

FIG. 1

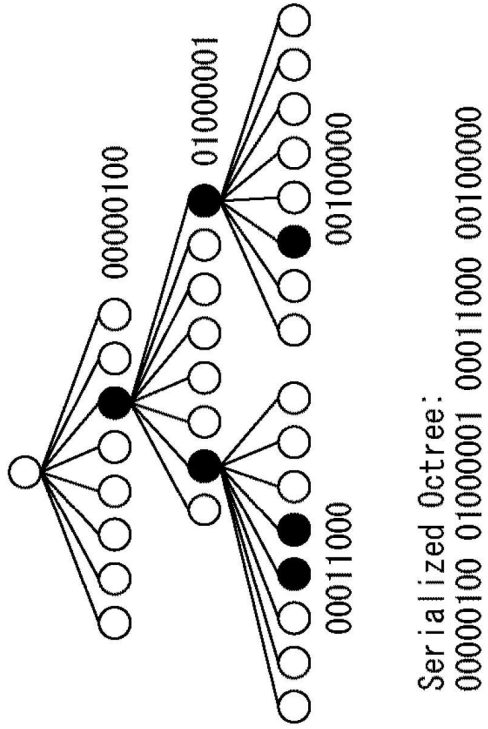
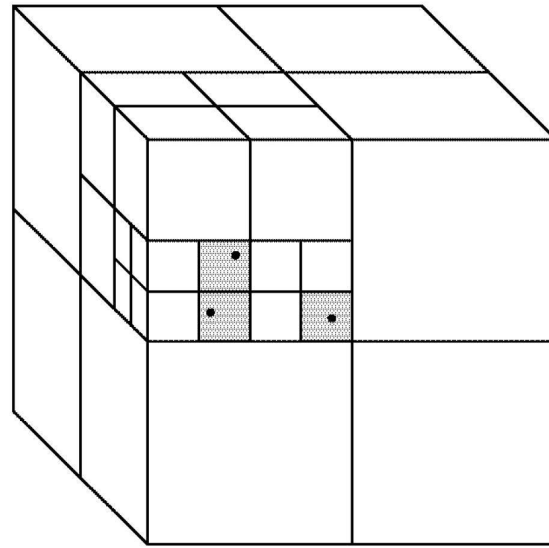


FIG. 2

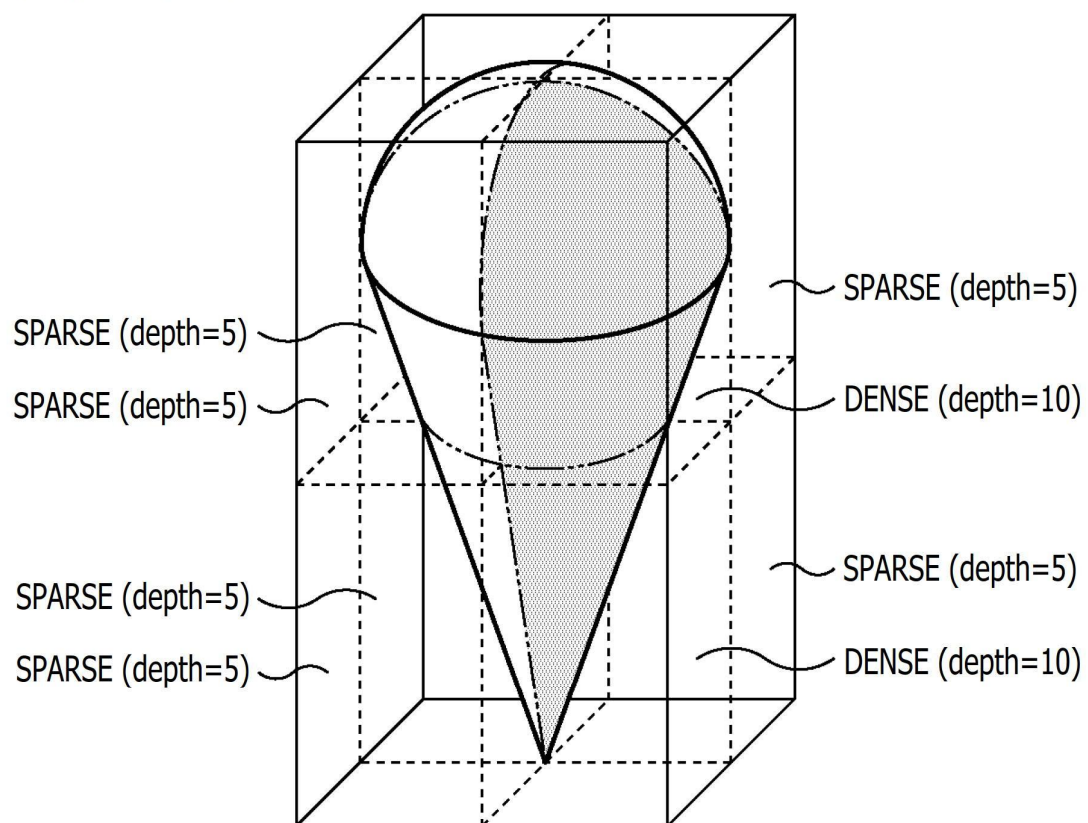


FIG. 3

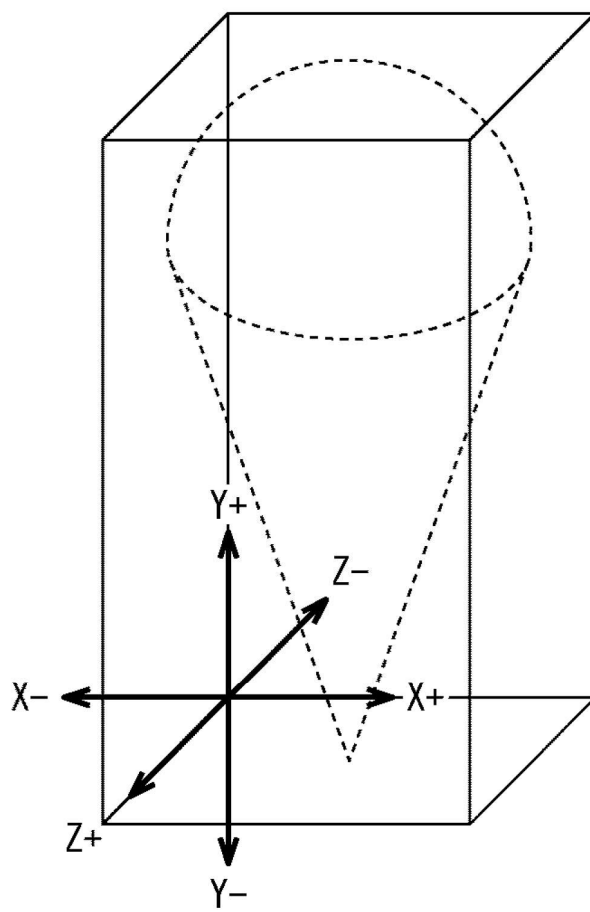


FIG. 4

```
<AdaptationSet id="1">
  <SupplementalProperty schemeIdUri="urn:mpeg:mepgl:gpcc:high_lod_direction:2018">
    <gpcc:directionInfo direction="0" />
  </SupplementalProperty>
  <Representation id="1-2">...</Representation>
</AdaptationSet>
<AdaptationSet id="2">
  <SupplementalProperty schemeIdUri="urn:mpeg:mepgl:gpcc:high_lod_direction:2018">
    <gpcc:directionInfo direction="1" />
  </SupplementalProperty>
  <Representation id="2-1">...</Representation>
</AdaptationSet>
```

FIG. 5

```

<AdaptationSet id="1">
  <Representation id="1-1">
    <SupplementalProperty schemeIdUri="urn:mpeg:mepgl:gpcc:high_lod_direction:2018">
      <gpcc:directionInfo direction="0" lod_ranking="1" />
    </SupplementalProperty>
  </Representation>
  ...
  <Representation>...</Representation>
</AdaptationSet>
<AdaptationSet id="2">
  <Representation id="2-1">
    <SupplementalProperty schemeIdUri="urn:mpeg:mepgl:gpcc:high_lod_direction:2018">
      <gpcc:directionInfo direction="1" lod_ranking="1" />
    </SupplementalProperty>
  </Representation>
  ...
  <Representation>...</Representation>
</AdaptationSet>

```

FIG. 6

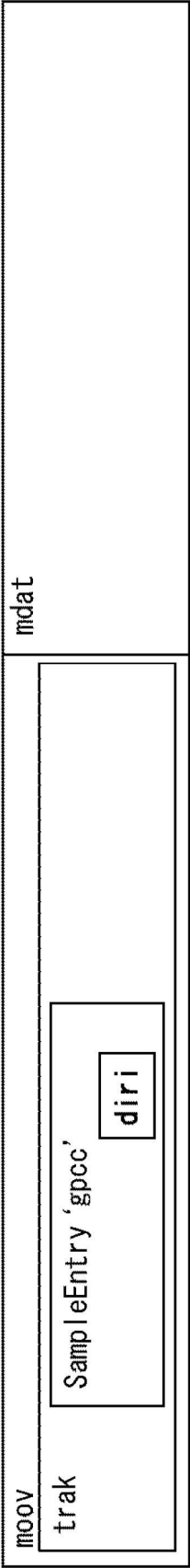


FIG. 7

```
aligned(8) class DirectionInformationBox extends FullBox( 'diri' , 0, 0)
{
    unsigned int(8) high_lod_direction;
    unsigned int(8) lod_ranking;
}
```

FIG. 8

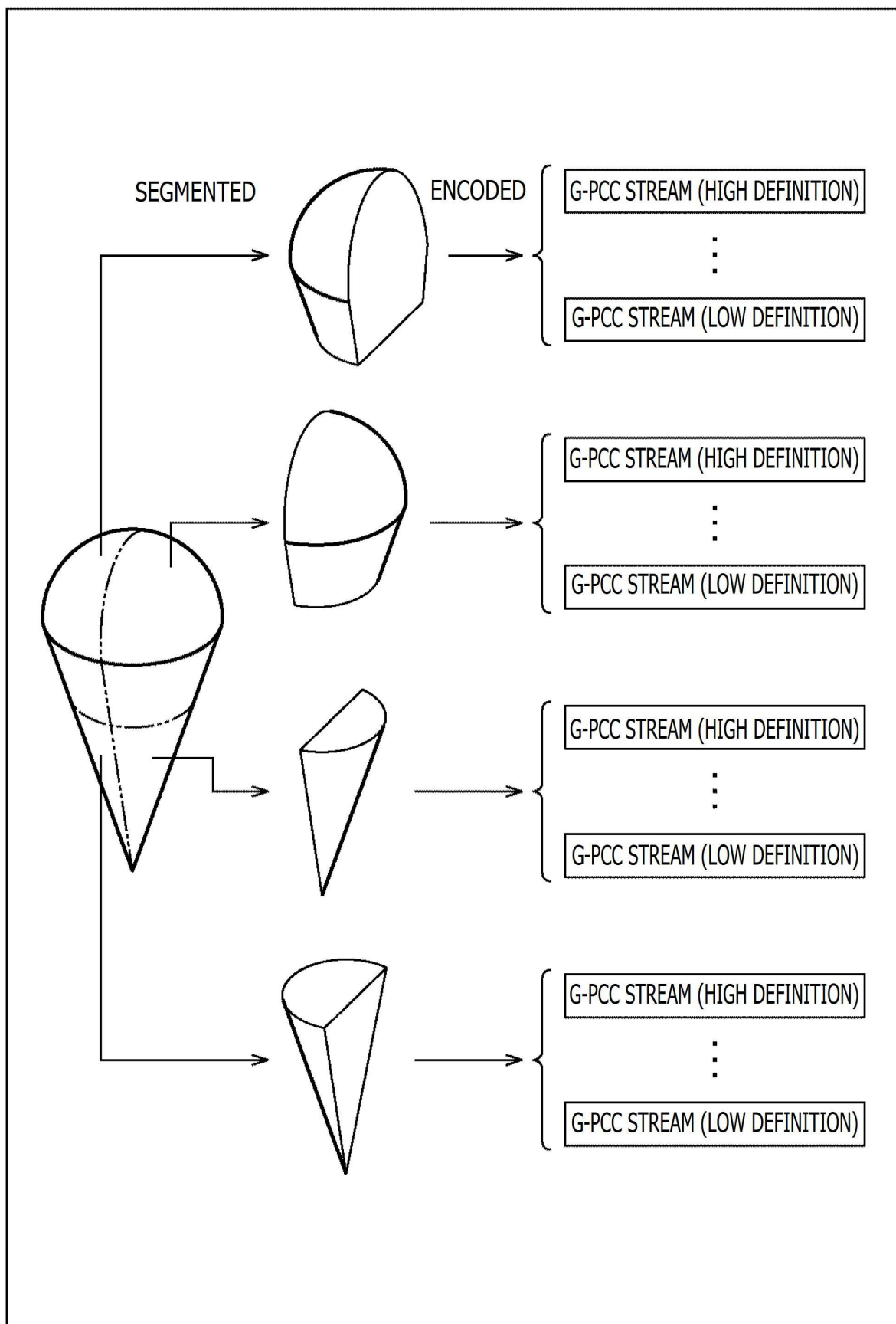


FIG. 9

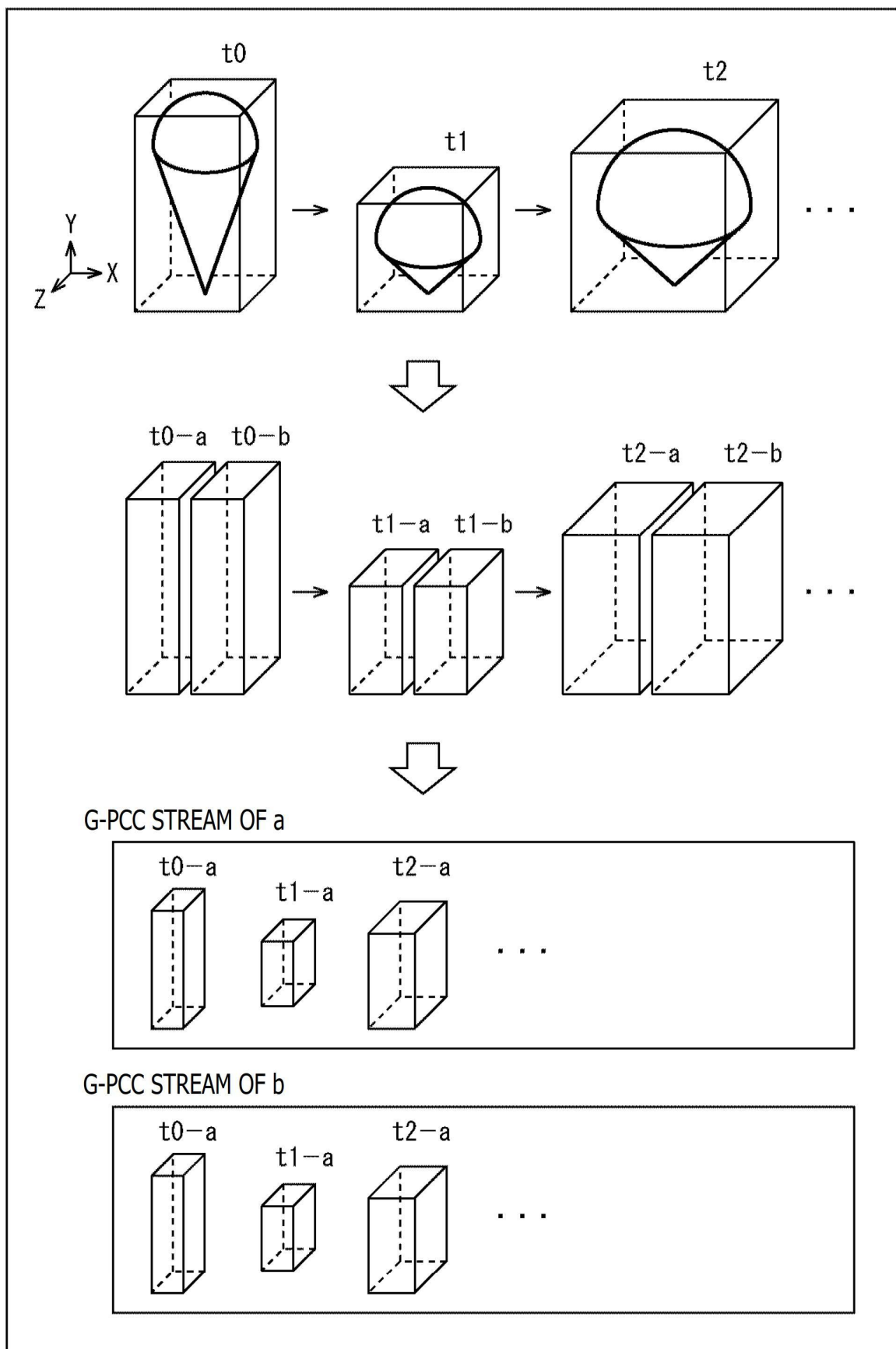


FIG. 10

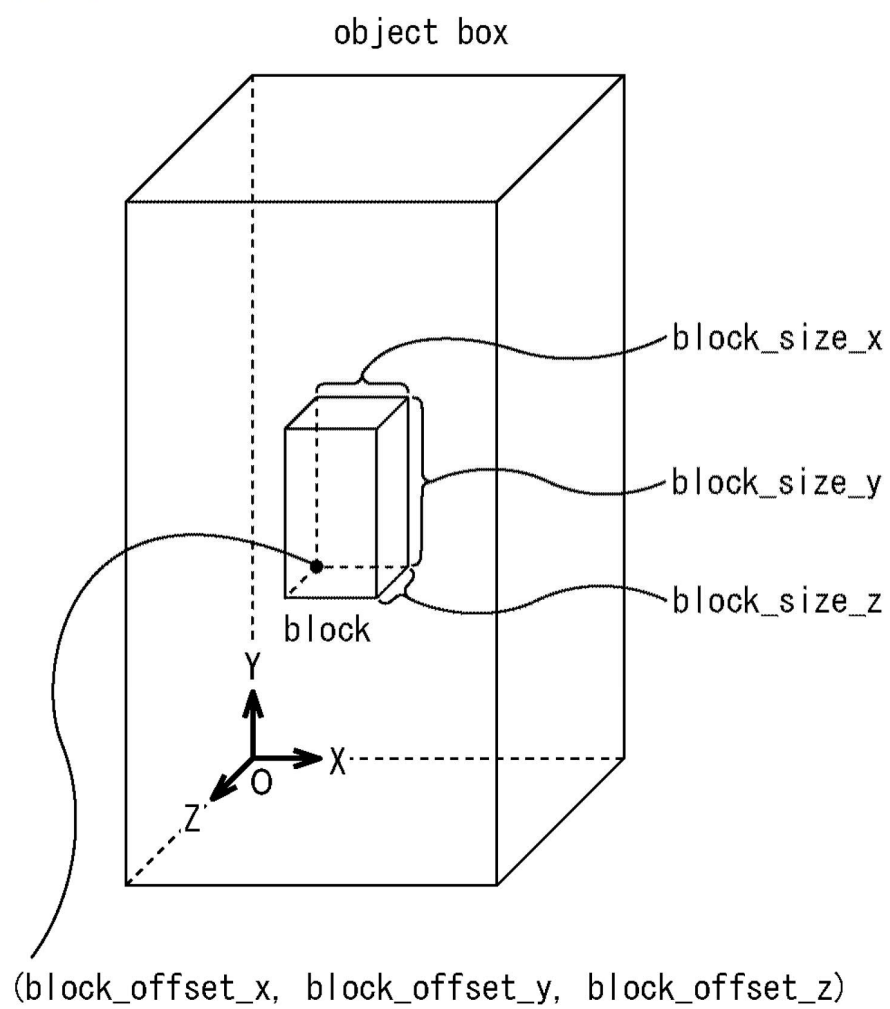
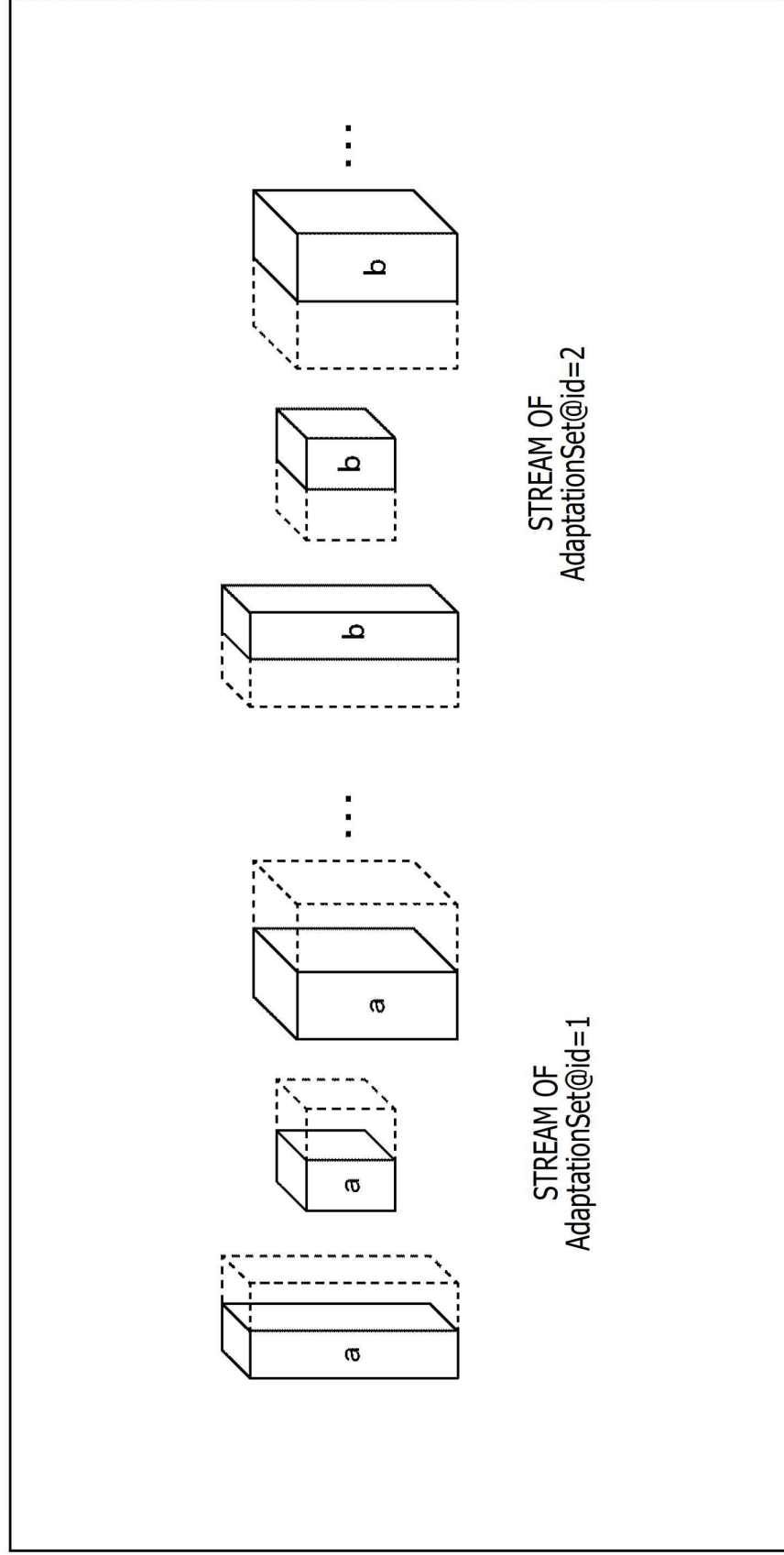


FIG. 11

```
<AdaptationSet id="1">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0" block_offset_y="0"
      block_offset_z="0" block_size_x="0.5" block_size_y="1"
      block_size_z="1" object_id="1"/>
  </SupplementalProperty>
  <Representation id="1-1">...</Representation>
</AdaptationSet>
<AdaptationSet id="2">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0.5" block_offset_y="0"
      block_offset_z="0" block_size_x="0.5" block_size_y="1"
      block_size_z="1" object_id="1"/>
  </SupplementalProperty>
  <Representation id="2-1">...</Representation>
</AdaptationSet>
```

FIG. 12



## FIG. 13

```

<AdaptationSet id="1">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0" block_offset_y="0"
      block_offset_z="0" block_size_x="0.5" block_size_y="1"
      block_size_z="1" object_id="1"/>
  </SupplementalProperty>
  <Representation id="1-1">
    <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:lod_information:2018">
      <gpcc:lodInfo lod_ranking="1"/>
    </SupplementalProperty>
    ...
  </Representation>
  <Representation id="1-2">
    <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:lod_information:2018">
      <gpcc:lodInfo lod_ranking="2"/>
    </SupplementalProperty>
    ...
  </Representation>
</AdaptationSet>
<AdaptationSet id="2">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0.5" block_offset_y="0"
      block_offset_z="0" block_size_x="0.5" block_size_y="1"
      block_size_z="1" object_id="1"/>
  </SupplementalProperty>
  <Representation id="2-1">
    <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:lod_information:2018">
      <gpcc:lodInfo lod_ranking="1"/>
    </SupplementalProperty>
    ...
  </Representation>
  ...
</AdaptationSet>

```

FIG. 14

11

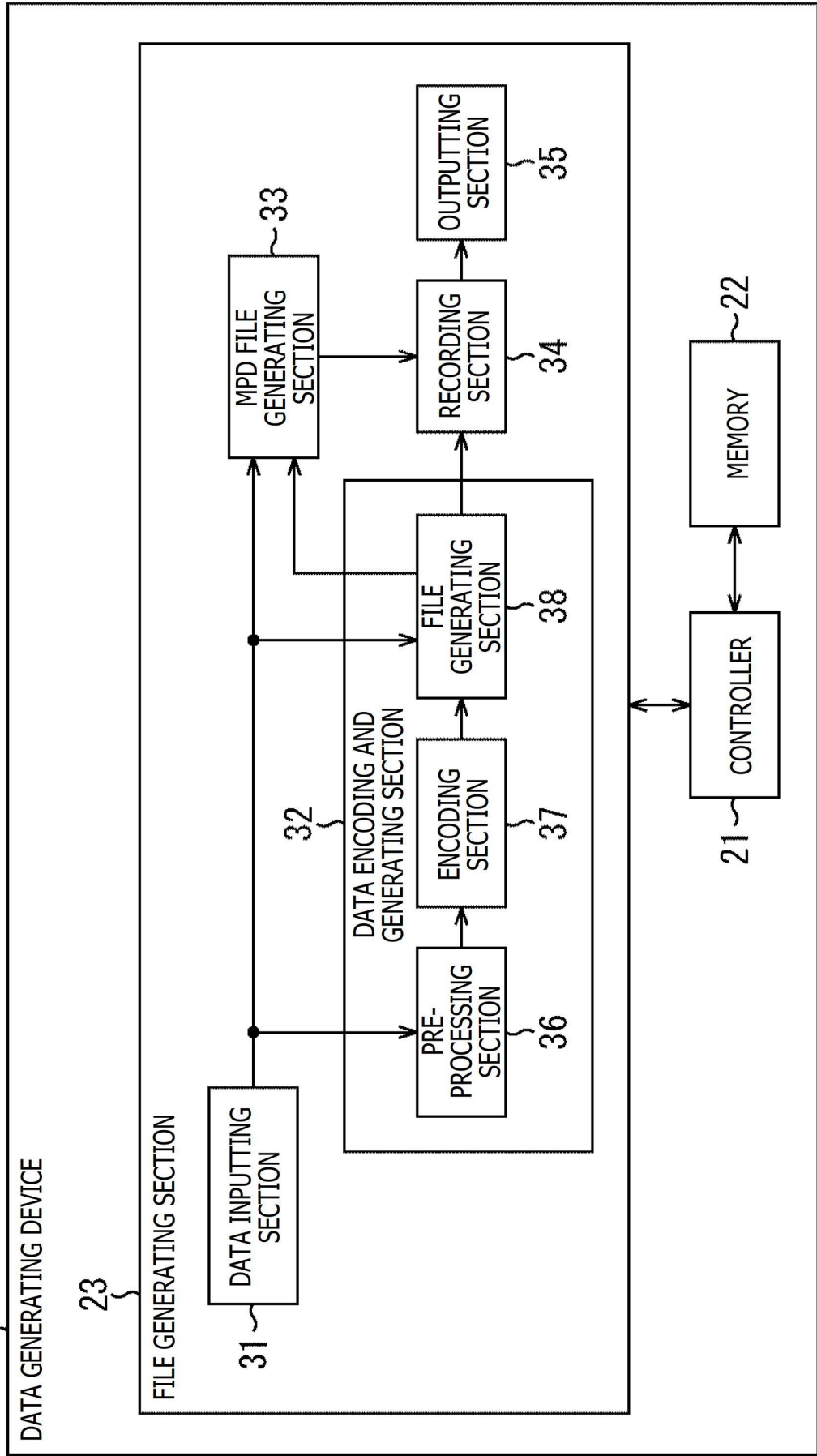


FIG. 15 12

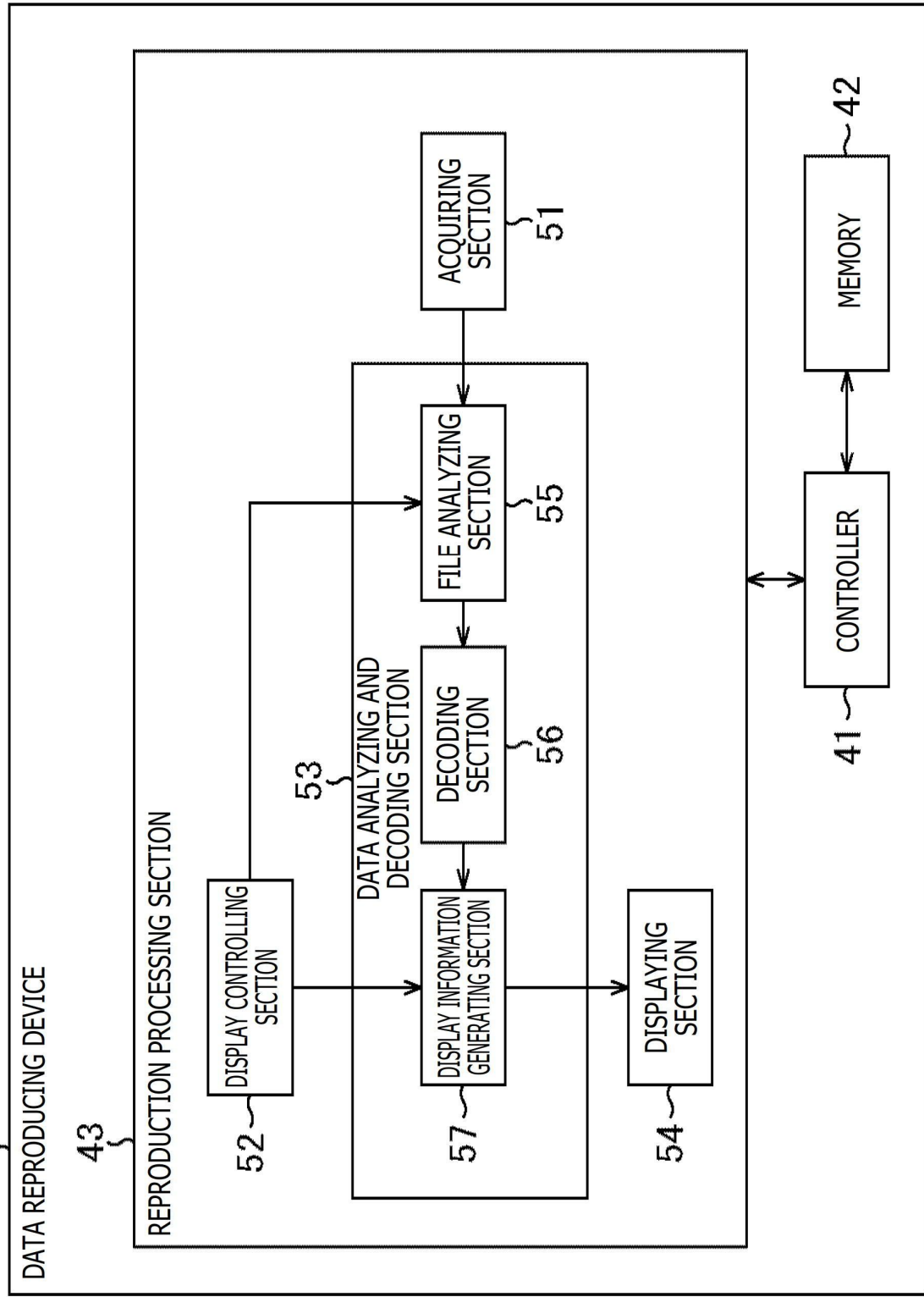


FIG. 16

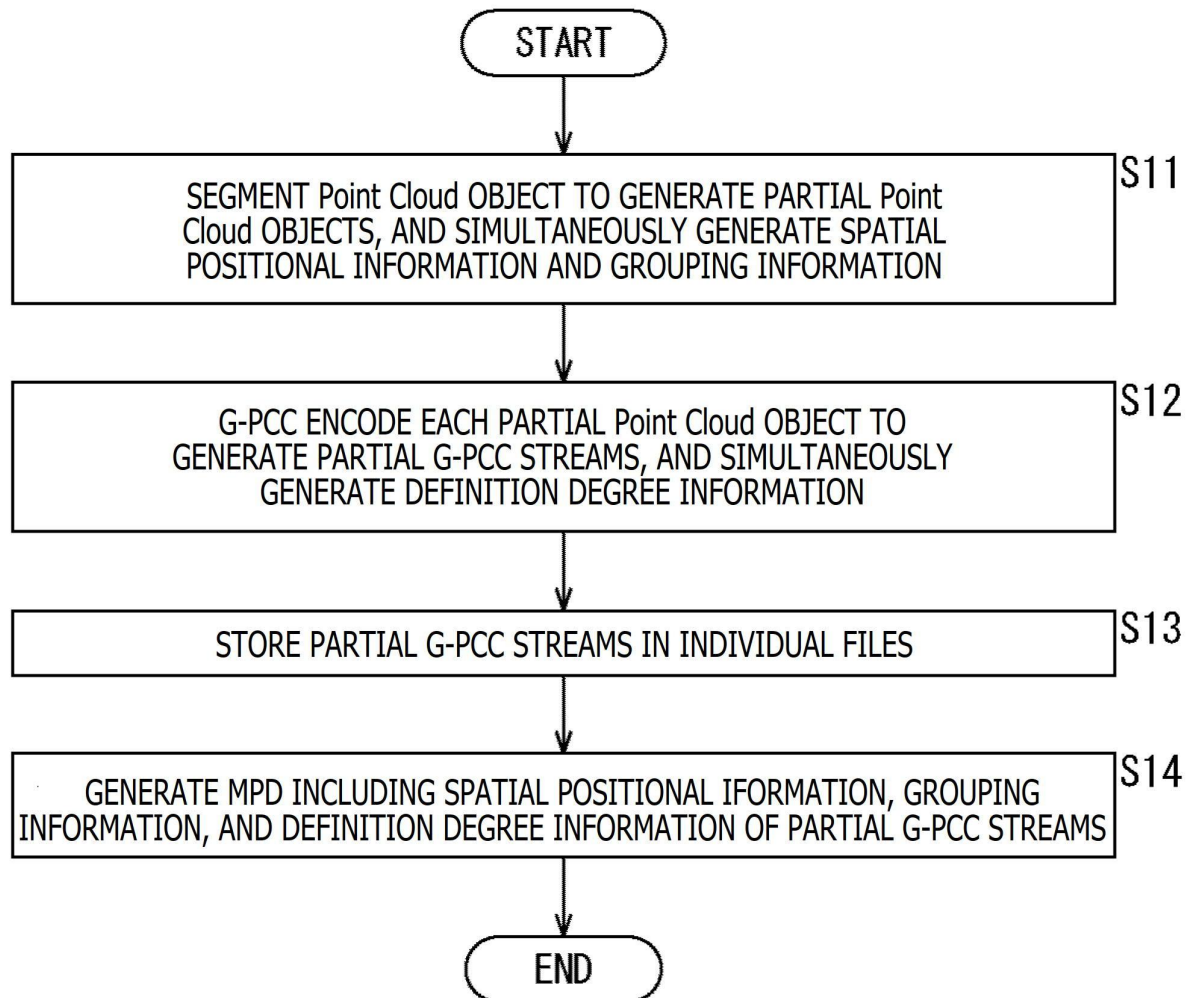


FIG. 17

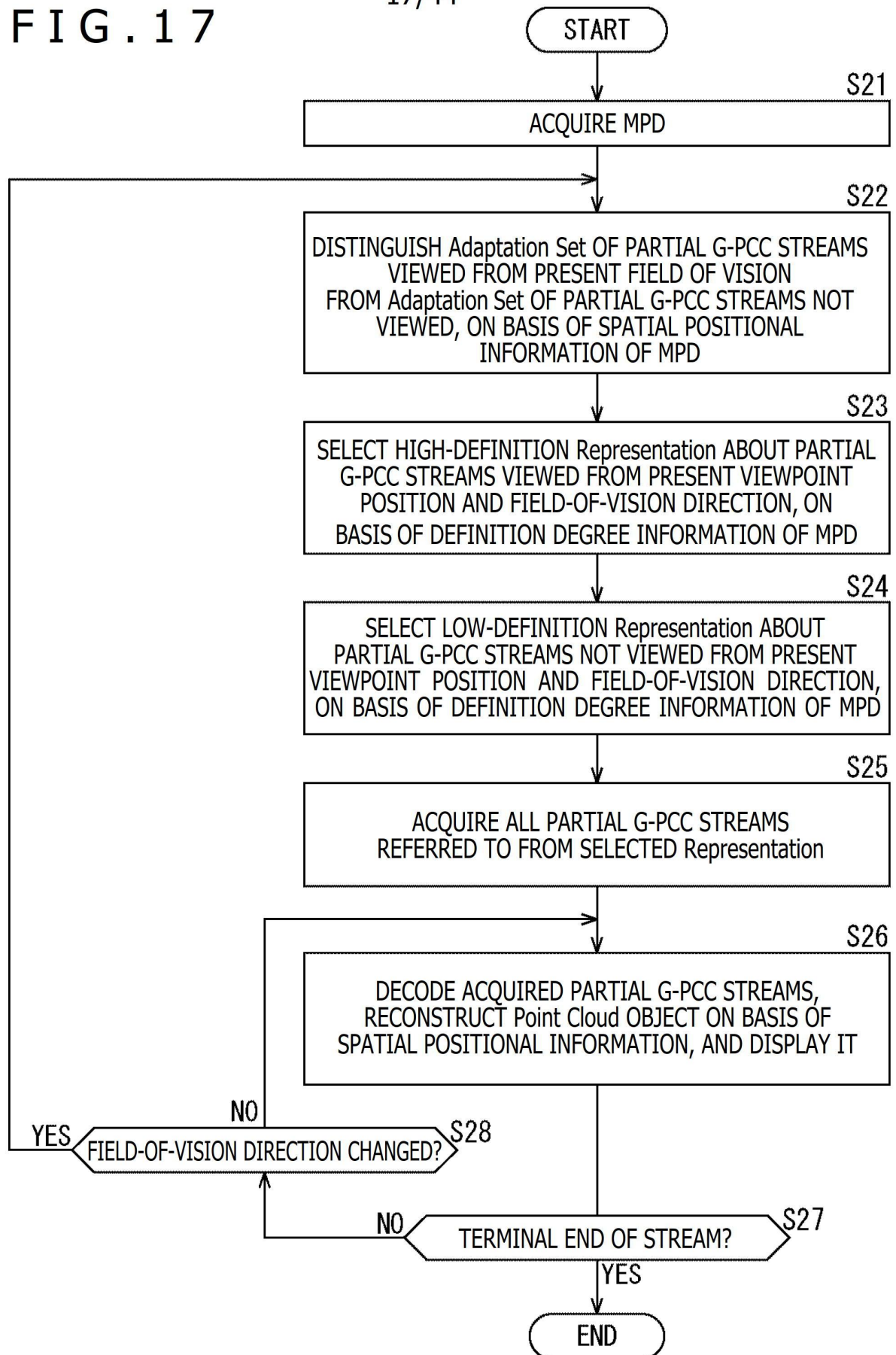


FIG. 18

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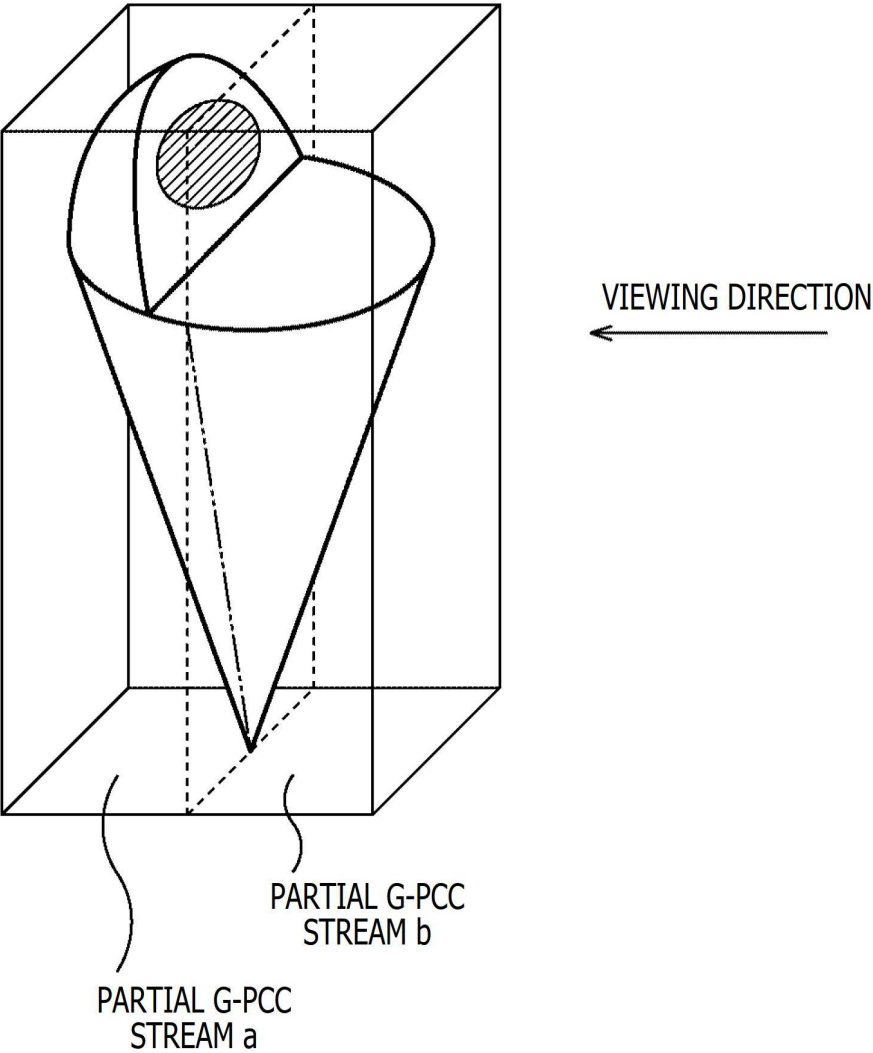


FIG. 19

```
<AdaptationSet id="1">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpeg1:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0" block_offset_y="0"
      block_offset_z="0" block_size_x="0.5" block_size_y="1"
      block_size_z="1" object_id="1"/>
    <gpcc:directionInfo direction="0 1 2 3 4 5">
      </SupplementalProperty>
    <Representation id="1-1">...</Representation>
  </AdaptationSet>
<AdaptationSet id="2">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpeg1:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0.5" block_offset_y="0"
      block_offset_z="0" block_size_x="0.5" block_size_y="1"
      block_size_z="1" object_id="1"/>
    <gpcc:directionInfo direction="0 1 3 4 5">
      </SupplementalProperty>
    <Representation id="2-1">...</Representation>
  </AdaptationSet>
```

FIG. 20

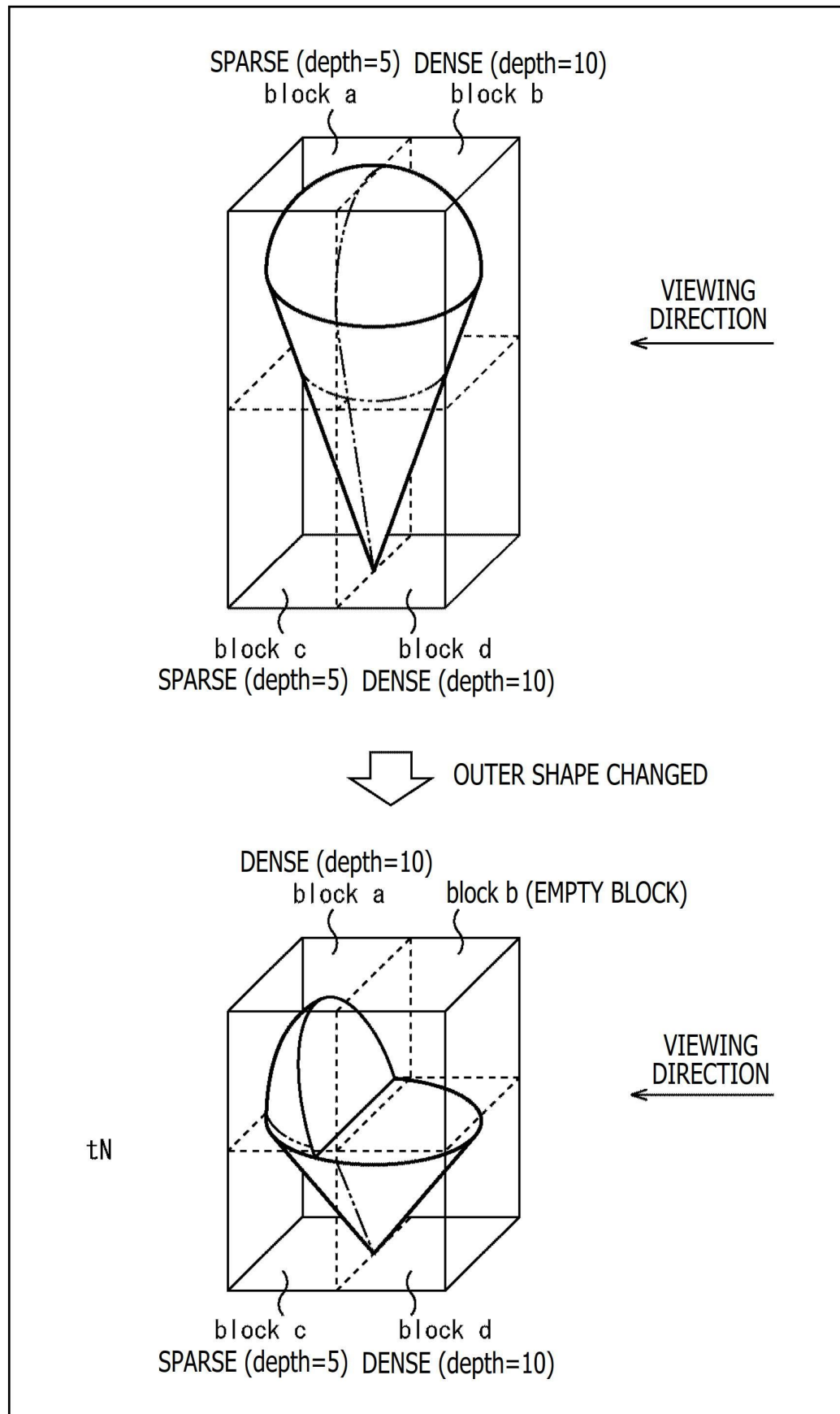


FIG. 21

```

<AdaptationSet id="1">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpeg1:gpcc:dynamic_block_information:2018">
    <gpcc:dynamicBlockInfo block_info_id="3-1" object_id="1" />
  </SupplementalProperty>
  <Representation id="1-1">...</Representation>
</AdaptationSet>
<AdaptationSet id="2">
  ...
</AdaptationSet>
<AdaptationSet id="3">
  <Representation id="3-1" associationId="1-1" associationType="dbif"> // timed metadata representation
  ...
</Representation>
</AdaptationSet>

```

FIG. 22

```
class BlockInformationSampleEntry() extends MetadataSampleEntry('dbif') {  
}
```

**FIG. 23**

```
aligned(8) BlockInformationSample() {  
    unsigned int(8) num_directions;  
    for(i=0; i<num_directions; i++) {  
        unsigned int(8) direction;  
    }  
}
```

**FIG. 24**

```
aligned(8) BlockInformationSample() {  
    unsigned int(32) block_offset_x;  
    unsigned int(32) block_offset_y;  
    unsigned int(32) block_offset_z;  
    unsigned int(32) block_size_x;  
    unsigned int(32) block_size_y;  
    unsigned int(32) block_size_z;  
}
```

FIG. 25

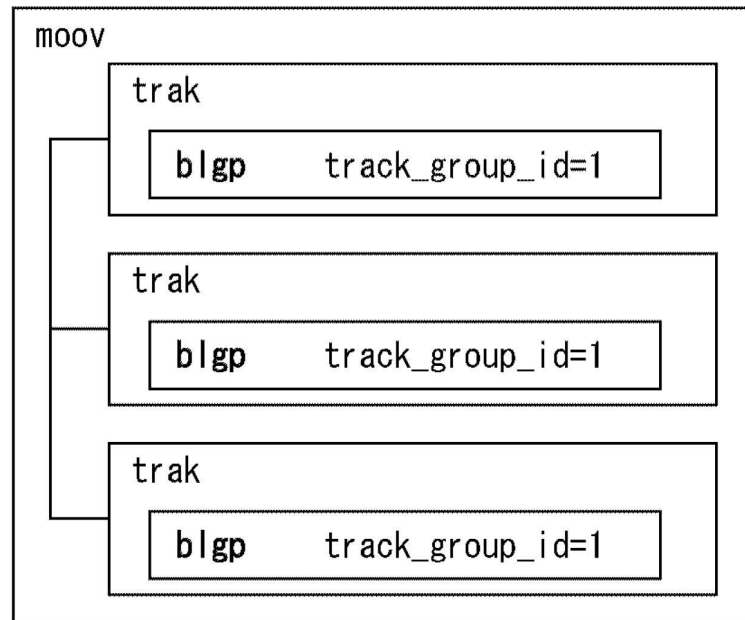
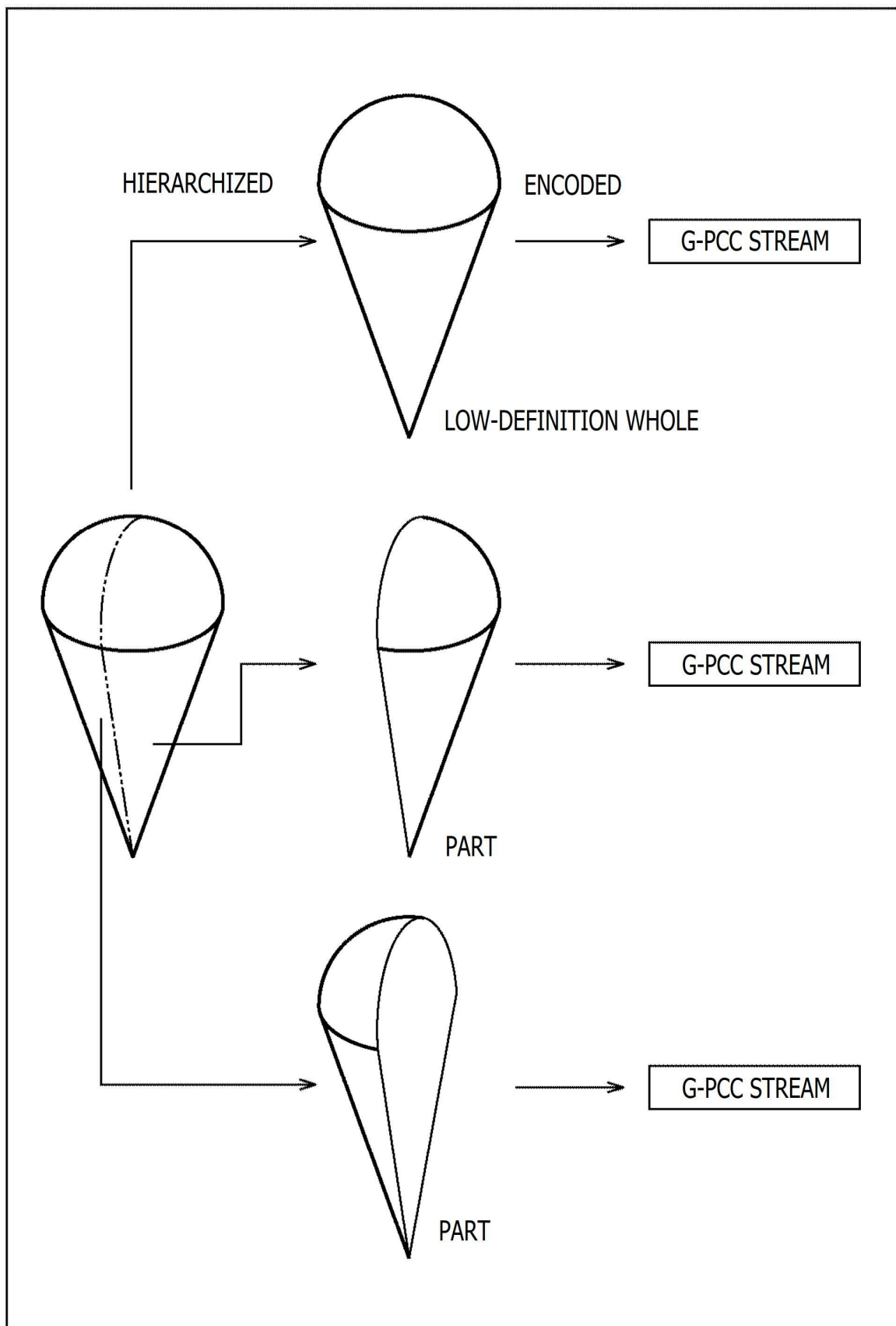


FIG. 26

```
aligned(8) class BlockGroupBox extends TrackGroupBox ('blgp', 0, 0) {  
    // track_group_id is inherited from TrackGroupBox  
    unsigned int(32) block_offset_x;  
    unsigned int(32) block_offset_y;  
    unsigned int(32) block_offset_z;  
    unsigned int(32) block_size_x;  
    unsigned int(32) block_size_y;  
    unsigned int(32) block_size_z;  
}
```

FIG. 27



## FIG. 28

```

<AdaptationSet id="1">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0" block_offset_y="0"
      block_offset_z="0" block_size_x="0.5" block_size_y="1"
      block_size_z="1" object_id="1"/>
  </SupplementalProperty>
  <Representation id="1-1" associationId="2-1" associationType="pbas">
    <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:lodInfo:2018">
      <gpcc:lodInfo lod_ranking="4" />
      <gpcc:combinedAreaLodInfo combined_rep_id="2-1" lod_ranking="2"/>
    </SupplementalProperty>
  </Representation>
</AdaptationSet>
<AdaptationSet id=" 2" >
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0" block_offset_y="0"
      block_offset_z="0" block_size_x="1" block_size_y="1"
      block_size_z="1" object_id="1"/>
  </SupplementalProperty>
  <Representation id="2-1">
    <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:lodInfo:2018">
      <gpcc:lodInfo lod_ranking="4" />
    </SupplementalProperty>
  </Representation>
</AdaptationSet>

```

FIG. 29

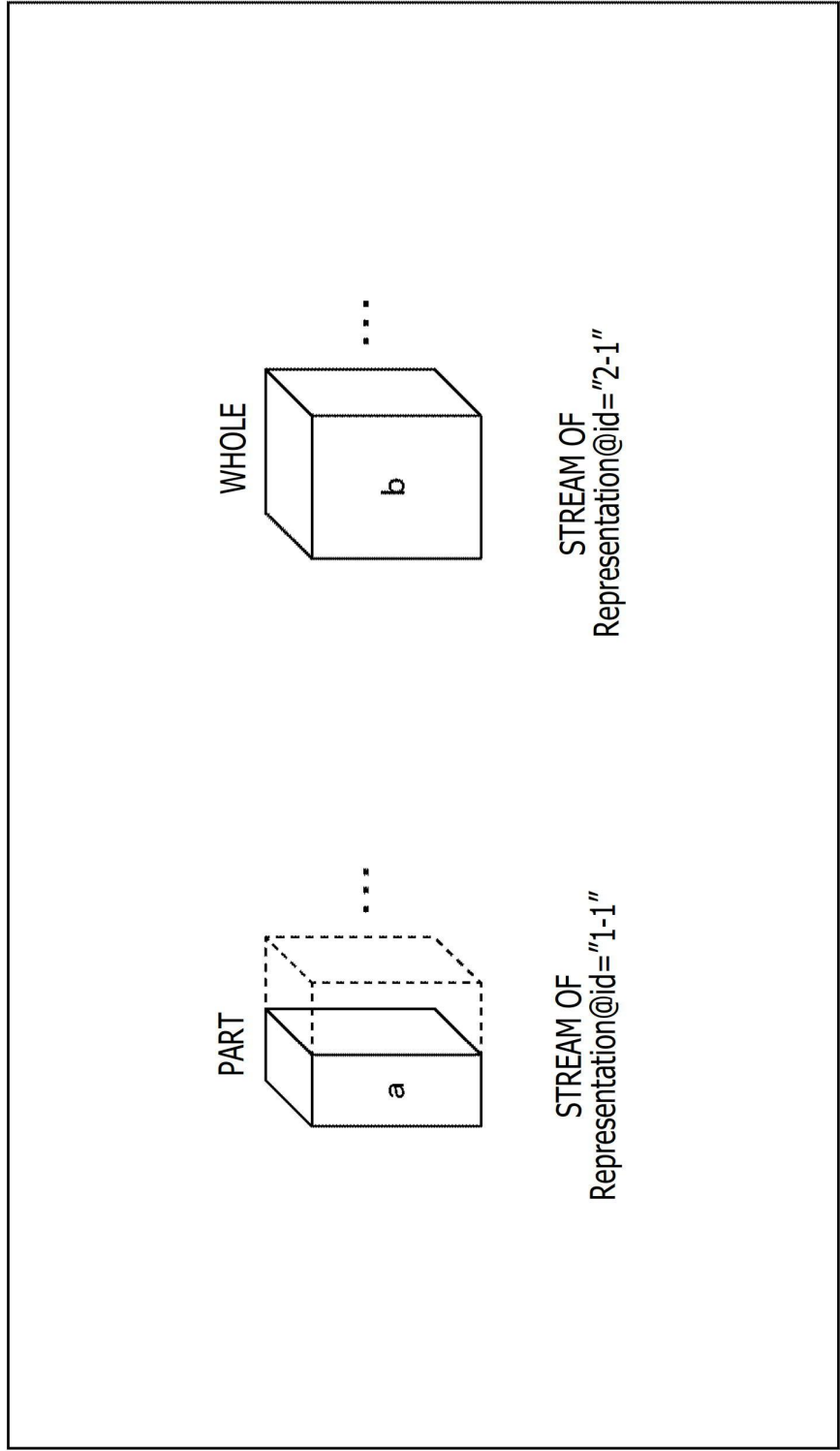


FIG. 30

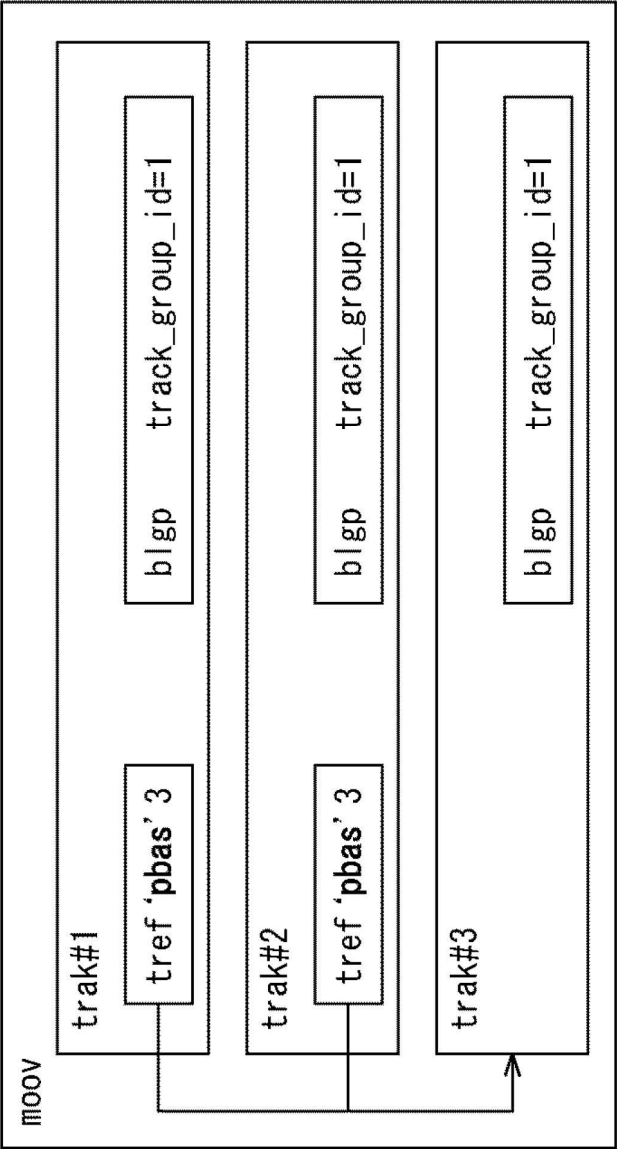


FIG. 31

```
aligned(8) class CombinedAreaLodInfoBox extends FullBox ( 'cloi' , 0, 0) {  
    unsigned int(8) num_of_entries;  
    for (i=0; i<num_of_entries; i++) {  
        unsigned int(32) combined_track_id;  
        unsigned int(8) lod_ranking;  
    }  
}
```

FIG. 32

```
aligned(8) class BrickGroupEntry extends VisualSampleGroupEntry ('blif', 0, 0) {  
    unsigned int(16) groupID;  
    unsigned int(32) brick_offset_x;  
    unsigned int(32) brick_offset_y;  
    unsigned int(32) brick_offset_z;  
    unsigned int(32) brick_size_x;  
    unsigned int(32) brick_size_y;  
    unsigned int(32) brick_size_z;  
}
```

FIG. 33

```
aligned(8) class UnitMapEntry extends VisualSampleGroupEntry ( 'unim', 0, 0) {  
    unsigned int(16) entry_count;  
    for (i=0; i<entry_count; i++) {  
        unsigned int(32) unit_index;  
        unsigned int(16) groupID;  
    }  
}
```

FIG. 34

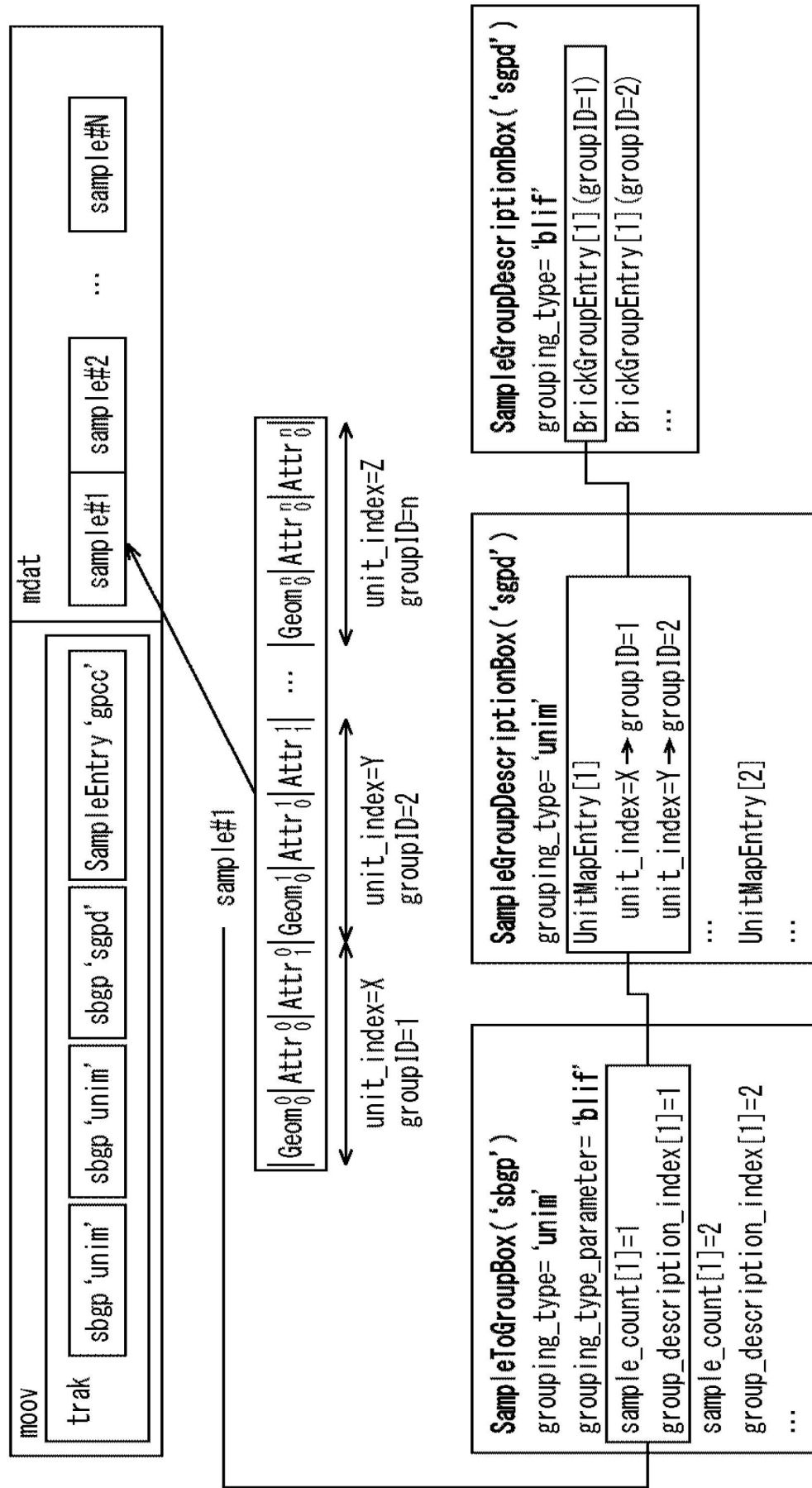


FIG. 35

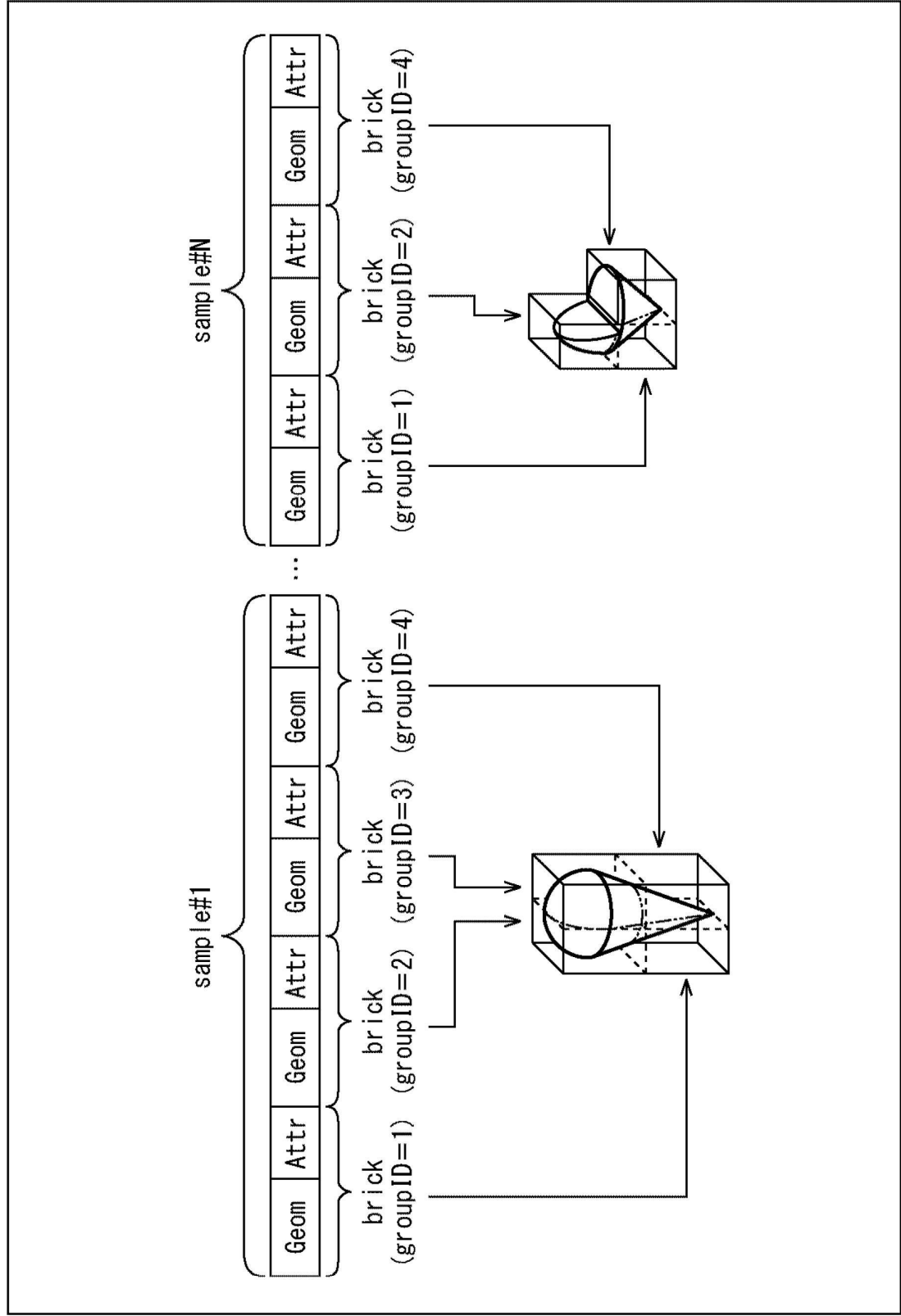


FIG. 36

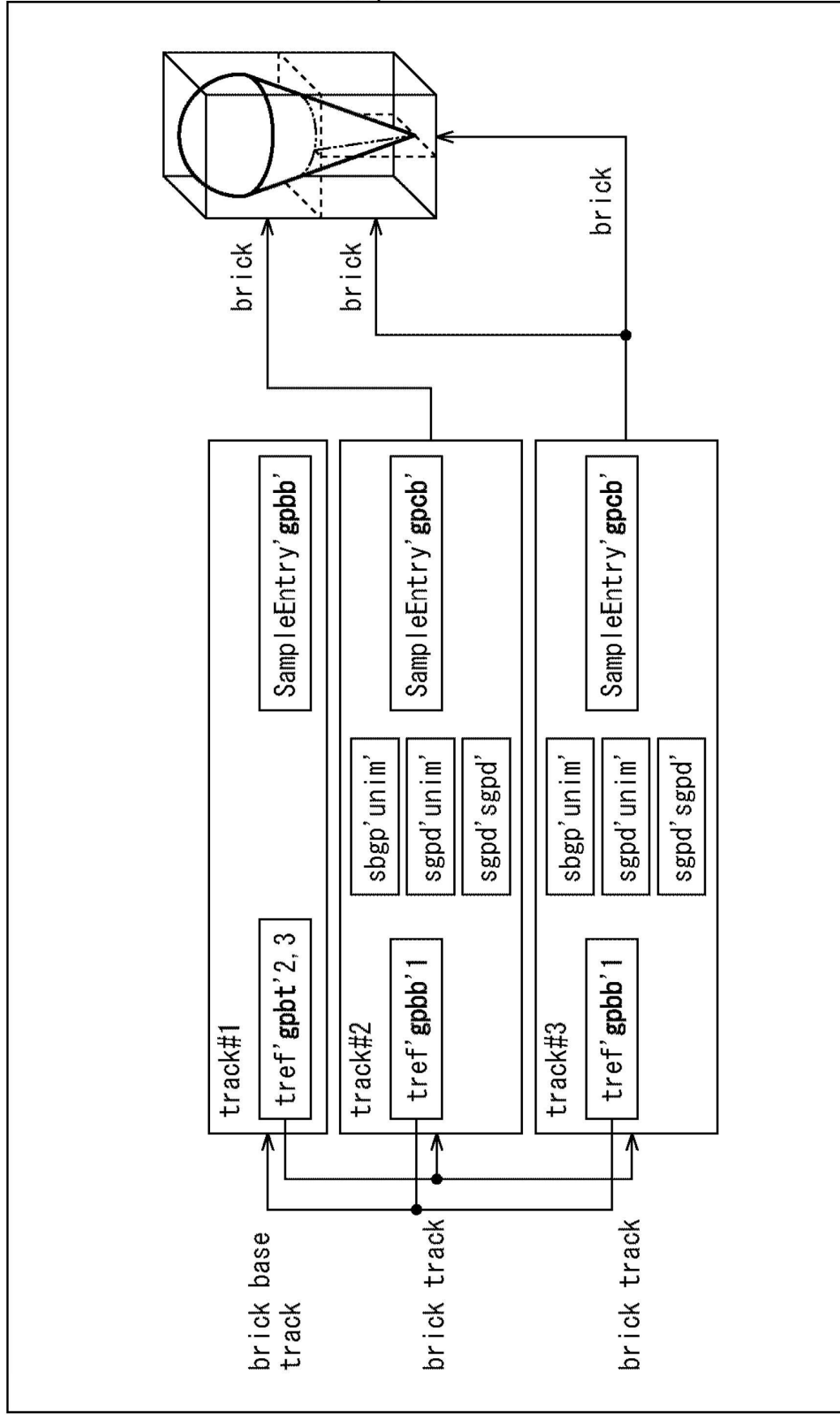


FIG. 37

| brick_inventory( ) {                 | Descriptor |
|--------------------------------------|------------|
| number_of_bricks                     | u(8)       |
| for (i=0; i<number_of_bricks; i++) { |            |
| brick_id                             | u(8)       |
| brick_offset_x                       | u(32)      |
| brick_offset_y                       | u(32)      |
| brick_offset_z                       | u(32)      |
| brick_size_x                         | u(32)      |
| brick_size_y                         | u(32)      |
| brick_size_z                         | u(32)      |
| }                                    |            |
| }                                    |            |

FIG. 38

```
<AdaptationSet id="1">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    ...
  </SupplementalProperty>
  <Representation id="1-1">
    <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:lod_information:2018">
      <gpcc:lodInfo lod_ranking="2" />
    </SupplementalProperty>
  </Representation>
  <Representation id="1-2">
    <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:lod_information:2018">
      <gpcc:lodInfo lod_ranking="4" />
    </SupplementalProperty>
  </Representation>
  <Representation id="1-3">
    <EssentialProperty schemeIdUri="urn:mpeg:mpegI:gpcc:rendering_information:2018">
      <gpcc:renderingInfo type="1" />
    </EssentialProperty>
    <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:lod_information:2018">
      <gpcc:lodInfo lod_ranking="6" />
    </SupplementalProperty>
  </Representation>
</AdaptationSet>
```

FIG. 39

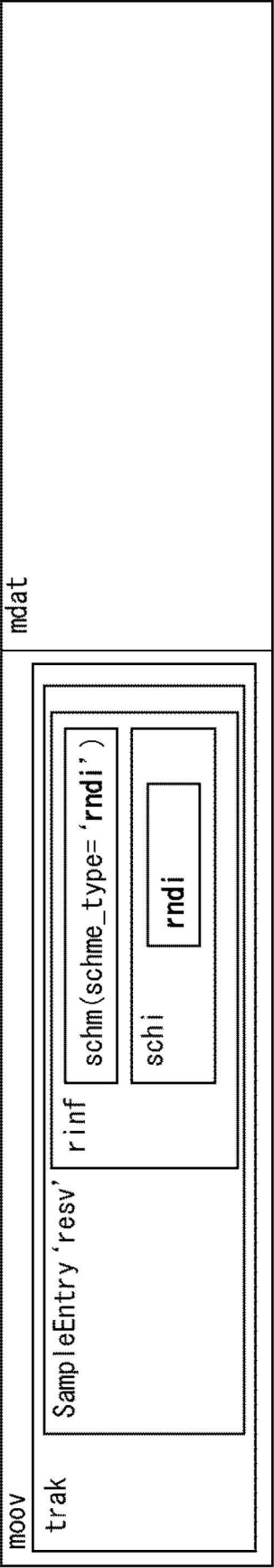


FIG. 40

```
aligned(8) class RenderingInformationBox extends FullBox( 'rmdi', 0, 0)
{
    unsigned int(8) type;
}
```

FIG. 41

```

<AdaptationSet id="1">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0" block_offset_y="0"
      block_offset_z="0" block_size_x="0.5" block_size_y="1"
      block_size_z="1" object_id="1" />
  </SupplementalProperty>
  <Representation id="1-1" associationId="2-2" associationType="pbas">
    <EssentialProperty schemeIdUri="urn:mpeg:mpegI:gpcc:rendering_information:2018">
      <gpcc:renderingInfo type="1" />
      <gpcc:combinedAreaRenderingInfo combined_rep_id="2-2" type="0" />
    </EssentialProperty>
  </Representation>
  <Representation>...</Representation>
</AdaptationSet>
<AdaptationSet id="2">
  <SupplementalProperty schemeIdUri="urn:mpeg:mpegI:gpcc:block_information:2018">
    <gpcc:blockInfo block_offset_x="0" block_offset_y="0"
      block_offset_z="0" block_size_x="1" block_size_y="1"
      block_size_z="1" object_id="1" />
  </SupplementalProperty>
  <Representation id="2-1">...</Representation>
  <Representation id="2-2" associationId="1-1" associationType="penh">
    <EssentialProperty schemeIdUri="urn:mpeg:mpegI:gpcc:rendering_information:2018">
      <gpcc:renderingInfo type="1" />
      <gpcc:combinedAreaRenderingInfo combined_rep_id="1-1" type="0" />
    </EssentialProperty>
  </Representation>
</AdaptationSet>

```

FIG. 42

```
aligned(8) class RenderingInformationBox extends FullBox( 'rmdi', 0, 0)
{
    unsigned int(8) type;
    unsigned int(7) reserved = 0;
    unsigned int(1) combined_track_exists;
    if(combined_track_exists) {
        unsigned int(32) combined_track_id;
        unsigned int(8) combined_area_type;
    }
}
```

FIG. 43

```
aligned(8) class RenderingInformationBox extends FullBox( 'rmdi', 0, 0)
{
    unsigned int(8) type;
    unsigned int(7) reserved = 0;
    unsigned int(1) combined_track_exists;
    if(combined_track_exists) {
        unsigned int(32) combined_track_id;
        unsigned int(8) combined_area_type;
        unsigned int(7) reserved = 0;
        unsigned int(1) priority_flag;
    }
}
```

# FIG. 44

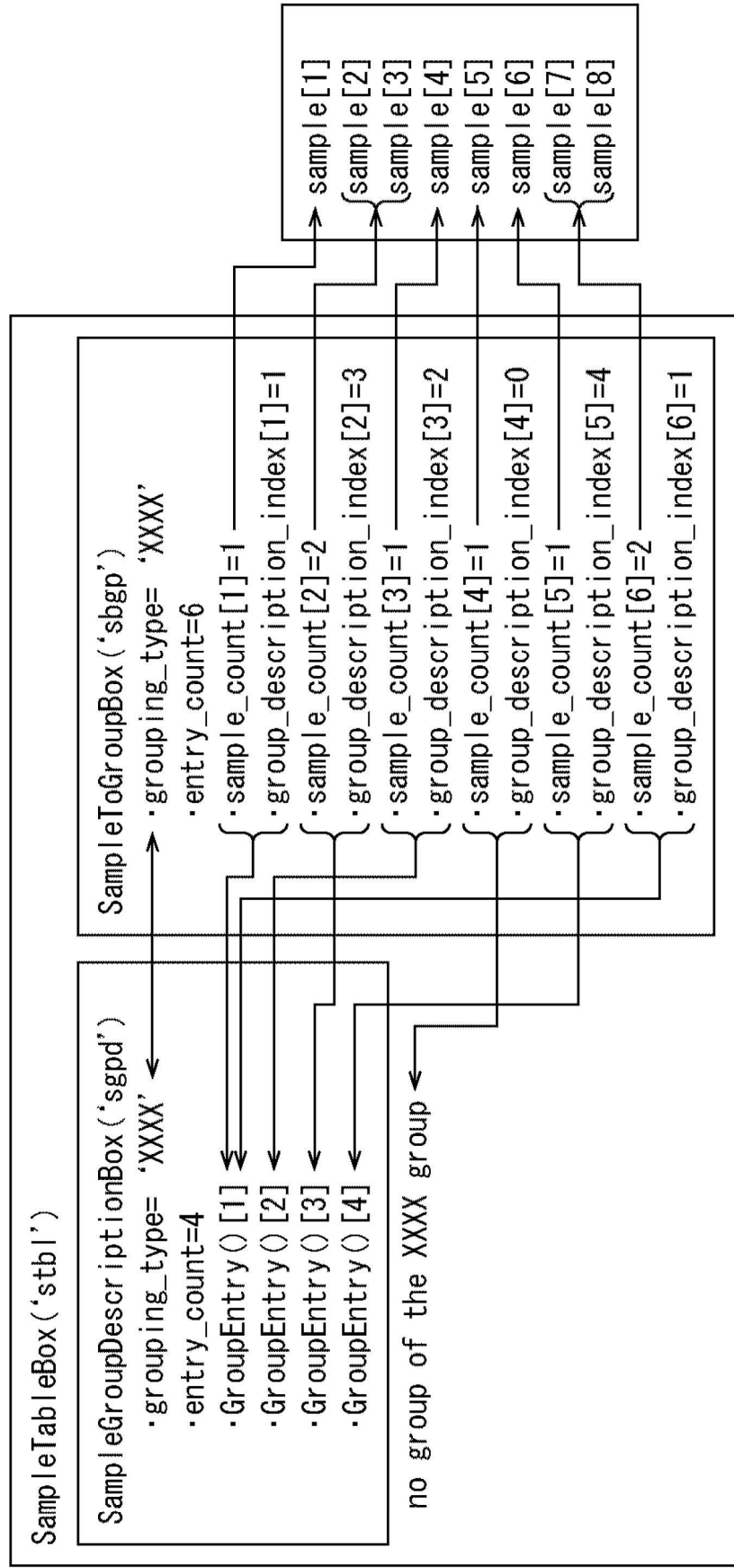


FIG. 45

