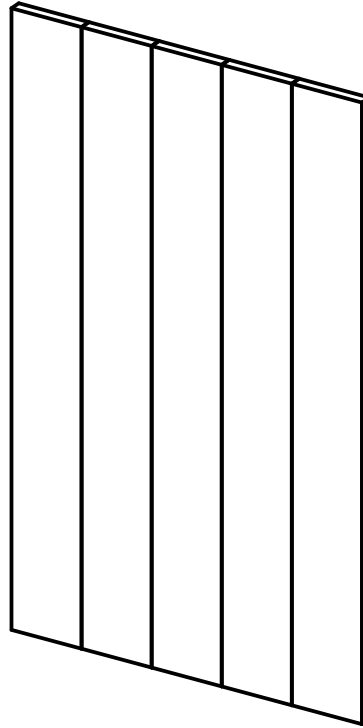


# Ledged and braced door

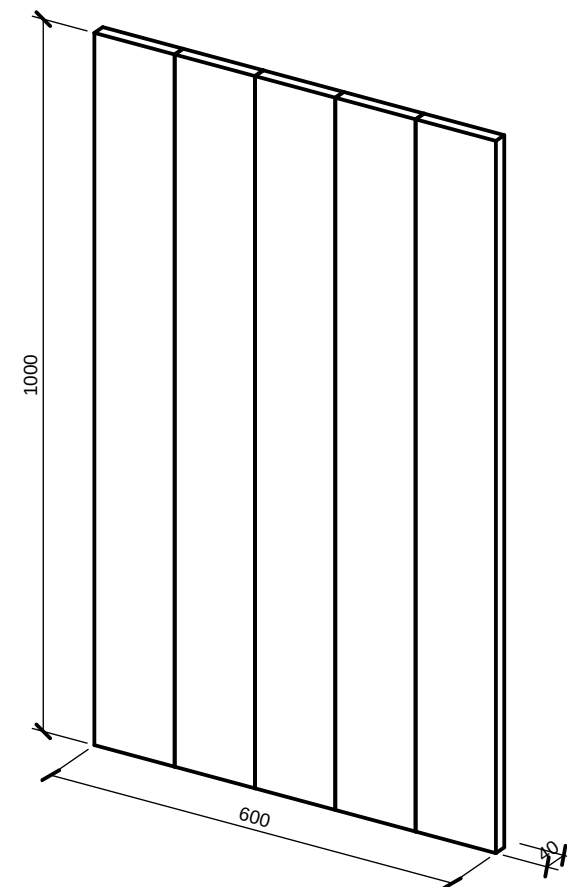
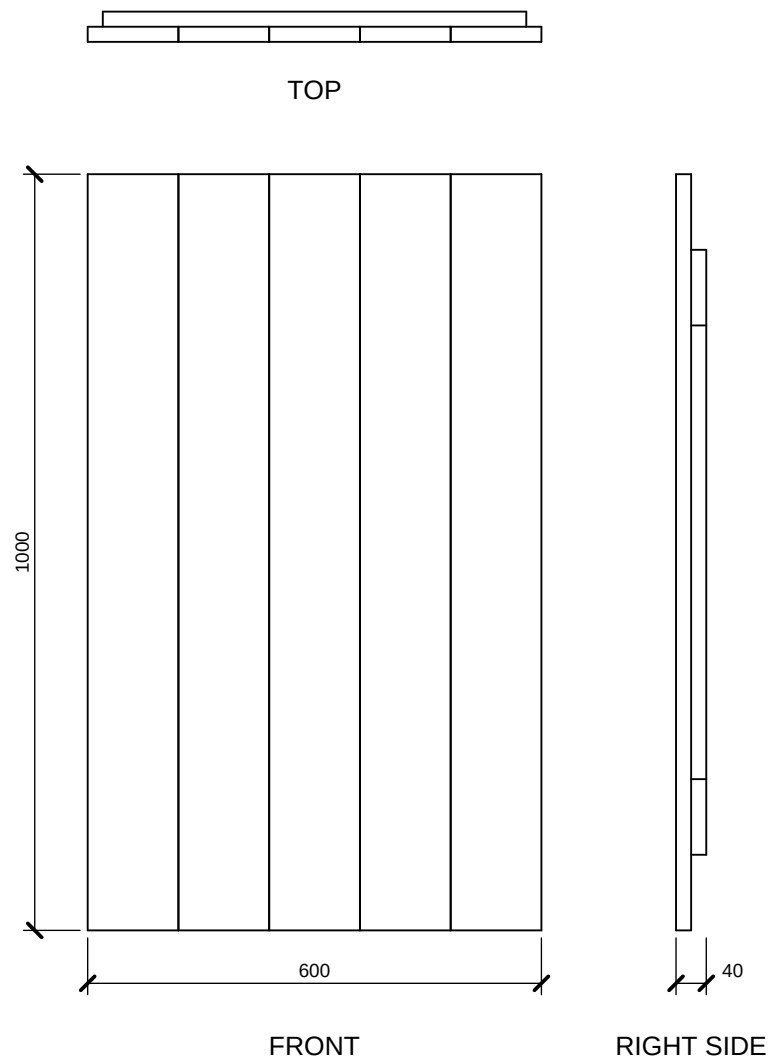
---



|           |                             |
|-----------|-----------------------------|
| parts     | 8 (3 different)             |
| overall   | 600 x 40 x 1000 (W x D x H) |
| material  | oak                         |
| date      | 2026-10-25                  |
| made with | woodwright 0.9.0            |

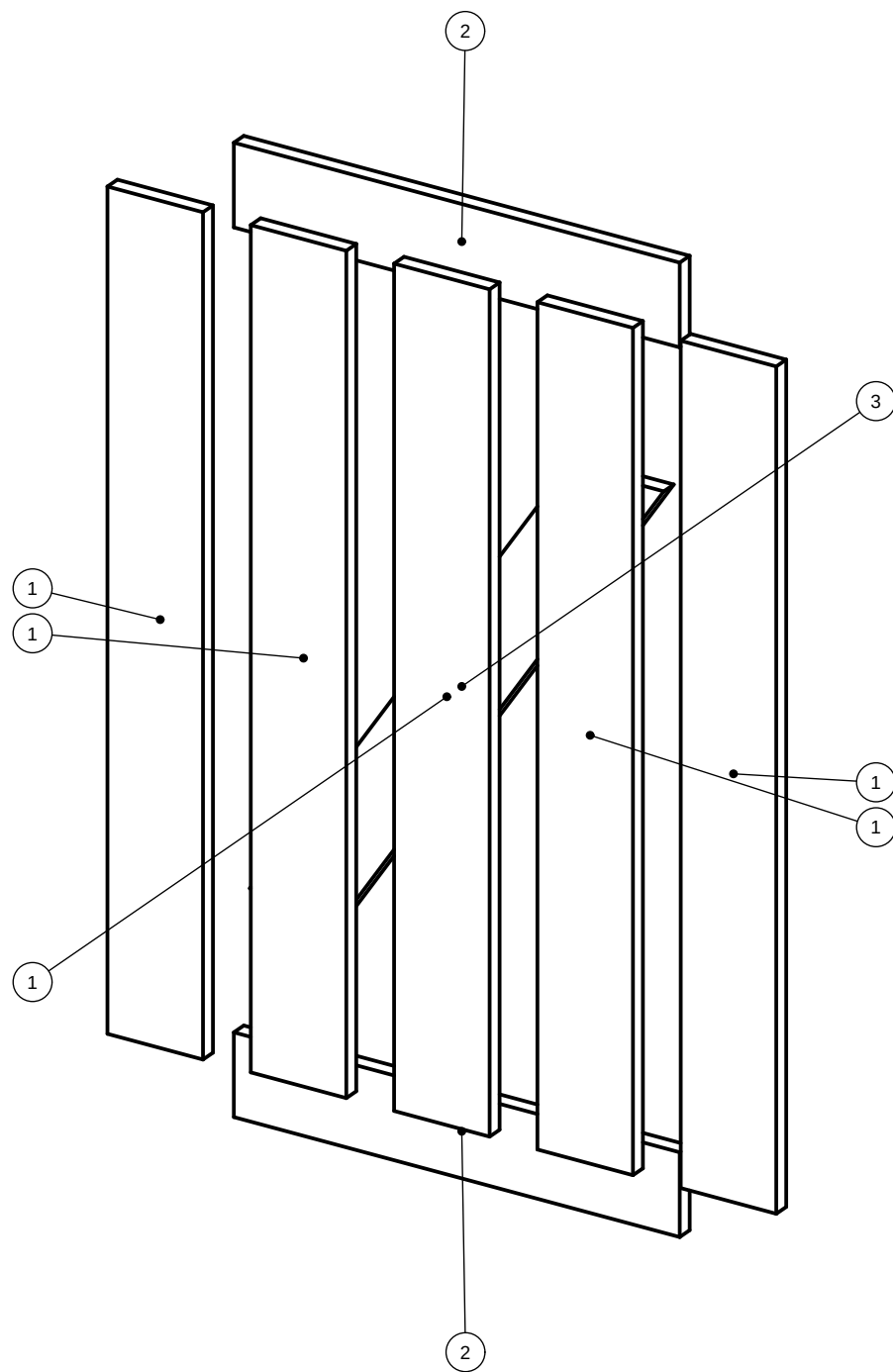
# Contents

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ISOMETRIC

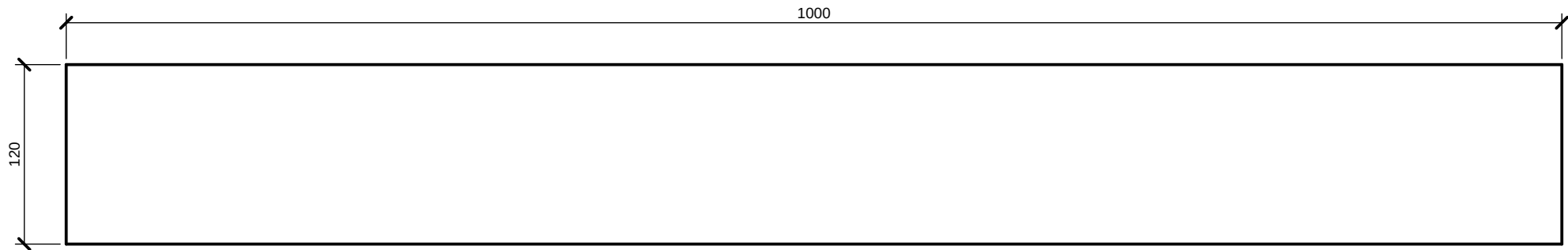
|          |                               |
|----------|-------------------------------|
| assembly | <b>ledged_and_braced_door</b> |
| parts    | 8 (3 different)               |
| overall  | 600 x 40 x 1000 (W x D x H)   |
| material | <b>oak</b>                    |
| scale    | 1:10, mm                      |



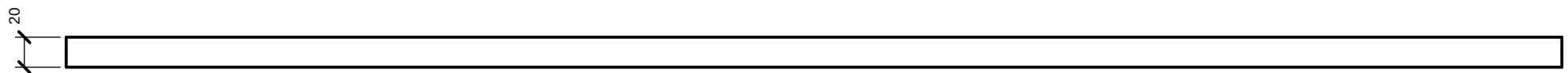
EXPLODED

| no. | part  | qty | cut size (L x W x T) | material |
|-----|-------|-----|----------------------|----------|
| 1   | board | 5   | 1000 x 120 x 20      | oak      |
| 2   | ledge | 2   | 560 x 100 x 20       | oak      |
| 3   | brace | 1   | 787.655 x 100 x 20   | oak      |

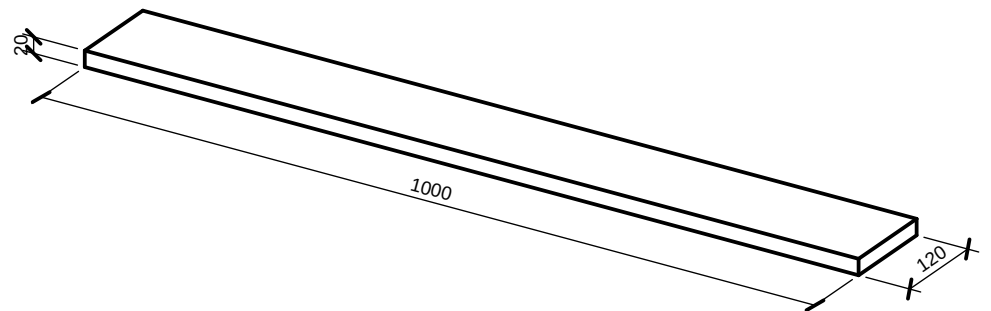
|          |                               |
|----------|-------------------------------|
| assembly | <b>ledged_and_braced_door</b> |
| parts    | 8 (3 different)               |
| overall  | 600 x 40 x 1000 (W x D x H)   |
| material | oak                           |
| scale    | not to scale, mm              |



TOP FACE



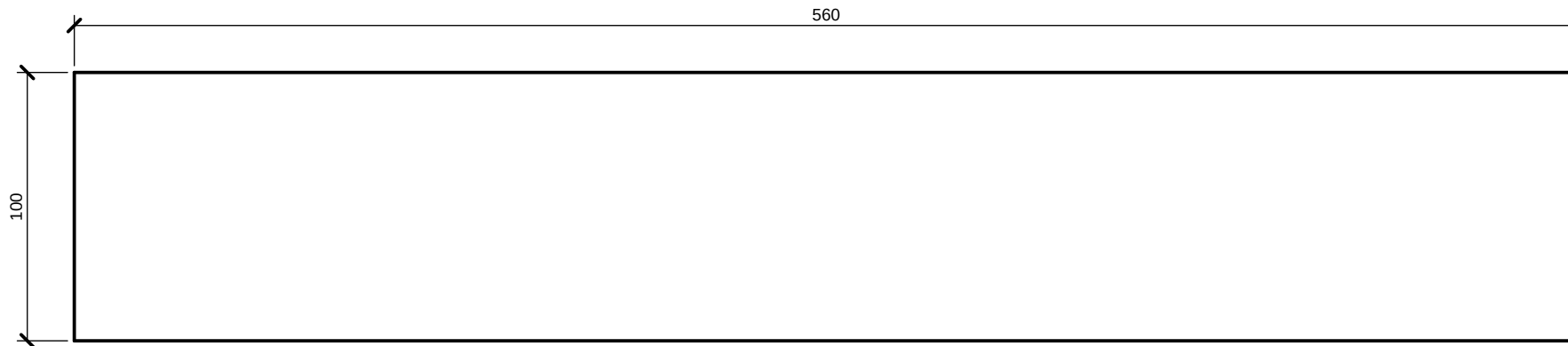
FRONT EDGE



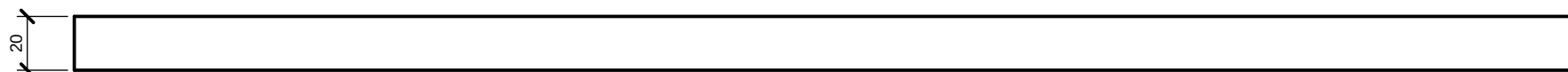
ISOMETRIC

5 pieces: board\_1, board\_2, board\_3, board\_4, board\_5

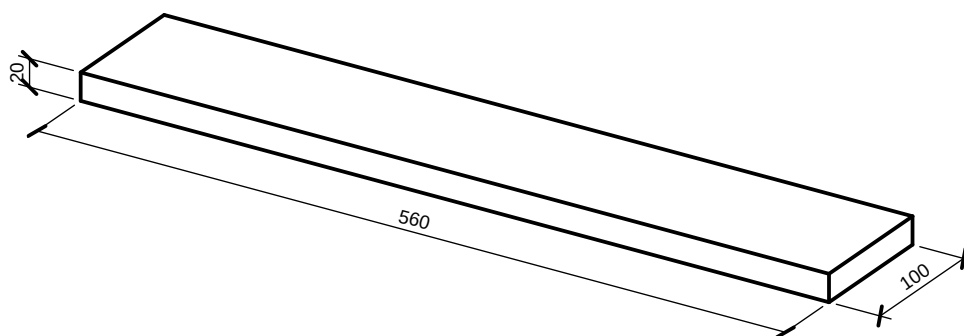
|          |                        |
|----------|------------------------|
| part     | <b>board</b>           |
| of       | ledged_and_braced_door |
| make     | 5                      |
| cut size | 1000 x 120 x 20        |
| material | oak                    |
| scale    | 1:4, mm                |



TOP FACE



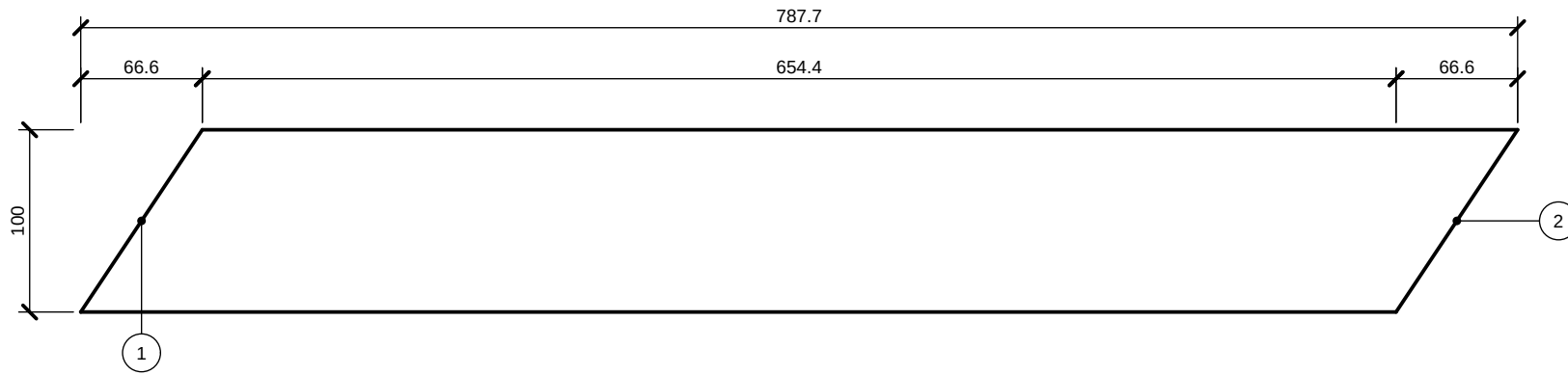
FRONT EDGE



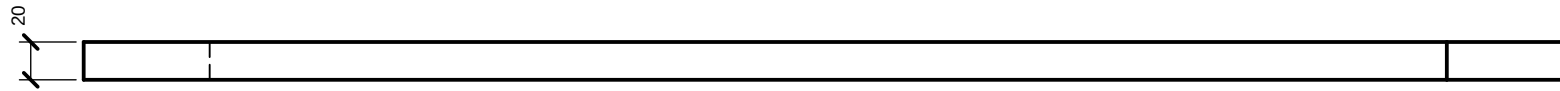
ISOMETRIC

2 pieces: ledge\_top, ledge\_bottom

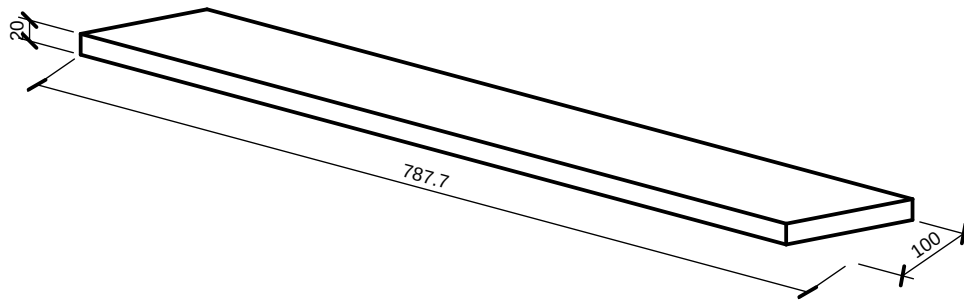
|          |                        |
|----------|------------------------|
| part     | <b>ledge</b>           |
| of       | ledged_and_braced_door |
| make     | 2                      |
| cut size | 560 x 100 x 20         |
| material | oak                    |
| scale    | 1:2.5, mm              |



TOP FACE



FRONT EDGE



ISOMETRIC

- 1 mitre 33.6789 deg on left\_end, back\_edge inside
- 2 mitre 33.6789 deg on right\_end, front\_edge inside

|          |                        |
|----------|------------------------|
| part     | <b>brace</b>           |
| of       | ledged_and_braced_door |
| make     | 1                      |
| cut size | 787.655 x 100 x 20     |
| material | <b>oak</b>             |
| scale    | 1:4, mm                |

## Cut list

board 1000 x 120 x 20 mm oak, 5 pieces: board\_1, board\_2, board\_3, board\_4, board\_5  
ledge 560 x 100 x 20 mm oak, 2 pieces: ledge\_top, ledge\_bottom  
brace 787.655 x 100 x 20 mm oak  
- mitre 33.6789 deg on left\_end, back\_edge inside  
- mitre 33.6789 deg on right\_end, front\_edge inside

## Appendix: source

Made with woodwright 0.9.0, build123d 0.13.0, Python 3.14.4.

To make these plans again:

```
uvx --python 3.14 woodwright==0.9.0 export projects.ledged_and_braced_door
```

### **projects.ledged\_and\_braced\_door, in woodwright/examples/projects.py**

```
def ledged_and_braced_door(
    height: float = 1000,
    width: float = 600,
    boards: int = 5,
    ledge_width: float = 100,
    ledge_from_ends: float = 100,
    ledge_inset: float = 20,
    brace_width: float = 100,
    brace_inset: float = 20,
    stock: Stock = OAK,
) -> Assembly:
    """A ledged and braced door, e.g. for a shed: boards butted edge to edge
    on two ledges and a diagonal brace across the back.

    The boards aren't glued: they would be nailed or screwed to the ledges
    and the brace from the front (not modelled). The ledges lie
    `ledge_from_ends` from the top and the bottom, `ledge_inset` in from
    the sides. The brace lies between them, in the same plane, and keeps
    the door from sagging: it rises from the hinge side (the left, seen
    from the front) at the bottom ledge to the latch side at the top one,
    so that it is in compression. Its ends are cut level and bear against
    the ledges' edges, the long points `brace_inset` in from the ends of
    the ledges.
    """
    # The boards' reference faces are at the back, their back edges to the right.
    asm = Assembly("ledged_and_braced_door", root_location=STANDING)
    door = [
        asm.add(Board(f"board_{i + 1}", stock, length=height, width=width / boards))
        for i in range(boards)
    ]
```

```

for a, b in itertools.pairwise(door):
    asm.join(Butt(a.back_edge, b.front_edge))
first = door[0]
for name, end in [("top", first.right_end), ("bottom", first.left_end)]:
    ledge = asm.add(
        Board(f"ledge_{name}", stock, length=width - 2 * ledge_inset, width=ledge_width)
    )
    asm.join(
        Butt(
            first.top_face,
            ledge.bottom_face,
            position=offset(ledge_from_ends, ref=end),
            flush=(first.front_edge, ledge.left_end),
            across=offset(ledge_inset),
        )
    )
# The brace's long points, on its upper (front) edge at the bottom and
# its lower (back) edge at the top, lie on the ledges' edges, `run` apart
# across the door and `rise` apart up it: its slope makes the brace's
# width fit between them.
rise = height - 2 * (ledge_from_ends + ledge_width)
run = width - 2 * (ledge_inset + brace_inset)
slope = math.atan2(rise, run) + math.asin(brace_width / math.hypot(run, rise))
length = (rise + brace_width * math.cos(slope)) / math.sin(slope)
brace = asm.add(Board("brace", stock, length=length, width=brace_width))
end_angle = 90 - math.degrees(slope)
brace.cut(Mitre(brace.left_end, inside=brace.back_edge, angle=end_angle))
brace.cut(Mitre(brace.right_end, inside=brace.front_edge, angle=end_angle))
# Lying along the top of the door, the brace is turned down about its
# lower long point, on the bottom ledge (measured from the top).
asm.join(
    Butt(
        first.top_face,
        brace.bottom_face,
        position=offset(height - ledge_from_ends - ledge_width),
        flush=(first.front_edge, brace.left_end),
        across=offset(ledge_inset + brace_inset),
        angle=-math.degrees(slope),
    )
)
return asm

```