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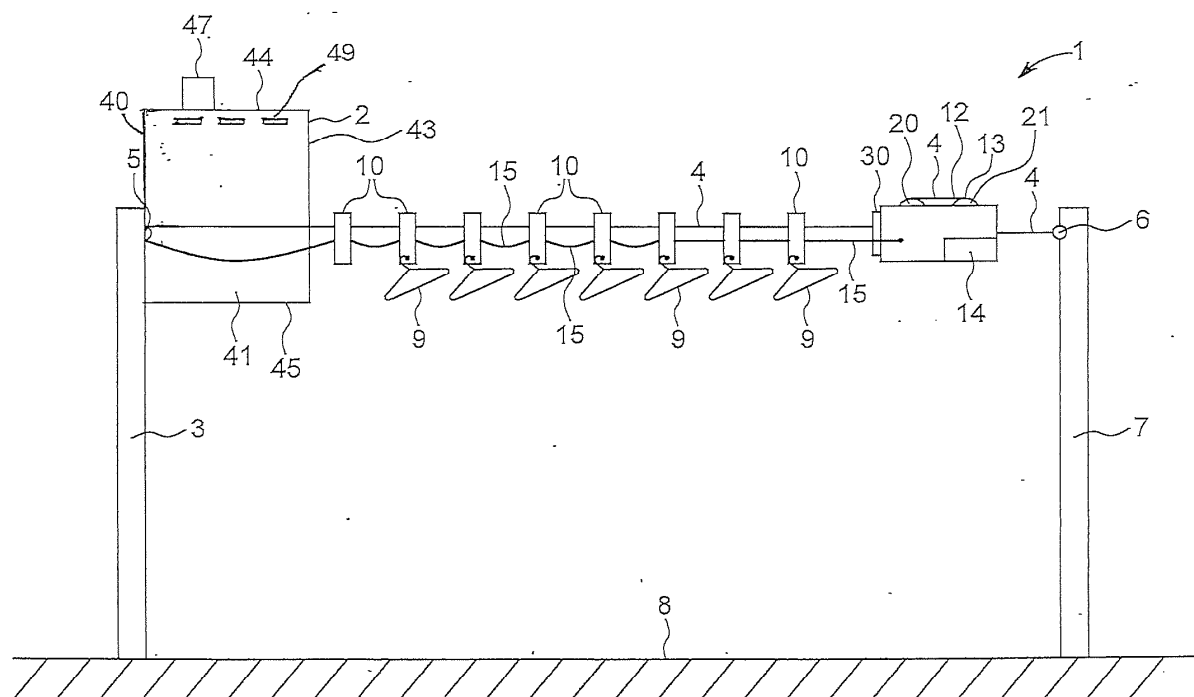
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(54) CLOTHES LINE ASSEMBLY

(57) A clothes line assembly (1) has a clothes line (4) mounted between spaced-apart support posts (3, 7). The clothes line (4) is wound about a drive mechanism (12) of a carriage (13) which is drivable along the clothes line (4) by means of a drive motor (14) mounted on the carriage (13). A number of hanger slide blocks (10) carrying

clothes hangers (9) are mounted on the clothes line (4) and are movable along the clothes line (4) by the carriage (13) between a juxtaposed collapsed stored position within a shelter (2) on the support post (3) and a spaced-apart drying position along the clothes line (4) outside the shelter (2).

**FIG. 1**

Description

Introduction

[0001] This invention relates to a clothes line assembly for drying clothes outdoors.

Background to the Invention

[0002] Various devices for protecting clothes hung outside to dry on a clothes line during rainy weather are known. By way of example, one such clothes drying line apparatus is disclosed in WO 2025/008294. The clothes drying line apparatus has a line mounted between a shelter and a post spaced therefrom in the open. Slide blocks for supporting clothes are slidable along the line between a stored position within the shelter and a drying position outside the shelter by means of a carriage which is movable back and forth along the line.

[0003] It is an object of the present invention to provide an improved clothes line assembly of this type.

Summary of the Invention

[0004] According to the invention there is provided a clothes line assembly for drying clothes outdoors, including:

a shelter;

a clothes line for mounting between a first support within the shelter and an associated second support outside the shelter and remote therefrom to support the clothes line above the ground; and

a plurality of clothes hangers mounted on the clothes line and movable on the clothes line between a stored position within the shelter and a deployed clothes drying position outside the shelter, the clothes line extending through an opening in a side-wall of the shelter,

a hanger drive mechanism for moving the hangers between the stored position within the shelter and the deployed clothes drying position,

the hanger drive mechanism comprising a carriage mounted on the clothes line and movable along the clothes line, the carriage having a chassis upon which two or more spaced-apart pulleys are rotatably mounted, the clothes line being drivably wound about the pulleys, and a reversible drive motor mounted on the carriage and drivably connected to the pulleys for rotation of the pulleys to move the carriage along the clothes line.

[0005] In another embodiment, there is provided one or more power supply cables for connection between a

power supply at the shelter and the drive motor on the carriage, each supply cable being supported by hanger slide blocks which are slidably mounted on the clothes line to suspend the hangers on the clothes line, the or each cable being clamped on each hanger slide block, at least one folding connector mounted on each cable between each adjacent pair of hanger slide blocks, each folding connector being engagable with a top of the clothes line when the hanger slide blocks are in a deployed position.

[0006] In another embodiment, a pair of spaced-apart power cables extend between the shelter and the carriage and each folding connector extends between and is attached to the cables.

[0007] In another embodiment, each folding connector has a central groove at a bottom of the folding connector for nesting engagement with the clothes line when the hanger slide blocks are in the deployed position.

[0008] In another embodiment, each folding connector has a pair of spaced-apart through holes for reception and through passage of the cables, each through hole having an associated radial locking screw mounted on the connector which is operable to clamp the cable within the through hole.

[0009] In another embodiment, a pair of spaced-apart folding connectors are mounted between each pair of adjacent hanger slide blocks.

[0010] In another embodiment, the folding connectors are spaced from the next adjacent hanger slide block by a distance of 20% to 35% of the distance between the hanger slide blocks.

[0011] In another embodiment, a spacer element is mounted between the carriage and the outermost hanger slide block.

[0012] In another embodiment, the spacer element is mounted on the carriage and extends outwardly therefrom to engage the outermost hanger slide block to position the outermost hanger slide block spaced-apart from the carriage.

[0013] In another embodiment of the invention the drive motor is operable in response to rain.

[0014] In another embodiment of the invention a rain sensor is mounted on the shelter and is operably connected to the drive motor to deploy the hangers in dry conditions and to deliver the hangers into the shelter in wet conditions.

[0015] In another embodiment, the door actuating mechanism is operable in response to the rain sensor.

[0016] In another embodiment, the hangers are slidably mounted on the clothes line.

[0017] In another embodiment of the invention hanger spacing means is provided to space the hangers apart on the clothes line when in the deployed position.

[0018] In another embodiment of the invention the hanger spacing means is a spacing line interconnecting adjacent hangers.

[0019] In another embodiment of the invention the shelter is a ventilated shelter.

[0020] In another embodiment of the invention the shelter has spaced-apart ventilation openings to generate a draft through the shelter.

[0021] In another embodiment of the invention the ventilation openings are provided at a bottom and at a top of the shelter.

[0022] In another embodiment, each pulley is attached to a drive gear rotatably mounted on the carriage, the drive gears being interconnected by an intermediate drive pinion for synchronous drive of the gears and their associated pulleys, and a reversible drive motor mounted on the carriage and drivably connected to the drive gears.

[0023] In another embodiment of the invention the shelter has a door in a side wall of the shelter for through-passage of the clothes line.

[0024] In another embodiment of the invention the door comprises a pair of door wings hingedly mounted on the side walls and having a seal along an inner free edge of each door.

[0025] In another embodiment of the invention the seal comprises a brush seal.

[0026] In another embodiment of the invention, door drive means is provided for opening and closing the doors.

[0027] In another embodiment of the invention the door is provided at a front of the shelter and the clothes line is attached to a rear wall of the shelter.

[0028] In another embodiment of the invention the shelter and the second support are mounted on support posts.

[0029] In another embodiment of the invention the opening in the sidewall of the shelter forms a doorway, a pair of doors mounted at the doorway and movable between a closed position closing the doorway and an open position, and a door actuating mechanism which is operable for movement of the doors between the closed position and the open position.

[0030] In another embodiment of the invention there is provided a clothes line assembly for drying clothes outdoors, including:

a shelter;

a clothes line for mounting between a first support within the shelter and an associated second support outside the shelter and remote therefrom to support the clothes line above the ground; and

a plurality of clothes hangers mounted on the clothes line and movable on the clothes line between a stored position within the shelter and a deployed clothes drying position outside the shelter, the clothes line extending through an opening in a side-wall of the shelter,

a hanger drive mechanism for moving the hangers between the stored position within the shelter and the deployed clothes drying position,

the hanger drive mechanism comprising a carriage mounted on the clothes line and movable along the clothes line, the carriage having a chassis upon which two or more spaced-apart pulleys are rotatably mounted, the clothes line being drivably wound about the pulleys, and a reversible drive motor mounted on the carriage and drivably connected to the pulleys for rotation of the pulleys to move the carriage along the clothes line,

the reversible drive motor being connected to and driven by a rechargeable battery mounted on the carriage, the rechargeable battery being connected to a solar panel mounted on the carriage which is operable to recharge the battery.

Brief Description of the Drawings

[0031] The invention will be more clearly understood by the following description of some embodiments thereof, given by way of example only with reference to the accompanying drawings, in which:

Fig. 1 is a diagrammatic illustration of a clothes line assembly according to the invention;

Fig. 2 is a detail front perspective view of a carriage forming portion of the clothes line assembly of Fig. 1;

Fig. 3 is another front perspective view of the carriage;

Fig. 4 is a rear perspective view of the carriage;

Fig. 5 is a perspective view of portion of another clothes line assembly according to the invention;

Fig. 6 is a detail perspective view showing portion of the clothes line assembly of Fig. 5 in another position of use;

Fig. 7 is a detail perspective view showing portion of the clothes line assembly of Fig. 5 in a partially retracted position;

Fig. 8 is a detail perspective view of the clothes line assembly of Fig. 5 shown in another partially retracted position;

Fig. 9 is a detail perspective view of portion of the clothes line assembly of Fig. 5 in a partially retracted position;

Fig. 10 is a detail perspective view showing portion of the clothes line assembly of Fig. 5 in a partially retracted position;

Fig. 11 is a detail perspective view of the clothes line

assembly of Fig. 5 shown in a fully retracted position;

Fig. 12 is an enlarged detail elevational view of a cable guide portion of the clothes line assembly of Fig. 5;

Fig. 13 is a detail elevational, partially cut-away, view of a hanger block assembly used with the clothes line assembly of Fig. 5;

Fig. 14 is an end elevational view of the hanger block assembly shown in Fig. 13;

Fig. 15 is a plan view of the hanger block assembly shown in Fig. 13;

Fig. 16 is a detail elevational view of a spacer element of the clothes line assembly of Fig. 5;

Fig. 17 is a detail plan view of the spacer element shown in Fig. 16;

Fig. 18 is a detail end elevational view of the spacer element shown in Fig. 16; and

Fig. 19 is a diagrammatic illustration of another clothes line assembly according to the invention.

Detailed Description of the Preferred Embodiments

[0032] Referring to the drawings, and initially to Fig. 1 to Fig. 4 thereof, there is illustrated a clothes line assembly indicated generally by the reference numeral 1. The clothes line assembly 1 comprises a shelter 2 mounted on an upright first support post 3. A clothes line 4 is mounted between a first support 5 within the shelter 2 and an associated second support 6 mounted outside the shelter 2 and remote therefrom on an upstanding second support post 7 to support the clothes line 4 at about 2.4 metres above the ground 8. A plurality of clothes hangers 9 are mounted on the clothes line 4 by hanger slide blocks 10 which are slidably movable on the clothes line 4 between a stored position within the shelter 2 and a deployed clothes drying position outside the shelter as shown in Fig. 1. In this case, a taut clothes line 4 is mounted between the supports 5, 6 on the support posts 3, 7. This clothes line 4 is wound about a drive mechanism 12 of a carriage 13 which is drivable along the clothes line 4 by means of a reversible drive motor 14 mounted on the carriage 13. A number of the hanger slide blocks 10 are mounted on the clothes line 4 and are movable along the clothes line 4 by the carriage 13 between a juxtaposed collapsed stored position within the shelter 2 and a spaced-apart drying position along the clothes line 4, as shown in Fig. 1.

[0033] The carriage 13 has a chassis comprising an upright front panel 16 and an upright rear panel 17 which are substantially parallel and spaced-apart by spacer

rods 18 extending therebetween. A pair of pulleys 20, 21 are rotatably mounted on the rear panel 17. The clothes line 4 is drivably wound around these pulleys 20, 21 such that rotation of these pulleys 20, 21 drives the carriage 13 along the clothes line 4.

[0034] Each pulley 20, 21 has a drive gear 22, 23 attached thereto. An intermediate drive pinion 24 drivably engages and interconnects both drive gears 22, 23 for synchronous drive of the gears 22, 23 and their attached drive pulleys 20, 21 in the same direction. The drive motor 14 is reversible and is drivably connected through the drive pinion 24 to the drive gears 22, 23 for rotation of the drive gears 22, 23 and hence the pulleys 20, 21 to move the carriage 13 along the clothes line 4.

[0035] The clothes hanger slide blocks 10 are interconnected by spacing lines 15 connected between adjacent clothes hanger slide blocks 10 to position the clothes hanger blocks 10 and hence the hangers 9, a preset distance apart on the clothes line 4 when deployed.

[0036] A push bar 30 at an inner end 32 of the carriage 13 has a vertical clothes line guide slot 34 which guides the clothes line 4 into engagement with the remote pulley 21, the clothes line 4 feeding around the remote pulley 21 and then around the near pulley 20 and then extending out at an outer end 36 of the carriage 13.

[0037] When the carriage 13 retracts back into the shelter 2, the push bar 30 engages the outermost hanger slide block 10 and pushes all the hanger slide blocks 10, and hence hangers 9, together, along the clothes line 4 and into the shelter 2.

[0038] The shelter 2 is similar to the shelter described in WO2025/008294, the contents of which are incorporated herein by reference thereto. The shelter 2 comprises a box-like housing with a rear wall 40 from which side walls 41 extend forwardly to an open front forming an opening through which the clothes line extends closed by a pair of door wings 43. The door wings 43 are hingedly mounted along a front edge of each side wall 41. A brush seal is mounted along a free edge of each door wing 43. A ceiling panel 44 extends forwardly from a top of the rear wall 40 and between top edges of the side walls 41. The opening in the sidewall of the shelter through which the clothes line 4 extends forms a doorway. The pair of door wings 43 are mounted at the doorway and are movable between a closed position closing the doorway and an open position. A door actuating mechanism is operable for movement of the door wings 43 between the closed position and the open position, as described in WO2025/008294.

[0039] The shelter 2 has an open bottom 45. Vent openings 49 are provided in the ceiling panel 44 or at a top of the side walls 41. It will be appreciated that the vent openings 49 in the ceiling panel 44 or side walls 41 and the open bottom 45 of the shelter 2 allow ventilation of air through the shelter 2 when the hangers 9 are housed within the shelter 2 in the stored position and the door wings 43 are closed.

[0040] A rain sensor 47 is mounted on top of the shelter 2 and is connected to a controller 48 (Fig. 4) which is operably connected to the drive motor 14 for operation of the drive motor 14 to deploy or retract the clothes hangers 9.

[0041] The construction and operation of the shelter 2, and the arrangement and operation of the rain sensor 47 and the associated controller 48, which controls operation of the drive motor 14, are as described in WO 2025/008294, the content of which is included herein by reference thereto, for regulating storage of the hangers 9 within the shelter 2 in rainy weather and external deployment in dry weather.

[0042] It will be appreciated that the invention provides a clothes line assembly which takes in or puts out clothes depending on whether or not it is raining. Thus, quicker and more efficient drying of the clothes can be achieved.

[0043] Referring now to Fig. 5 to Fig. 19, there is shown another clothes line assembly according to the invention, indicated generally by the reference numeral 50. This is largely similar to the clothes line assembly 1 described previously and parts similar to those described previously are assigned the same reference numerals. In this case a carriage 53 with three pulleys 54,55,56 is provided, the clothes line 4 winding around the pulleys 54,55,56 which, when rotated by the drive motor 14, move the carriage 53 along the clothes line 4.

[0044] The drive motor 14 runs on low dc voltage (24V dc) which is delivered to the drive motor 14 by a pair of power cables 58,59 which extend from a power supply on the shelter 2 to the drive motor 14 on the carriage 53. These cables 58,59 are arranged to fold upwardly, above the clothes line 4, when the hangers 9 are in a retracted position to avoid possible soiling of clothing or other washed items on the hangers 9.

[0045] The pair of power supply cables 58,59 are supported by hanger slide blocks 10 which are slidably mounted on the clothes line 4 to suspend the hangers 9 on the clothes line 4. Each cable 58,59 is clamped on each hanger slide block 10. In this way, the cables 58, 59 also form the same function as the spacing lines 15 described previously, for spacing the hangers 9 a desired distance apart when they are deployed along the clothes line 4. A pair of folding connectors 60,61 are mounted between each cable 58,59 between each adjacent pair of hanger slide blocks 10. Each folding connector 60,61 is engagable with a top of the clothes line 4 when the hanger slide blocks 10 are in a spaced-apart deployed position.

[0046] Each folding connector 60,61 has a central semi-circular groove 62 (see Fig. 9 and Fig. 12) at a bottom of the folding connector 60,61 for nesting engagement with the clothes line 4 when the hanger slide blocks 10 are in the deployed position (see Fig. 9 for example).

[0047] Referring in particular to Fig. 12, each folding connector 60,61 has a pair of spaced-apart through holes 64,65 for reception and through passage of the cables 58,59. Each through hole 64,65 has an associated radial locking screw 66,67 mounted on the connector 60,61

which is operable to clamp the cable 58, 59 within the associated through hole 64,65 through which it passes.

[0048] Referring in particular to Fig. 10, it will be noted that a pair of spaced-apart folding connectors 60,61 are mounted between each pair of adjacent hanger slide blocks 10. The folding connectors 60,61 are spaced from the next adjacent hanger slide block 10 by a distance of 20% to 35% of the distance between the hanger slide blocks 10.

[0049] A spacer element 68 (see Fig. 7, Fig. 10, and Fig. 11) is mounted between the carriage 53 and the outermost hanger slide block 10. The spacer element 68 is mounted on the carriage 53 and extends outwardly therefrom terminating in a push head 69 to engage the outermost hanger slide block 10 and keep it spaced-apart from the carriage 53.

[0050] Referring in particular to Fig. 13 to Fig. 15, the hanger block 10 is shown in more detail. The hanger slide block 10 has a front face 70, rear face 71 and side faces 72, 73. At an upper portion of the hanger block 10, a central through hole 75 extends between the front face 70 and the rear face 71 for reception and free through passage of the clothes line 4. This is flanked on either side by cable through holes 76, 77 for reception of the cables 58, 59 which are held fast in the through holes 76, 77 by locking grub screws 78 in threaded holes 79 extending radially inwardly from the side faces 72, 73 to meet the through holes 76, 77. Below the central through hole 75, a hanger mounting channel 80 extends through the hanger block 10 between opposite side faces 72, 73, and rotatably receives a top bar 82 of the hanger 9. A locking collar 84, clamped between the ends of the top bar 82 by a clamp grub screw 85, is mounted within a central opening 86 extending through the hanger block 10 between the front face 70 and the rear face 71, and intersecting the hanger mounting channel 80, to retain the hanger 9 on the hanger block 10.

[0051] Referring in particular to Fig. 16 to Fig. 18, the spacer element 68 is shown in more detail. The spacer element 68 has a pair of spaced-apart elongate bars 90, 91 held spaced-apart by end blocks 92 mounted at opposite ends of the elongate bars 90, 91 by clamp screws 94 and define a through passage 95 for the clothes line 4. This spacer element 68 prevents the hangers 9 from getting too close to the carriage 58 which might possibly soil clothing on the hangers 9 during drying, particularly in windy conditions.

[0052] In use, in dry weather the hangers 9 can be deployed spaced-apart on the clothes line 4 by movement of the carriage 53 away from the shelter 2. Upon subsequent retraction of the carriage 53 towards the shelter 2, as each adjacent pair of slide blocks 10 move together the portions of the power cables 58,59 clamped between the slide blocks 10 fold upwardly as the folding connectors 60,61 between the slide blocks 10 prevent downward movement of the cables 58,59 thus neatly storing the folded cables above the clothes line 4, as shown in Fig. 11, and away from any washing on the

hangers 9.

[0053] It will be appreciated that the shelter 2 can also be fixed to a wall (like the back wall of a house). The above-mentioned embodiments disclose the clothes line 4 being mounted between supports 5, 6 on spaced-apart support posts 3, 7. Alternatively, either one or both of the shelter 2 with the first support 5 and the second support 6 could be fixed to a wall, such as a wall of a house or a boundary wall, or indeed any other suitable support.

[0054] Referring now to Fig. 19, where is shown another clothes line assembly according to the invention, indicated generally by the reference numeral 100. This is largely similar to the clothes line assembly 1 described previously and parts similar to those described previously are assigned the same reference numerals. In this case the carriage 13 is powered by a rechargeable battery 101 mounted on the carriage 13 and charged by a solar panel 102 mounted on the carriage 13. The battery 101 may also, or alternatively, be charged by engaging with a charging point while it's at the shelter 2 (i.e. when the clothes are stored within the shelter 2 and the doors 43 closed) and/or when the clothes are out be charged by engaging with a charging point on the pole 7 while adjacent to the pole 7. If the drive motor 14 is powered by the rechargeable battery 101 mounted on the carriage 13, the power cables 58, 59 are not needed, and the spacing lines 15 are then used instead of the cables 58, 59 to evenly space the hangers 9 on the clothes line 4 in the deployed position.

[0055] The terms "comprise" and "include", and any variations thereof required for grammatical reasons, are to be considered as interchangeable and accorded the widest possible interpretation.

[0056] The invention is not limited to the embodiments hereinbefore described which may be varied in both construction and detail within the scope of the appended claims.

Claims

1. A clothes line assembly (1, 50, 100) for drying clothes outdoors, including:

- a shelter (2);
- a clothes line (4) for mounting between a first support (5) within the shelter (2) and an associated second support (6) outside the shelter (2) and remote therefrom to support the clothes line (4) above the ground (8); and
- a plurality of clothes hangers (9) mounted on the clothes line (4) and movable on the clothes line (4) between a stored position within the shelter (2) and a deployed clothes drying position outside the shelter (2), the clothes line (4) extending through an opening in a sidewall of the shelter (2),
- a hanger drive mechanism (12) for moving the

hangers (9) between the stored position within the shelter (2) and the deployed clothes drying position, the hanger drive mechanism comprising a carriage (13, 53) mounted on the clothes line (4) and movable along the clothes line (4), the carriage (13, 53) having a chassis upon which two or more spaced-apart pulleys (20, 21, 54, 55, 56) are rotatably mounted, the clothes line (4) being drivably wound about the pulleys (21, 22, 54, 55, 56), and a reversible drive motor (14) mounted on the carriage (13, 53) and drivably connected to the pulleys (21, 22, 54, 55, 56) for rotation of the pulleys (20, 21, 54, 55, 56) to move the carriage (13, 53) along the clothes line (4),

characterised in that there is provided one or more power supply cables (58, 59) for connection between a power supply at the shelter (2) and the drive motor (14) on the carriage (13, 53), each supply cable (58, 59) being supported by hanger slide blocks (10) which are slidably mounted on the clothes line (4) to suspend the hangers (9) on the clothes line (4), the or each cable (58, 59) being clamped on each hanger slide block (10), at least one folding connector (60, 61) mounted on each cable (58, 59) between each adjacent pair of hanger slide blocks (10), each folding connector (60, 61) being engagable with a top of the clothes line (4) when the hanger slide blocks (10) are in a deployed position.

2. The clothes line assembly (50) as claimed in claim 1, wherein a pair of spaced-apart power cables (58, 59) extend between the shelter (2) and the carriage (53) and each folding connector (60, 61) extends between and is attached to the cables (58, 59).
3. The clothes line assembly (50) as claimed in claim 1 or claim 2, wherein each folding connector (60, 61) has a central groove (62) at a bottom of the folding connector (60, 61) for nesting engagement with the clothes line (4) when the hanger slide blocks (10) are in the deployed position.
4. The clothes line assembly (50) as claimed in any one of the preceding claims, wherein each folding connector (60, 61) has a pair of spaced-apart through holes (64, 65) for reception and through passage of the cables (58, 59), each through hole (64, 65) having an associated radial locking screw (66, 67) mounted on the connector (60, 61) which is operable to clamp the cable (58, 59) within the through hole (64, 65).
5. The clothes line assembly (50) as claimed in any one of the preceding claims, wherein a pair of spaced-apart folding connectors (60, 61) are mounted be-

tween each pair of adjacent hanger slide blocks (10).

6. The clothes line assembly (50) as claimed in claim 5, wherein the folding connectors (60, 61) are spaced from the next adjacent hanger slide block (10) by a distance of 20% to 35% of the distance between the hanger slide blocks (10). 5
7. The clothes line assembly (50) as claimed in any one of the preceding claims, wherein a spacer element (68) is mounted on the carriage (53) and projects outwardly therefrom to engage and position an outermost hanger slide block (10) spaced-apart from the carriage (53). 10
8. The clothes line assembly (1, 100) as claimed in any one of the preceding claims, wherein the clothes hangers (9) are interconnected by a spacing line (15) connected between adjacent hanger slide blocks (10) to position the hangers (9) a preset distance spaced-apart on the clothes line (4) when deployed. 15 20
9. The clothes line assembly (1, 50, 100) as claimed in any one of the preceding claims, wherein the shelter (2) is a ventilated shelter. 25
10. The clothes line assembly (1, 50, 100) as claimed in claim 9, wherein the shelter (2) has spaced-apart ventilation openings (49, 45) to generate a draft through the shelter (2). 30
11. The clothes line assembly (1) as claimed in any one of the preceding claims, wherein each pulley (20, 21) is attached to a drive gear (22, 23) rotatably mounted on the carriage (13, 53), the drive gears (22, 23) being interconnected by an intermediate drive pinion (24) for synchronous drive of the drive gears (22, 23) and their associated pulleys, the drive motor (14) mounted on the carriage (13, 53) and drivably connected to the drive gears (22, 23). 35 40
12. The clothes line assembly (1, 50, 100) as claimed in any one of the preceding claims, wherein the shelter (2) has a door (43) in a side wall of the shelter (2) for through-passage of the clothes line (4). 45
13. The clothes line assembly (1, 50, 100) as claimed in claim 12, wherein the door (43) comprises a pair of door wings (43) hingedly mounted on the side walls (41) and having a seal along an inner free edge of each door wing (43). 50
14. The clothes line assembly (1, 50, 100) as claimed in claim 13, wherein the seal comprises a brush seal. 55
15. The clothes line assembly (1, 50, 100) as claimed in any one of the preceding claims, wherein the door

(43) is provided at a front of the shelter (2) and the clothes line (4) is attached to a rear wall (40) of the shelter (2).

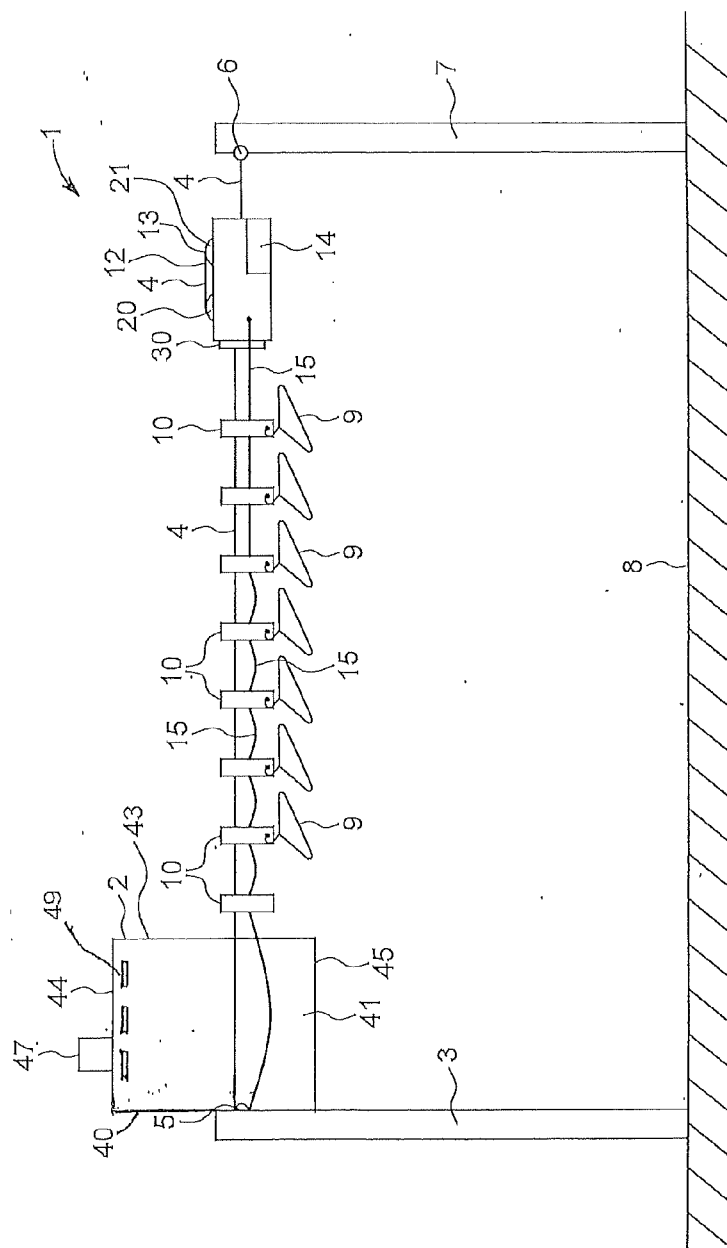


FIG. 1

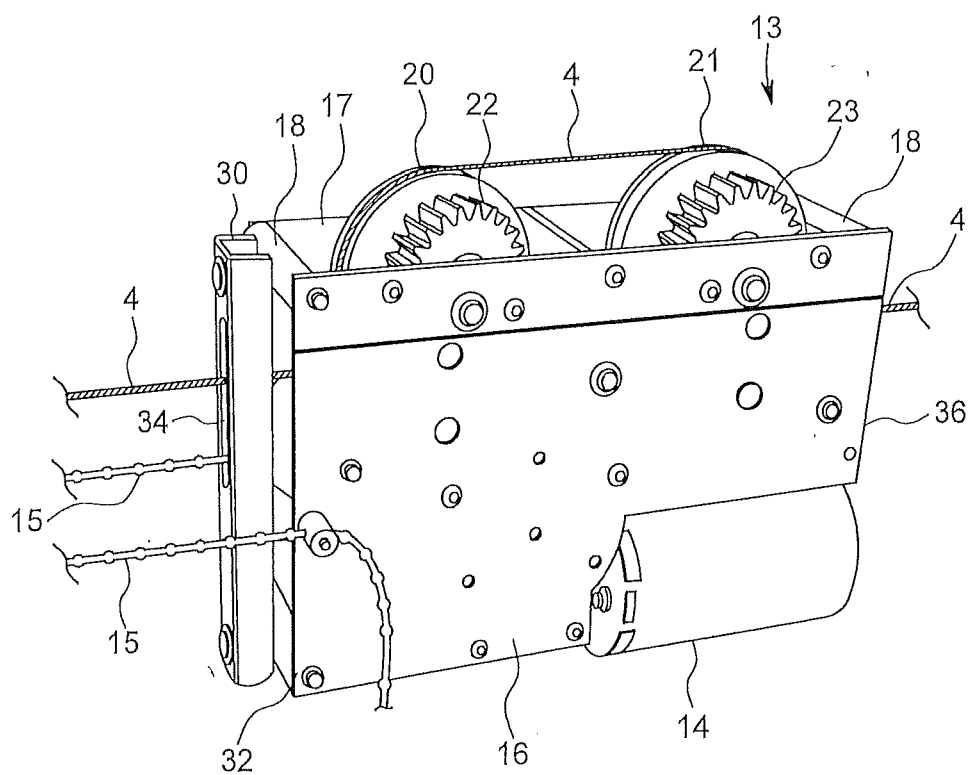


FIG. 2

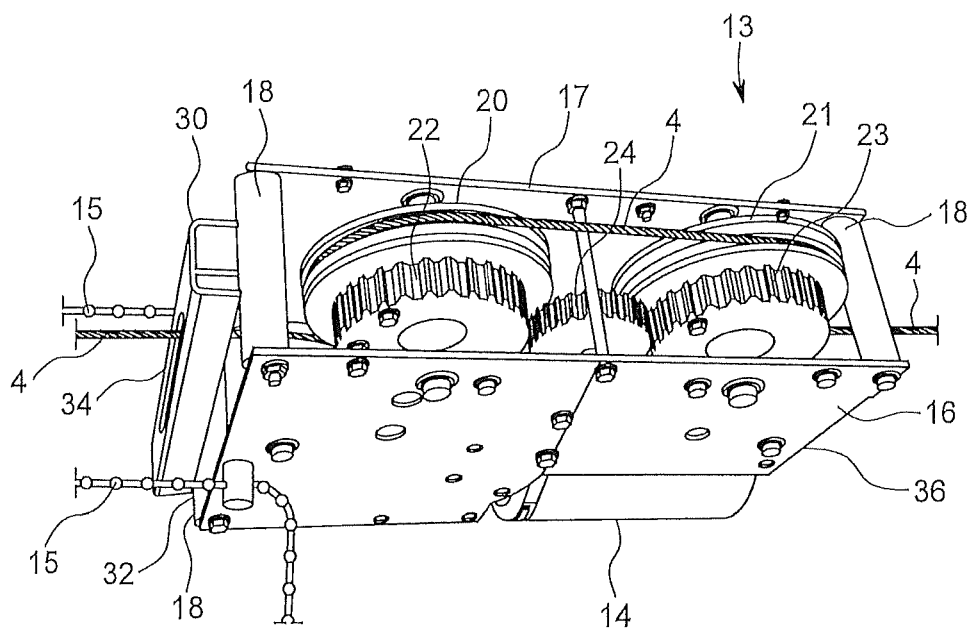


FIG. 3

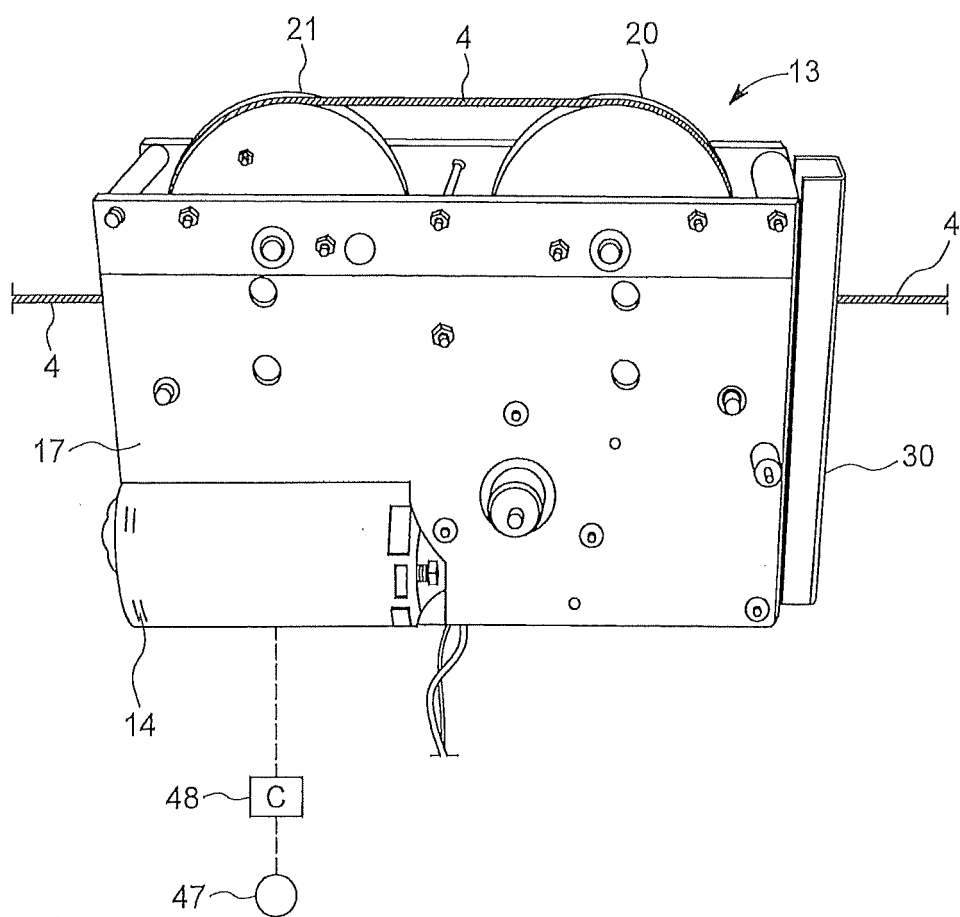


FIG. 4

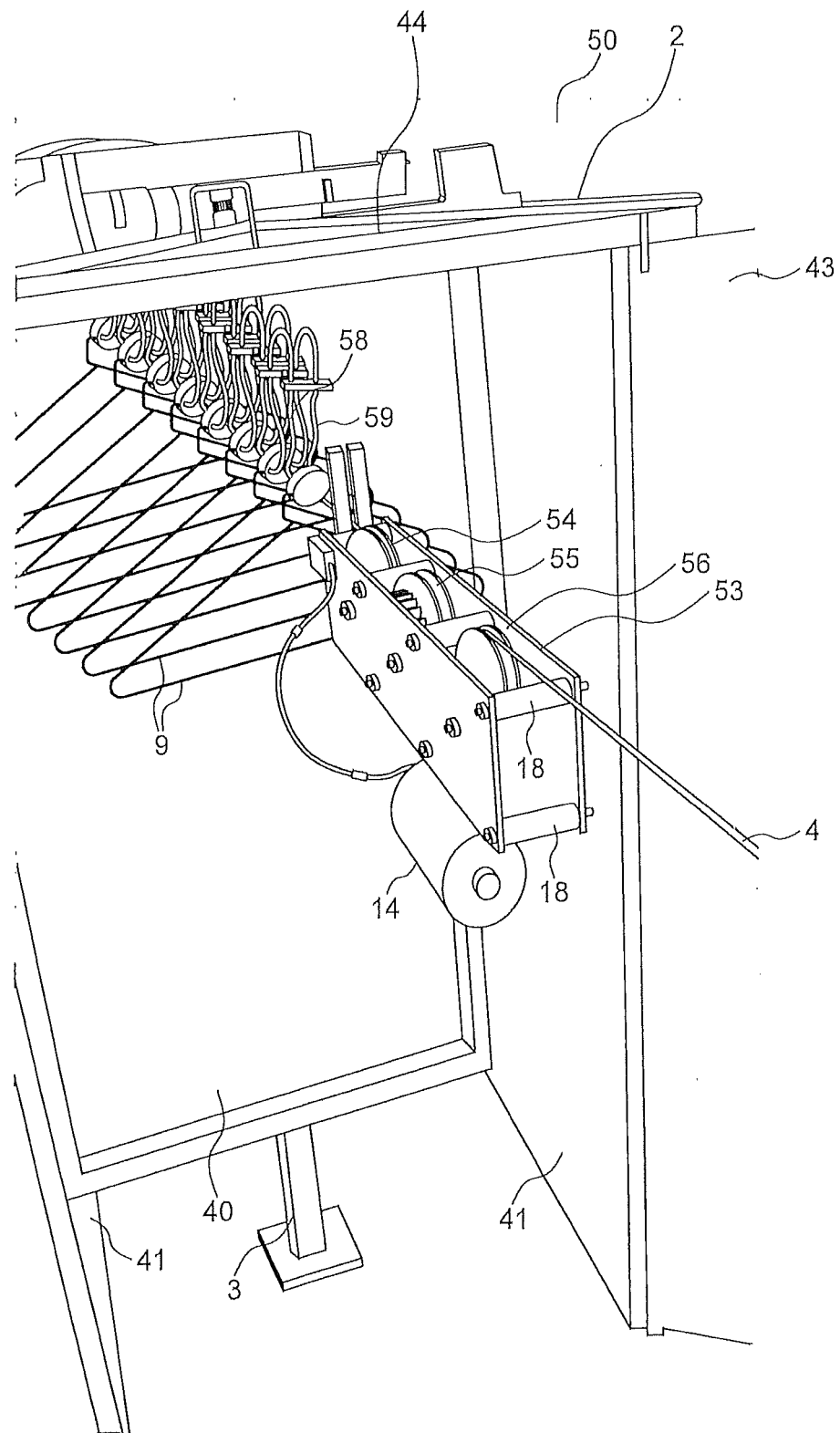


FIG. 5

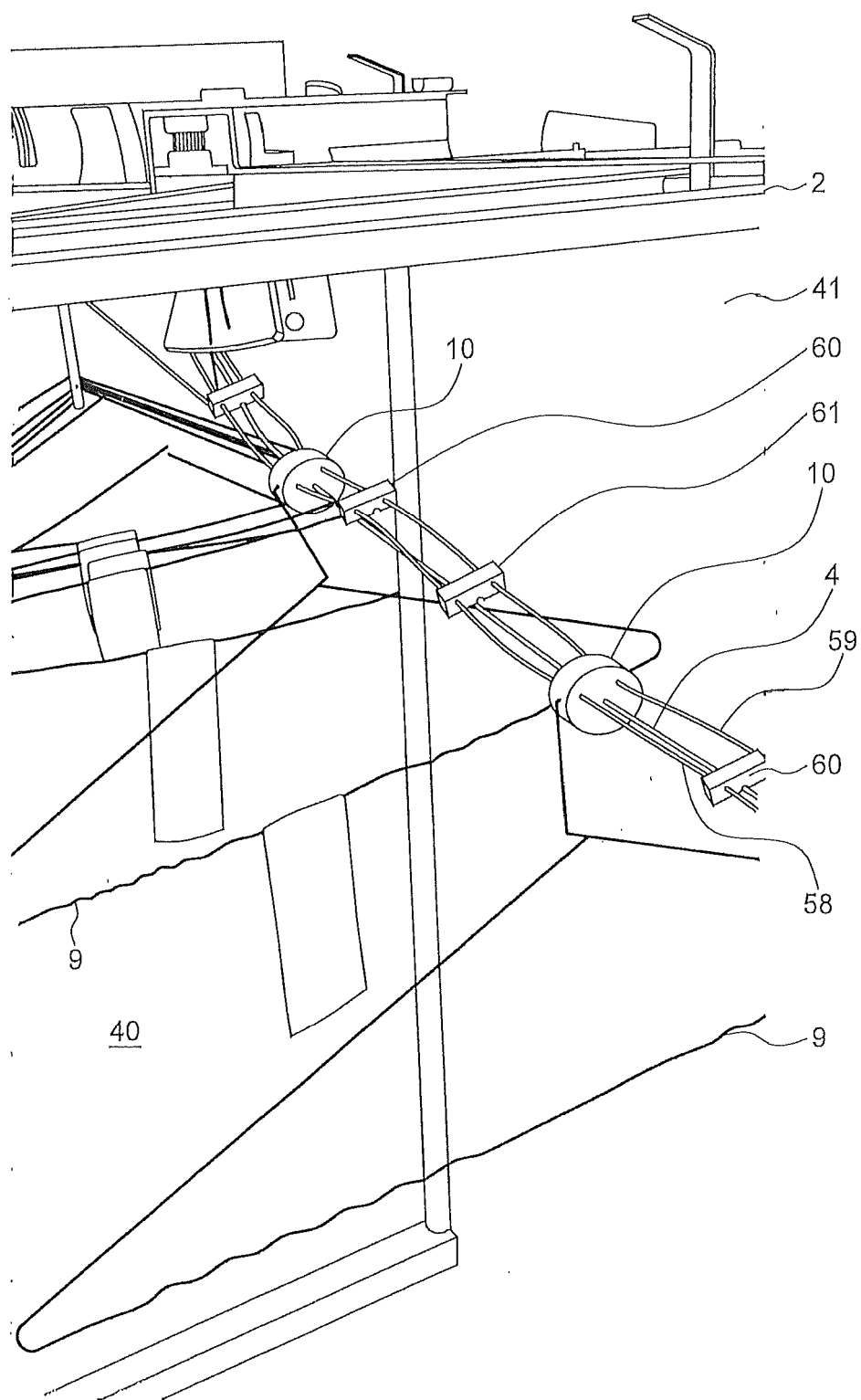


FIG. 6

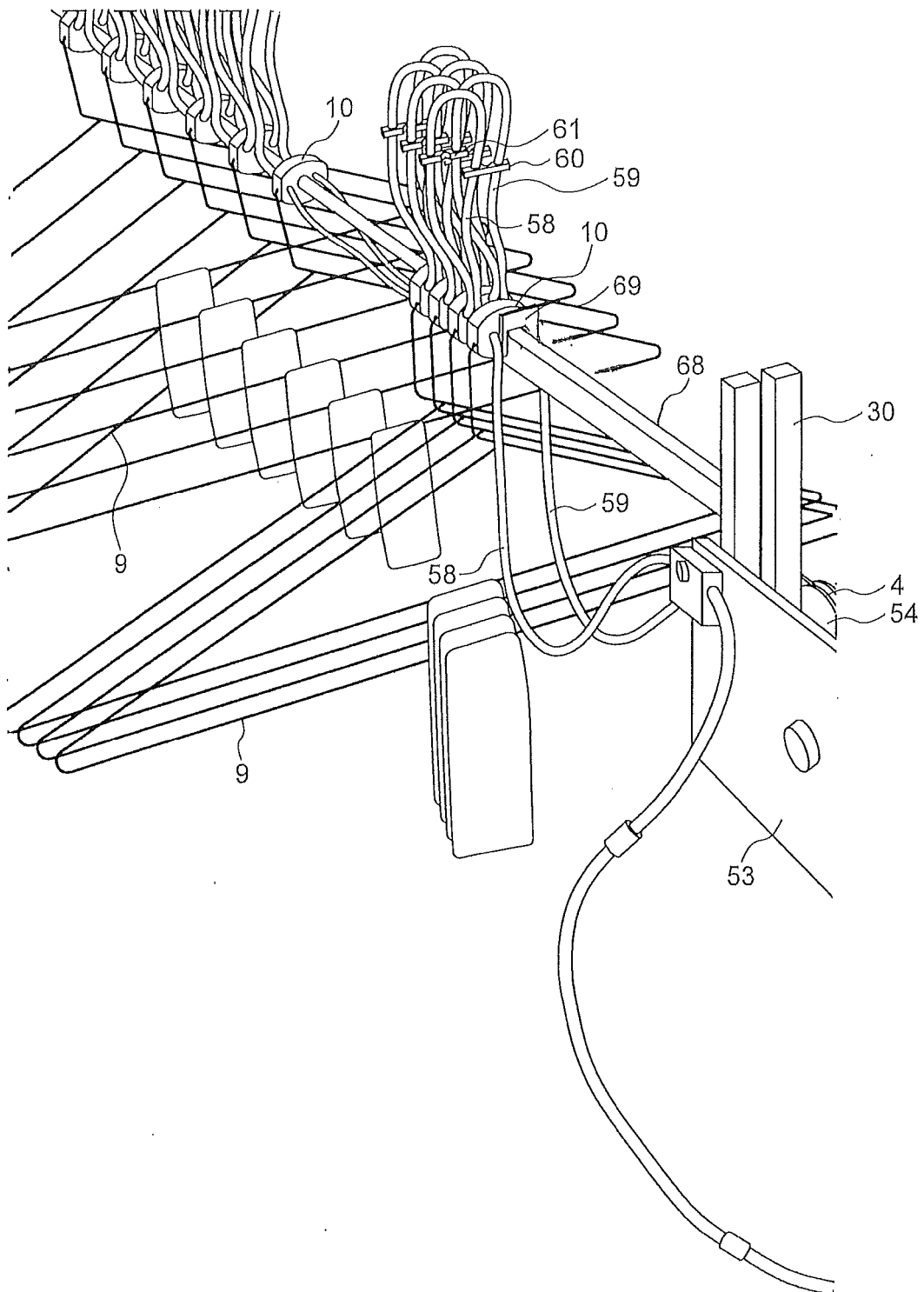


FIG. 7

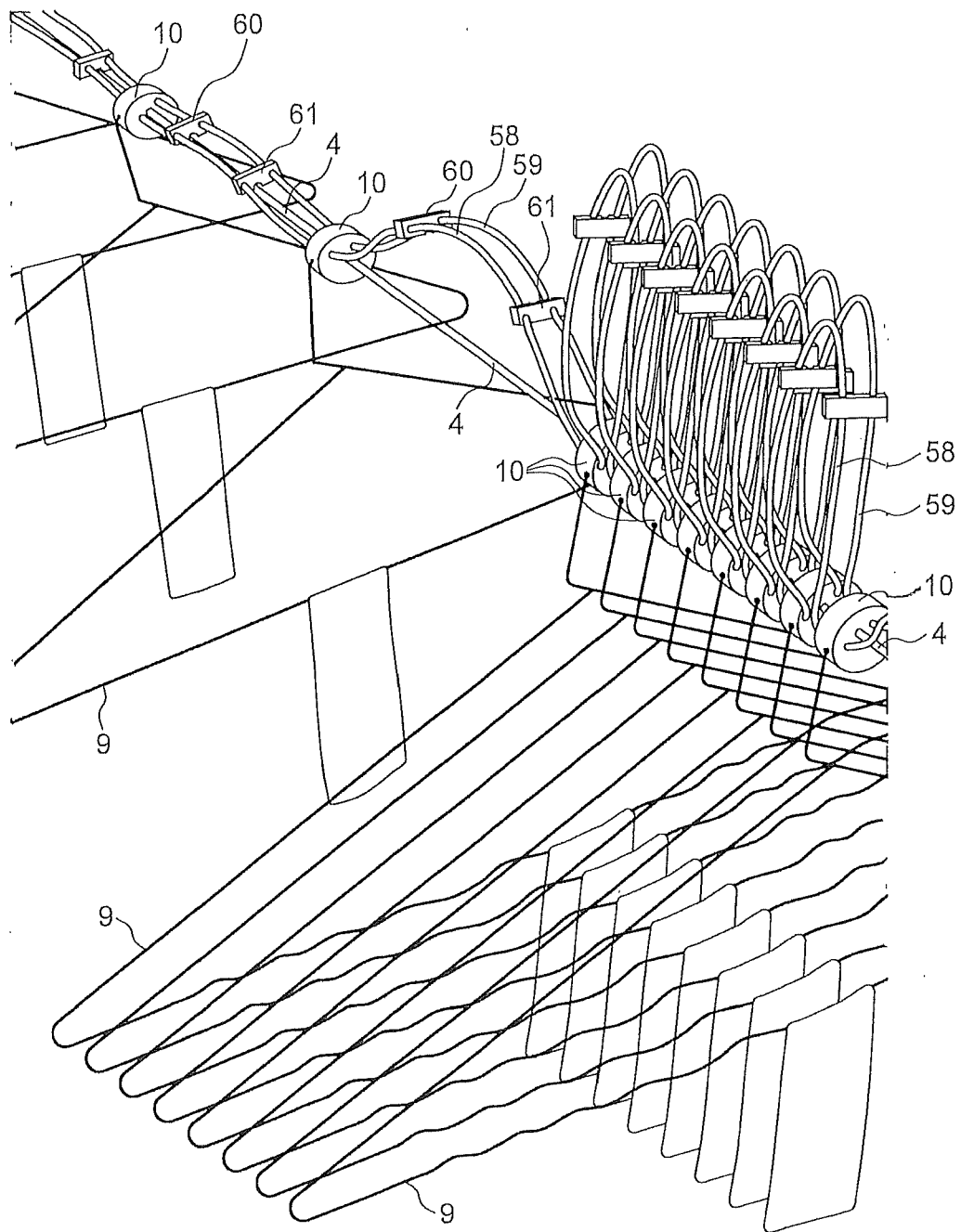


FIG. 8

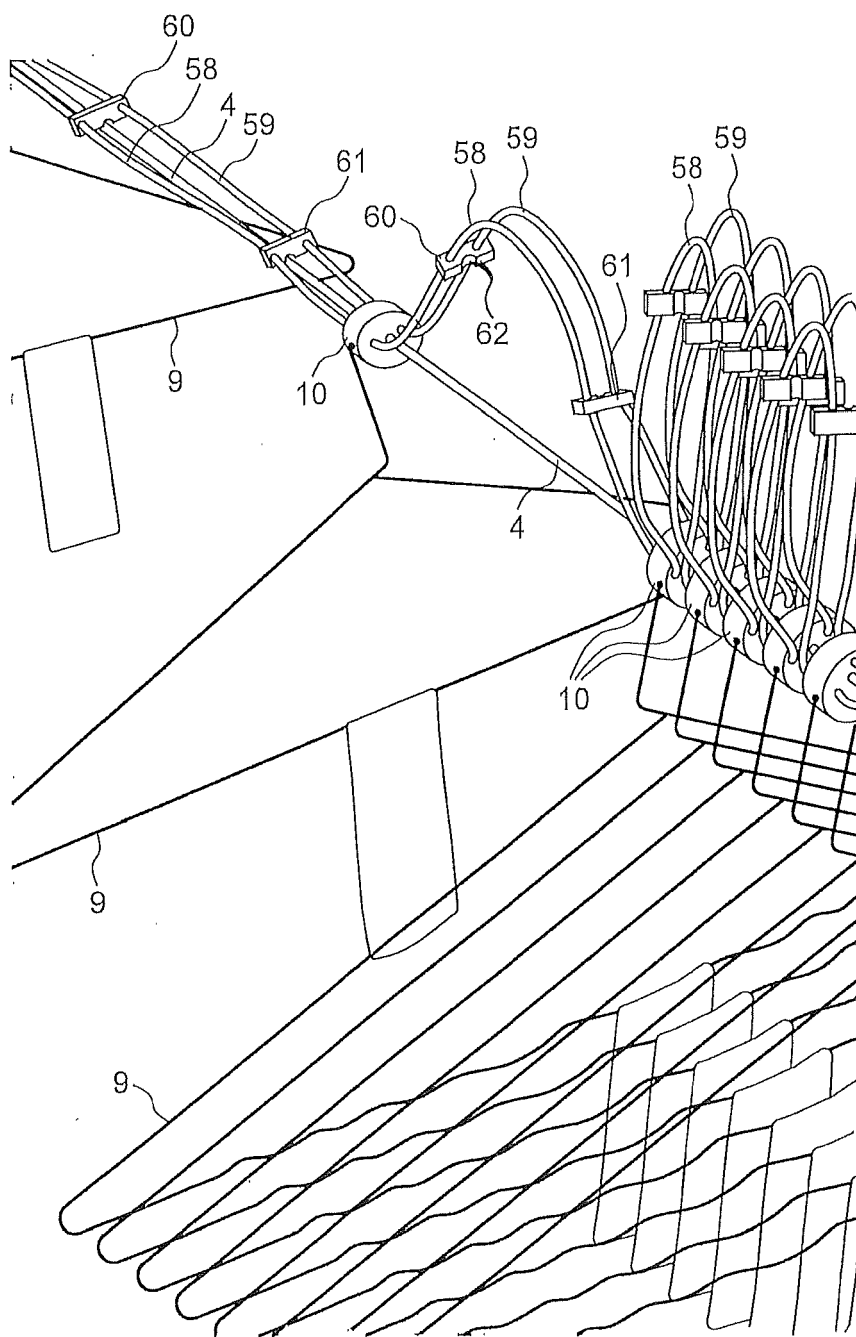


FIG. 9

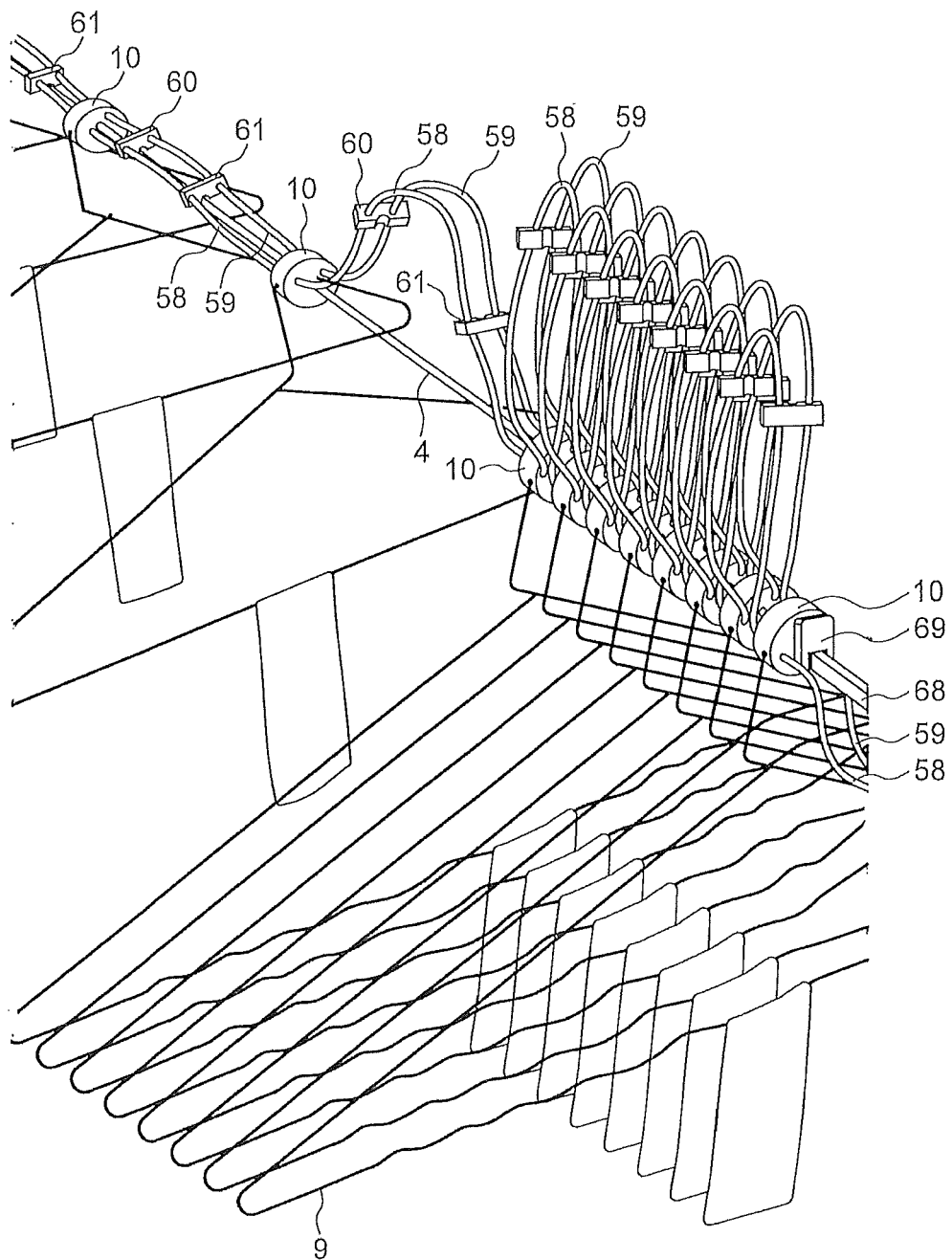


FIG. 10

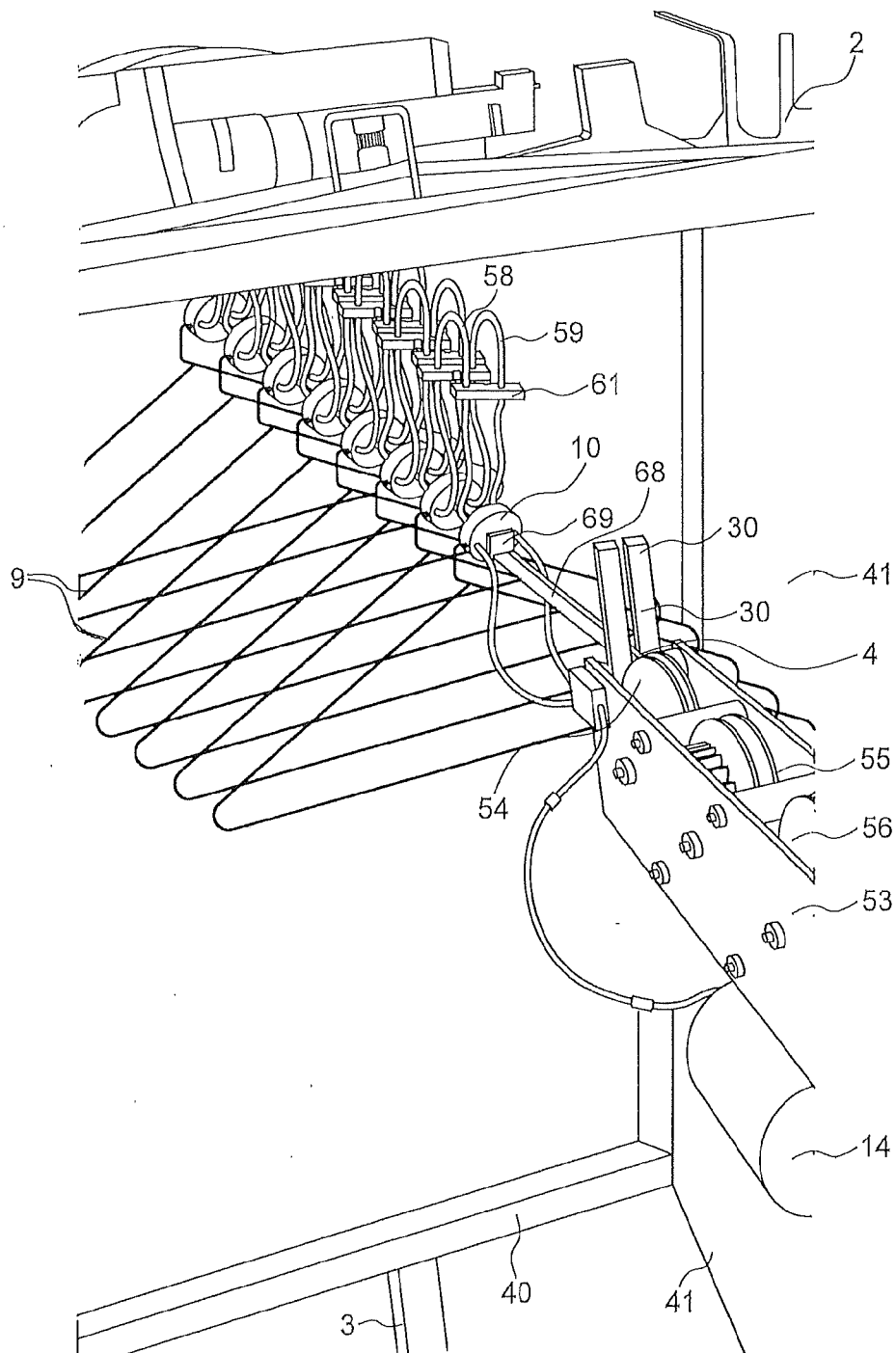


FIG. 11

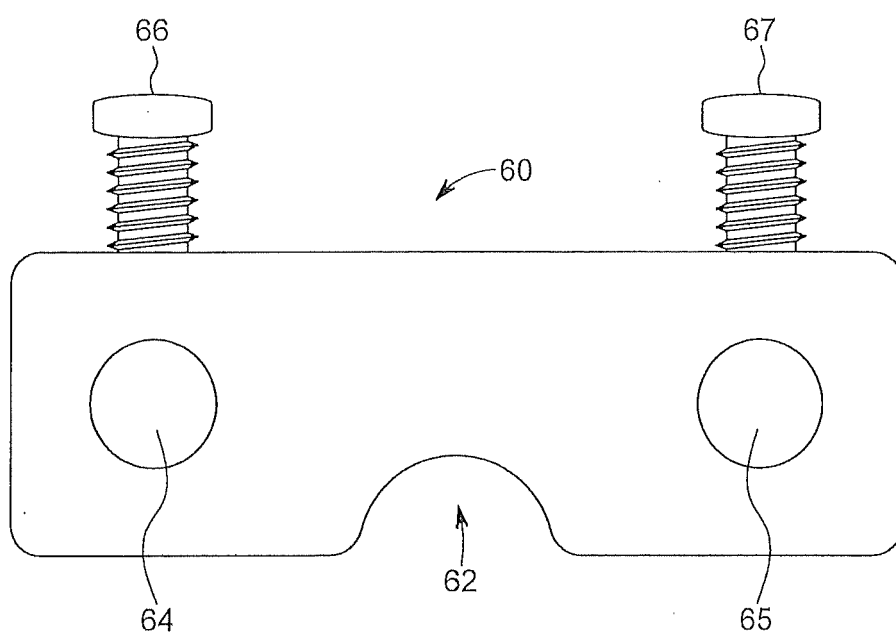


FIG. 12

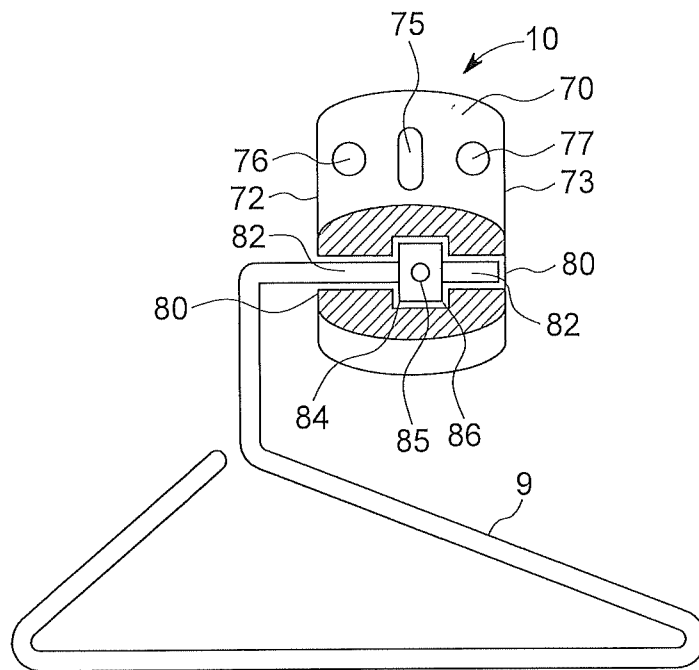


FIG. 13

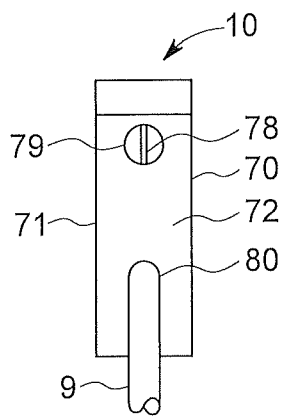


FIG. 14

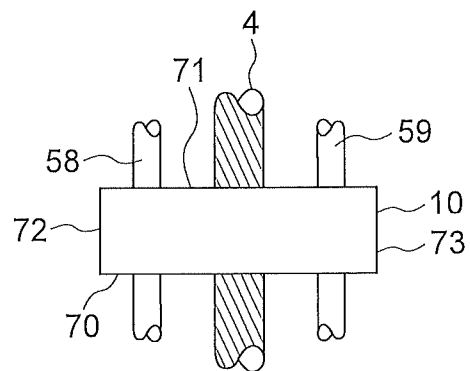


FIG. 15

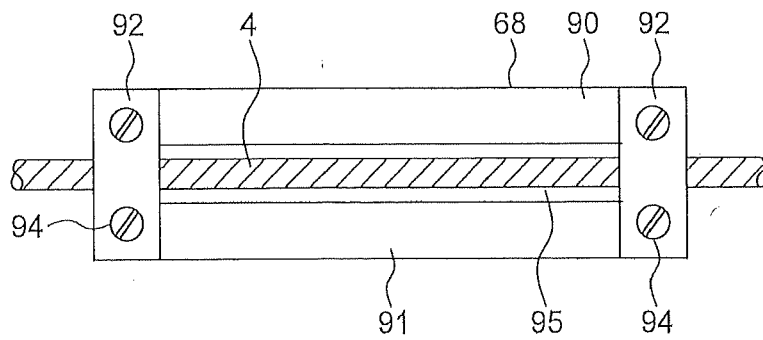


FIG. 16

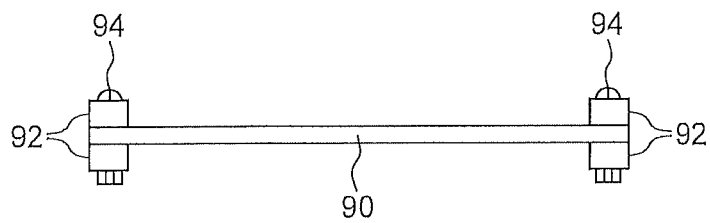


FIG. 17

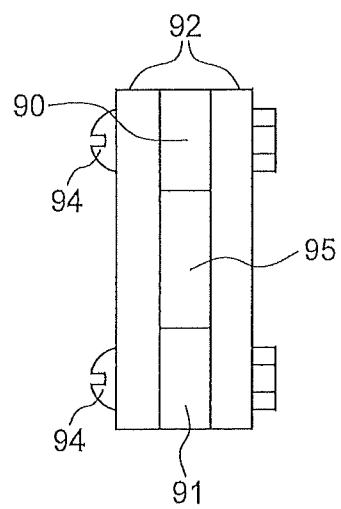


FIG. 18

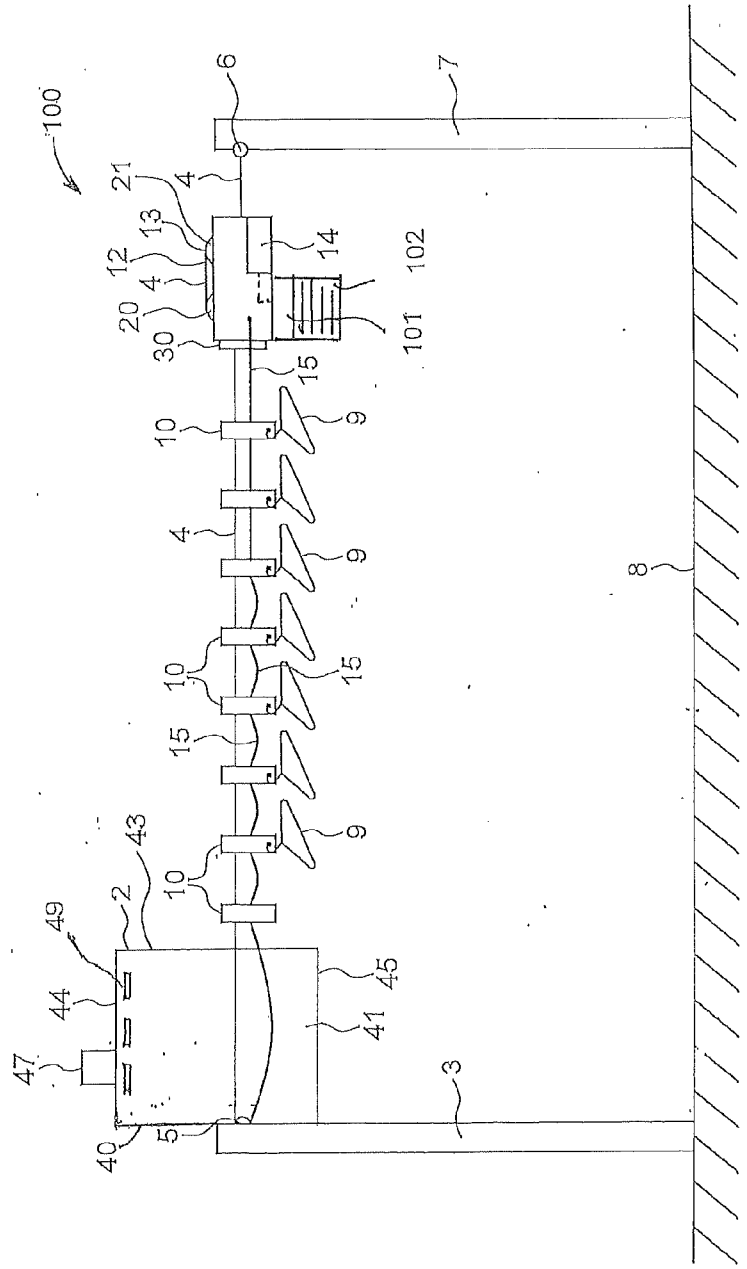


FIG. 19



EUROPEAN SEARCH REPORT

Application Number

EP 26 16 9253

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Place of search		Date of completion of the search	Examiner
Munich		7 August 2026	Weidner, Maximilian
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