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, there being a base-plane groove along each side of the raised joint portions, and a base-plane groove along each end of the raised body portions between the raised joint portions, one side of the sheet being extended beyond the contiguous base-plane groove.

9. A metal sheet having a plurality of rows of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, and the several designs in each row being staggered so that the raised body portions of one row are alined and merged with the raised joint portions of another row to form a continuous ridge across the sheet, there being a base-plane groove along each side of the raised joint portions, and a base-plane groove along each end of the raised body portions between the raised joint portions.

10. A metal sheet having a plurality of rows of laterally adjoining individual tile designs shaped thereon, each design having a raised body portion forming a ridge across the sheet and adjoining designs having a common raised lateral-joint portion likewise forming a ridge across the sheet, and the several designs in each row being staggered so that the raised body portions of one row are alined and merged with the raised joint portions of another row to form a continuous ridge across the sheet, there being a base-plane groove along each end of the raised body portions between the raised joint portions, one side of the sheet being extended beyond the contiguous base-plane groove.

11. A sheet metal joint composed of two endwise adjoining sheets with overlapping end portions, each sheet having a plurality of rows of individual tile designs shaped thereon with alternately alined and merging body and joint ridges extending across the sheet, the overlapping portions including at least one of said alined ridges to form a tight joint.

12. A sheet metal joint composed of endwise adjoining sheets with overlapping end portions, each sheet having a row of individual tile designs shaped thereon with body and joint ridges extending across the sheet, the overlapping portions including at least one of said ridges to form a tight joint.

13. A sheet metal joint composed of two endwise adjoining sheets with overlapping end portions, each sheet having a plurality of rows of individual tile designs shaped thereon with alternately alined and merging

body and joint ridges extending across the sheet and with base grooves alongside the joint ridges and at the ends of the body ridges between the joint ridges, the overlapping portions including at least one of said alined ridges to form a tight joint.

14. A sheet metal joint composed of two endwise adjoining sheets with overlapping end portions, each sheet having a row of individual tile designs shaped thereon with body and joint ridges extending across the sheet and with base grooves alongside the joint ridges and at the ends of the body ridges between the joint ridges, the overlapping portions including at least one of said ridges to form a tight joint.

15. A sheet metal joint composed of two sidewise adjoining sheets with overlapping side portions, each sheet having a plurality of rows of individual tile designs shaped thereon with body and joint ridges extending across the sheet and base-plane grooves alongside the joint ridges and at the ends of the body ridges between the joint ridges, one side of one sheet being extended beyond the contiguous base-plane groove and being overlapped by the base-plane groove of the adjoining sheet.

16. A sheet metal joint composed of two sidewise adjoining sheets with overlapping side portions, each sheet having a row of individual tile designs shaped thereon with body and joint ridges extending across the sheet and base-plane grooves alongside the joint ridges and at the ends of the body ridges between the joint ridges, one side of one sheet being extended beyond the contiguous base-plane groove and being overlapped by the base-plane groove of the adjoining sheet.

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