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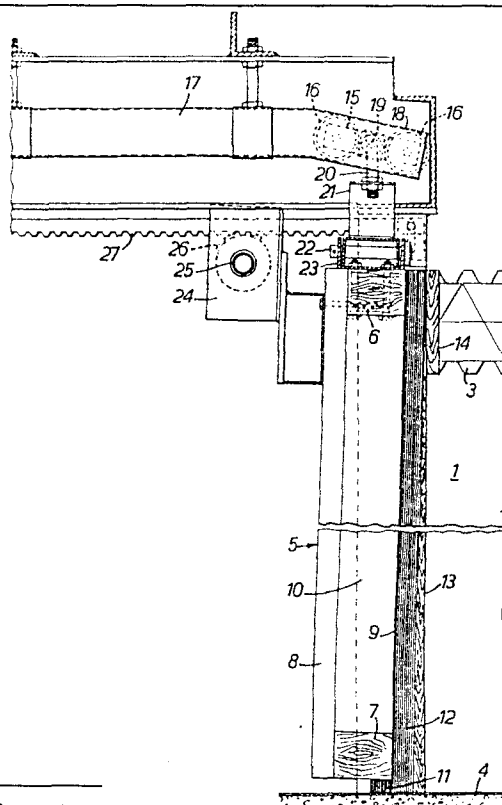
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⑦ Applicant: **Schulte & Lestraden B.V., Parklaan 156,
NL-2171 EK Sassenheim (NL)**

⑦2 Inventor: Lestraden, Jacobus Wilhelmus,
Nachtegaallaan 4, NL-2172 JR Sassenheim (NL)

74 Representative: Noz, Franciscus Xaverius, Ir. et al,
Boschdijk 155 P.O. Box 645, NL-5600 AP Eindhoven (NL)

(57) A space for treating and/or storing products, crops and the like comprising upwardly extending walls, a floor, a ceiling and a door shutting at least part of one side of the space and being movable at least substantially in a horizontal direction away from and towards said space for opening and closing the same respectively, whereby the door and supporting members associated with the door are designed so that in the closed position of the door, the door occupies a sloping position such that, viewed in the direction of displacement of the door, when the door is closed, the top end of the door is located in front of the lower end of the door.



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Space for treating and/or storing products, crops and the like.

The invention relates to a space for treating and/or storing products, crops or the like comprising upwardly extending walls, a floor, a ceiling and a door shutting at least part of one side of the space, said door being movable at least substantially in a
5 horizontal direction away from and towards the space for opening and closing the space respectively.

Such a space is known from Dutch Patent Application 7602243. In this construction the door may form an entire wall or a large part of a wall of the space so that, when the door is open,
10 the space is accessible through a large passage and lifting trucks or the like can drive in. Such a construction is very satisfying in practice.

In treating and/or storing certain products, crops or the like, for example, in growing given crops in the space, it is, however,
15 often necessary to obtain a given excess pressure or a given subatmospheric pressure in the space. In the conventional construction known from Dutch Patent Application 7602243, in which the door, when closed, is in a vertical position, difficulties may arise in ensuring a satisfying seal of the space in the area of the door, when the door
20 is in the closed position.

The invention has for its object to provide a space of the kind set forth above in which the aforesaid disadvantage can be obviated in a simple manner.

According to the invention this can be achieved in that
5 the door and the supporting members associated with the door are designed so that in the closed position of the door, the door occupies a sloping position such that, viewed in the direction of displacement of the door, the top end of the door is located in front of the lower end of the door, when the door is closed.

10 When such a construction is employed, the weight of the door will contribute to maintaining the door in the closed position, so that ensuring a satisfactory seal in the closed position of the door in the area thereof will be facilitated.

The invention will be described more fully hereinafter
15 with reference to the accompanying Figures.

Fig. 1 shows partly in an elevational view and partly in a sectional view part of a space embodying the invention.

Fig. 2 shows a detail of a modified embodiment.

From Fig. 1 it is apparent that a space 1 is bounded by
20 upwardly extending walls 2, a ceiling 3 and a floor 4. An open side of the space is closed by a door 5. The door 5 comprises two relatively parallel wooden beams 6 and 7 located near the top side and the bottom side respectively of the door and interconnected near their ends by wooden beams (not shown) extending upwardly from the ends of the beam
25 7 to the ends of the beam 6. To this square or rectangular framework formed by the wooden beams is fastened on the side remote from the space 1 a corrugated plate 8 and on the side facing the space a flat cover plate 9. The space surrounded by the beams and enclosed between the plates 8 and 9 may effectively be filled out with insulating
30 material 10.

Along the underside of the beam 7, on the side facing the space 1, is arranged a sealing strip 11 of rubber or a similar, elastic material. In a similar manner sealing strips 12 of rubber or a similar, elastic material are provided along the beams inter-
35 connecting the ends of the beams 6 and 7 on the side of said beams

facing the space 1. In the closed position of the door shown in the Figure the underside of the sealing strip 11 and the lower ends of the sealing strips 12 are bearing on the top surface of the floor 11.

The sides of the sealing strips 12 remote from the door 5 are bearing on upwardly extending wooden supporting members 13. From the Figure it will be apparent that these wooden supporting members are tapering from bottom to top, whilst the sides of the supporting members facing the door are at a small angle to the vertical so that the lower ends of the sides of the supporting members facing the door 10 are further remote from an upright wall of the space 1 opposite the door than the top ends of said sides of the supporting members. In this design the door 5 bearing with the sealing strips 12 on the supporting members 13 occupies a slightly sloping position as is illustrated in the Figure. In the closed position of the door a 15 sealing strip (not shown) fastened to the beam 6 is in sealing engagement with a head partition of the top wall 3.

The door is supported by a plurality of carriages 15 each provided with two freely rotatable rollers 16, which can roll along relatively parallel rails 17 supported at a desired distance 20 above the floor 4. It will be apparent from the Figure that in the closed position of the door the rollers 16 of the carriages 15 are located in downwardly bent-over ends 18 of the rails 17, which, viewed on plan, extend at right angles to the door 5. With the aid of pivotal shafts 19 extending parallel to the rotary axes of the rollers 16 25 and parallel to the front face of the door coupling rods 20 are coupled with the carriages. These coupling rods 20 are fastened to carriers 21 which are pivotally connected with U-shaped brackets 23 secured to the top beam 6 of the door with the aid of pivot pins 22 perpendicular to the front face of the door.

30 In supports 24 rotatably fastened to the door is rotatably journaled a horizontal shaft 25 extending parallel to the front face of the door. With the aid of a driving mechanism (not shown) the shaft 25 can be rotated about its centre line. To the shaft 25 are fastened gear wheels 26, which are in mesh with toothed racks 27 occupying 35 a fixed position and extending parallel to the rails 17.

The toothed racks 27 are not displaceable in a direction of length, but the right-hand ends of the toothed racks, as viewed in Fig. 1, can move up and down to follow the movement of the gear wheels 26.

5 For opening the door the shaft 25 can be turned so that the gear wheels 26 will roll along the toothed racks 27 and the door will be displaced to the left as viewed in the Figure. The rollers 16 will first move along the inclined, bent-over part 18 of the rails 17 and thus lift the door from the ground, whilst the door will occupy
10 a vertical position when the rollers 16 are located in the horizontal parts of the rails 17. Closing of the door is performed in the reverse order. When the rollers 16 reach the downwardly inclined parts of the rails 17 the lower end of the door will be at least substantially in contact with the lower ends of the supporting members,
15 after which the door moves down so that the sealing strip 11 and the lower ends of the sealing strips 12 come into contact with the floor and are slightly compressed by the weight of the door. Viewed in the direction of movement of the door the top end of the door will move further than the lower end so that the door will occupy the inclined
20 position shown in the Figure, in which position the door is held by the supporting members 13. In this inclined position the sealing strips 12 are slightly compressed on the supporting members 13 by the weight of the door so that in the areas of the sealing strips 12 and the sealing strip fastened to the top beam a satisfactory seal
25 is obtained by the action of the weight of the door, even when pressure fluctuations occur in the interior of the space 1.

The sealing strips 12 and the sealing strip near the top side of the door may, as an alternative, be fastened to the supporting members 13 and the head partition 14 respectively so
30 that they do not move with the door.

Such an arrangement reduces the risk of damage.

In order to further tighten the sealing strips, the construction shown in Fig. 2 can be used. Therein near the sides of the door the lower beam 7 or the like has fastened to it projecting
35 arms 28 having inclined guide faces 29 co-operating with guide

rollers 30. The disposition is such that, when the door is near its closed position but has not yet moved downwards during the closing operation, the lower ends of the guide faces are located just on the right-hand side of the topmost points of the guide rollers as shown 5 in Fig. 2.

When the door moves downwards during the last phase of the closing movement, the door will be urged to the right as viewed in Fig. 2 as a result of the co-operation of the guide faces 29 with the rollers 30, so that the sealing strips are more tightly pressed 10 home and the lower end of the door is guarded to some extent.

The reference numerals in the Claims do not have a limitative function on the interpretation of the Claims and solely serve for clarification.

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CLAIMS

1. A space for treating and/or storing products, crops and the like comprising upwardly extending walls, a floor, a ceiling and a door shutting at least part of one side of the space and being movable at least substantially in a horizontal direction away from
5 and towards said space for opening and closing the same respectively, characterized in that the door and supporting members associated with the door are designed so that in the closed position of the door, the door occupies a sloping position such that, viewed in the direction of displacement of the door, when the door is closed, the
10 top end of the door is located in front of the lower end of the door.
2. A space as claimed in Claim 1, characterized in that with the interposition of slightly elastic material of sealing strips the door is supported in its closed position by supports located near the sides of the opening closed by the door, the supporting
15 faces of said supports facing the door being upwardly inclined at an angle to the vertical .
3. A space as claimed in Claim 1 or 2, characterized in that the door is supported by a plurality of carriages movable along rails and having each a pair of rollers, the door being coupled with
20 said carriages with the aid of coupling rods pivoted to the carriages.

4. A space as claimed in Claim 3, characterized in that the coupling rod is fastened to a support which is pivotally connected with the door with the aid of a pivotal shaft extending at right angles to the front face of the door.

5 5. A space as claimed in anyone of the preceding Claims, characterized in that in supports secured to the door is journaled a horizontal shaft extending at least substantially parallel to the front face of the door, said shaft having secured to it gear wheels which are in mesh with toothed racks extending at right angles to
10 the front face of the door, whilst a driving mechanism is provided for rotating said shaft.

6. A space as claimed in anyone of the preceding Claims 3 to 5, characterized in that the ends of the rails facing the space are bent over downwards.

15 7. A space as claimed in Claim 5 or 6, characterized in that at least the ends of the toothed racks facing the space are movable in a direction of height.

8. A space as claimed in anyone of the preceding Claims, characterized in that near the bottom side of the door guide means
20 are provided so that when moving downwards during the closing operation the lower end of the door is urged in the direction towards the space.

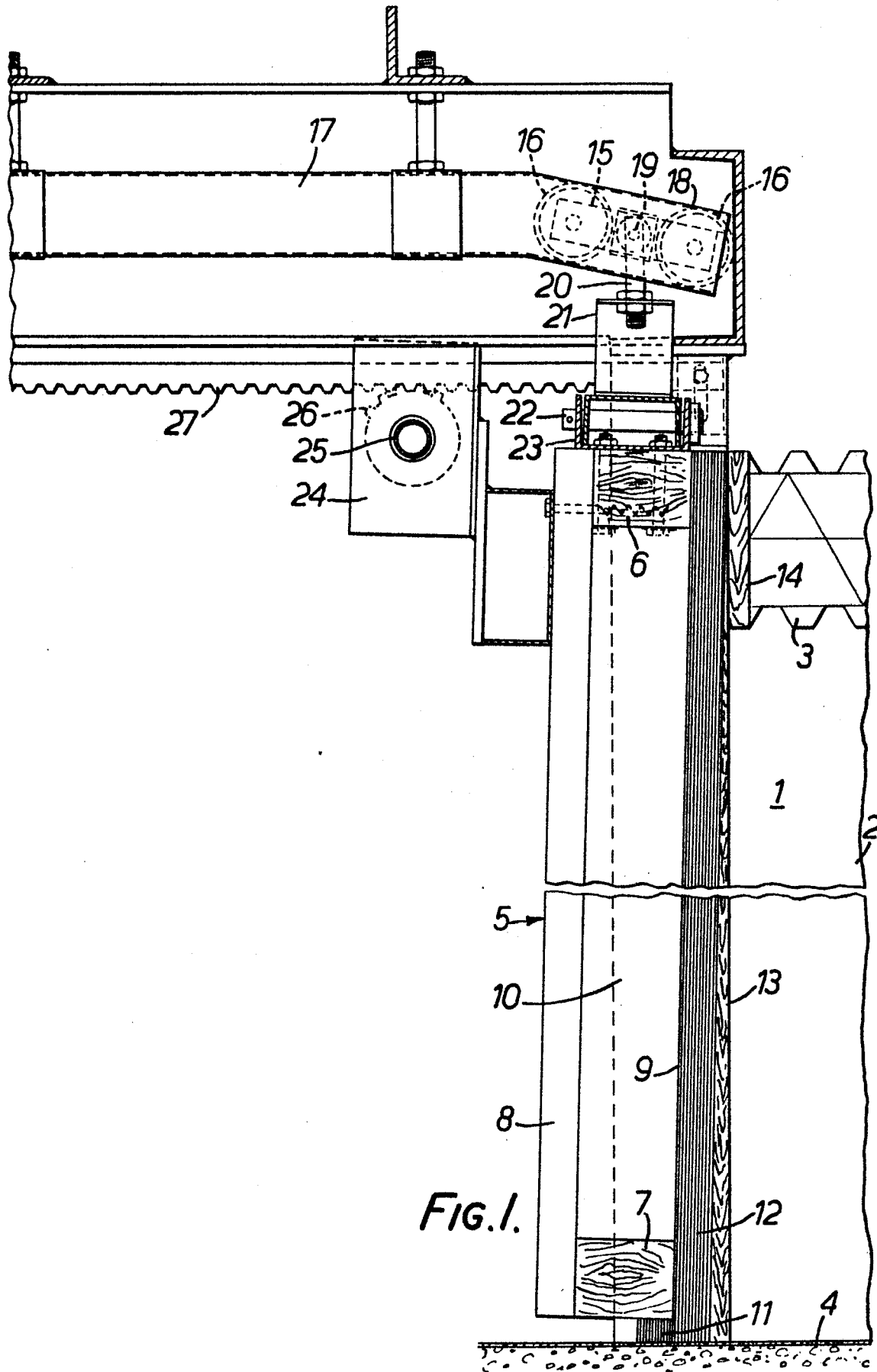


FIG. 1.

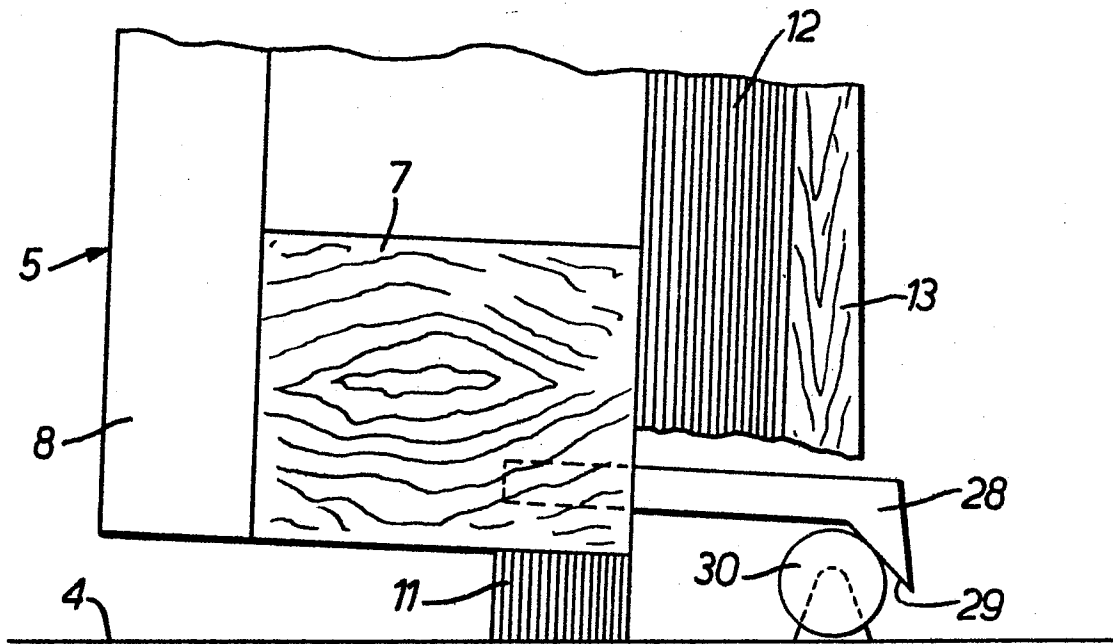


FIG. 2.



European Patent
Office

EUROPEAN SEARCH REPORT

0096927

Application number

EP 83 20 0808

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A	GB-A-1 515 648 (ELTREVA) * Page 2, lines 10-30; figures 1,2 *	1	E 05 D 15/10 E 05 D 15/56
A	DE-A-2 053 689 (GABLER) * Page 4, paragraph 5 *	1	
A	FR-A-1 590 953 (TOURNE) * Figure 1 *	3,4	
A	US-A-2 811 739 (SLOAN) * Figure 1 *	5	
			TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
			E 05 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE	Date of completion of the search 14-09-1983	Examiner NEYS B.G.	

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