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(54) **Fire hose support**

(57) The present invention relates to a fixable and movable fire hose support (1), comprising a nozzle arrangement (2), a support body (3) that is connected to said nozzle arrangement (2), and a fixation arrangement (4, 5, 6) comprising a first fixation portion (4) arranged at said nozzle arrangement (2) and a second fixation portion

(5) arranged at said support body and a locking mechanism (6) for locking into place at least one of said first and second fixation portions (4, 5), wherein at least one of said first and second fixation portions (4, 5) is slideably arranged so that a distance (d) between said first and second fixation portions (4, 5) can be decreased.

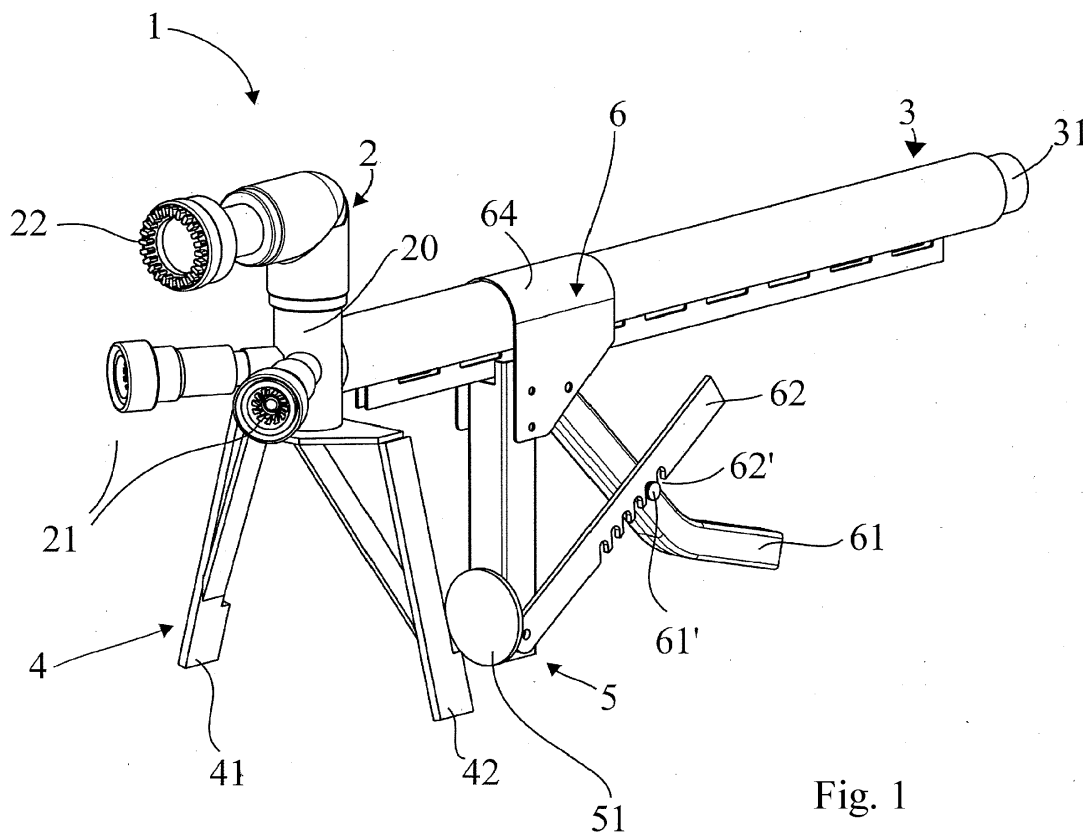


Fig. 1

Description

TECHNICAL FIELD

[0001] The present invention relates to a a fixable and movable fire hose support, comprising a nozzle arrangement, a support body that is connected to said nozzle arrangement, and a fixation arrangement comprising a first fixation portion arranged at said nozzle arrangement and a second fixation portion arranged at said support body and a locking mechanism for locking into place at least one of said first and second fixation portions.

BACKGROUND ART

[0002] When fighting fires, high demands are placed on equipment as well as personal safety of fire fighters and other personnel. A general method of extinguishing a fire is for a fire fighter to hold a hose with a nozzle through which a fluid such as water can be sprayed towards the fire. Due to the high water pressure inside the hose, a support device is sometimes used to stabilize the hose and nozzle to avoid a situation where the fire fighter is unable to hold the nozzle in a desired position for the duration of the fire fighting operation. It is also desirable to shorten the time of this operation as much as possible, both for the sake of damages to buildings or objects that are on fire and to minimize the risk for damages to the fire fighter due to heat or fumes.

[0003] A number of fire hose supports are known in the art. US 7,159,826 (Bruce) shows a support for attaching a fire hose to a stationary structure so that only one fire fighter is required for holding the hose during the fire fighting operation. The mounting of this support device is, however, a fairly complicated and slow multi-step process and the presence of the fire fighter at the site is required during the entire fire fighting process.

[0004] Another similar technology is shown by US 1,444,900 (Blaw), where a support device can be fastened by screwing to a structure such as a windowsill. A hose with nozzle can be mounted on this support device in such a way that water can be sprayed from a remote location, so that the presence of a fire fighter at the nozzle is no longer required. This is a significant improvement with regards to risk for the fire fighting personnel involved, but the mounting steps required to fasten the support device to a suitable structure and the hose and nozzle to this support are complicated and time consuming, so that crucial seconds needed for the extinguishing of the fire are lost.

[0005] Thus, there is clearly a need for an improved support device for a fire hose that aims at overcoming the problems described herein.

DISCLOSURE OF THE INVENTION

[0006] The object of the present invention is to eliminate or at least to minimize the problems described

above. This is achieved through a fixable and movable fire hose support, comprising a nozzle arrangement, a support body that is connected to said nozzle arrangement, and a fixation arrangement comprising a first fixation portion arranged at said nozzle arrangement and a second fixation portion arranged at said support body and a locking mechanism for locking into place at least one of said first and second fixation portions, wherein at least one of said first and second fixation portions is slideably arranged so that a distance between said first and second fixation portions can be decreased. Thereby, a quick and reliable fastening of the fire hose support can be effected so that the time required for a fire fighter to be present in the potentially harmful environment near the fire can be minimized and so that an efficient fire fighting operation can be performed, using the fire hose support to direct a flow of a fluid from hose.

[0007] According to an aspect of the invention, said nozzle arrangement (2) is connected to a supply tube for supplying a fluid to said nozzle arrangement (2). Thereby, the fluid can be supplied to the fire hose support in a reliable way and be sprayed through nozzles aimed at the fire. The mounting is also made quicker by the hose being attached to the supply tube in advance, so that the fire hose support is ready to use immediately after mounting.

[0008] According to another aspect of the invention, said support body (3) is said supply tube. Thereby, the supply tube itself is held stably by the fastening of the fire hose support to a structure, minimizing the risk for damages to the supply tube or leakages due to the high fluid pressure inside the supply tube. Preferably, the fluid can be transported towards the fire through the supply tube, through a main nozzle body and to a nozzle for ejection in a desired direction. Said nozzle can also be arranged to be movable along a horizontal or vertical direction or both, thus enabling a direction of the fluid to be altered so that an efficient fire fighting operation can be achieved.

[0009] Many other advantages of the present invention will become apparent in view of the detailed description below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The invention will now be described in more detail with reference to the appended drawings, wherein:

Fig. 1 shows a perspective view of a fire hose support according to a preferred embodiment of the invention;

Fig. 2 shows a cross-sectional view of the fire hose support of Fig. 1; and

Fig. 3 shows an enlarged view of the section of Fig. 2 marked by dashed lines.

DETAILED DESCRIPTION OF THE INVENTION

[0011] Fig. 1 shows a fixable and movable fire hose support 1 according to a preferred embodiment of the invention. Said fire hose support 1 comprises a nozzle arrangement 2, a support body 3 connected thereto and a fixation arrangement 4, 5, 6 for mounting the fire hose support 1 on a structure in the vicinity of a fire. Such a structure can be a windowsill, an opening in a wall such as a doorway, a railing, pillar, pole or other element that is stable enough to hold the fire hose support 1 during operation.

[0012] The fixation arrangement 4, 5, 6 comprises a first fixation portion 4 in the form of an elongated section extending from the nozzle arrangement 2 with two support extensions 41, 42. A second fixation portion 5 is arranged perpendicular to the support body 3 and held in place by a locking mechanism 6 in such a way that said second fixation portion 5 can slide along the support body 3 so that a distance *d* between the first and second fixation portions 4, 5 can be increased or decreased, but can also be fixed in relation to the support body 3 by use of the locking mechanism 6 so that said distance *d* is fixed.

[0013] The support body 3 is preferably a hollow body with an end section 31 suitable for connection to a fire hose in such a way that a fluid can flow from said fire hose and into said support body 3 by way of the end section 31 and further along into the nozzle arrangement, as will be described in more detail further below. Preferably, said end section 31 is equipped with a swivel so that the fire hose that can be attached thereto and the fire hose support 1 can swivel independently from each other.

[0014] The locking mechanism 6 comprises a lever 61 and a transversal locking agent 62 that is arranged to pivot around a point on the second fixation portion 5 and to engage transversally with the lever 61 as will also be described further below with reference to Fig. 2 and 3. Holding means 64 are also provided around the support body 3 to fasten the second fixation portion 5 and prevent a movement perpendicular to said support body 3. The second fixation portion 5 and lever 61 are fixably attached to the holding means 64 which thereby also provide a counteracting force, allowing the lever 61 to pivot around a point 65 and together with the holding means 64 press against a circumference of the support body 3.

[0015] In Fig. 2, a cross-section of the fire hose support 1 of Fig. 1 can be seen, showing a hollow section 32 of the support body 3 extending along the entire length of said support body 3. At a connection to the nozzle arrangement 2, the support body 3 is connected to a main nozzle body 20 onto which at least one but preferably a number of nozzles 21 are mounted. An upper nozzle 22 can also be mounted on an upper section of said main nozzle body 20. During use as a fire fighting tool, a fluid can be transported through the end section 31, into the hollow section 32 and further to an interior of the nozzle

body 20 to be divided there between the nozzles 21, 22 and ejected in a desired direction. Preferably, said nozzles 21, 22 are aimed in different directions so that a larger area can be subjected to the fluid during use. In a particularly advantageous embodiment, the upper nozzle 22 is arranged to be movable along a horizontal or vertical axis or a combination of both, with a range of movement of at least 90° in a vertical direction from a horizontal starting point and at least 180° in a horizontal direction from a direction pointing directly away from the support body 3, so that said upper nozzle 22 can swivel and be aimed in different directions as desired. The adjustment of the upper nozzle 22 can be performed manually before or after mounting of the fire hose support 1, and the upper nozzle 22 locked in a preferred direction by a nozzle locking arrangement that may be similar to the locking mechanism 6 or be of a different type. During operation, a fire fighter can approach the fire hose support 1 and alter the direction of the upper nozzle 22 by unlocking the nozzle locking arrangement, turning the upper nozzle 22 in a new direction and locking said nozzle locking arrangement again. The fire fighter can then leave the vicinity of the fire hose support 1 and avoid exposure to the hazardous environment near the fire. It would of course also be possible to keep the upper nozzle 22 locked in the same direction for the entire duration of the fire fighting operation, depending on requirements at the particular site. The upper nozzle 22 can also be adjusted to provide a thinner or wider flow of water and can alternatively also be turned off to allow the other nozzles 21 to perform the fire fighting operation alone. The nozzles 21 can also be turned on or off and their spray of water can be adjusted to give a thinner or wider flow, similar to the adjustments possible to the nozzle of a conventional hand-held fireman's nozzle. Each nozzle 21 can be adjusted individually

[0016] The locking mechanism 6 comprises a toothed rack 33 mounted on a lower side of the support body 3 and is engaged by a toothed section 63 of the lever 61 to fix the second fixation portion 5 in relation to the support body 3, as also shown in Fig. 3. The toothed section 63 comprises a flat section 63' so that an engaging of the toothed section 63 and the toothed rack 33 can be avoided by lifting the lever 61 towards the support body 3 and thereby allow a sliding motion of the second fixation body 5 along the support body 3.

[0017] The operation of the fixable and movable fire hose support 1 will now be described in detail with reference to the Figures.

[0018] In a situation where a fire fighting operation is necessary and when it is deemed unsuitable for a person to stand close enough to a fire for a longer period of time, the fire hose support 1 of the invention can be mounted in the vicinity of the fire and used to extinguish said fire without the need for a person to be present.

[0019] In order to mount the fire hose support 1, a person transports said support 1, for instance by carrying it, to a suitable structure near the fire. If the fire is located

inside a building, such a structure can be a wall, a window or a railing, for instance. The fire hose support 1 is placed onto the structure in such a way that at least a portion of said structure is located between the first fixation portion 4 and the second fixation portion 5, and by lifting the lever 61 towards the support body 3, the second fixation portion 5 is allowed to move slide ably towards the first fixation portion 4 to decrease the distance d as much as possible. Thereby, the portion of the structure is trapped between the support extensions 41, 42 of the first fixation portion 4 on the one hand and a support 51 of the second fixation portion 5.

[0020] In this position, the lever 61 of the locking mechanism 6 is pushed down towards the second fixation portion 5 so that the toothed section 63 engages with the toothed rack 33. Through this motion, the second fixation portion 5 is pushed further towards the first fixation portion 4 to press firmly against the structure placed between them and prevent the fire hose support 1 from moving in relation to said structure. The lever 61 is locked in place by the transversal locking agent 62 being pivoted away from the support body 3 so that a protrusion 61' is inserted into an indentation 62', resulting in the lever 61 being unable to move in relation to the second fixation portion 5. Thanks to the engaging of the toothed section 63 and the toothed rack 33 and of the holding means 64 enveloping the support body 3, the second fixation portion 5 is also fixed in relation to the support body 3, thus securing the structure between the first and second fixation portion 4, 5. The locking agent 62 can be equipped with spring means such as a traction spring, for instance, for facilitating unlocking of the locking means 6, so that the locking agent 62 is released and can pivot away from the lever 61 by manually moving said lever 61 in order to unlock.

[0021] Thanks to the second fixation portion being slide ably arranged in relation to the support body 3 and of the locking mechanism 6 utilizing a lever 61 with a locking agent 62 in the manner described above, the decreasing of the distance d to squeeze the structure between the first and second fixation portions 4, 5 and the subsequent locking of the fire hose support 1 can be performed in a very quick and reliable way, generally taking only a few seconds. The entire process can be effected in two steps, firstly by gripping the lever 61, lifting it towards the support body 3 and pushing in the direction of the first fixation portion 4 to minimize the distance d , and secondly by pushing the lever 61 down towards the second fixation portion 5 and locking it in place by lowering the transversal locking agent 62 until the protrusion 61' and the indentation 62' engage.

[0022] Thanks to the simplicity of the mounting, the process can also be carried out by a single person in an environment of low visibility, such as a room filled with smoke or gas, and require so short a time that damages to that person can be minimized.

[0023] A supply hose can be attached to the end section 31 before mounting of the fire hose support 1, allow-

ing the support body 3 to act as a supply tube, so that no further operation is required after mounting to make the fire hose support 1 operational. Water can thus be ejected through the nozzles 21 as soon as the locking mechanism 6 is secured, thereby allowing for a swift and efficient fire fighting operation. Thanks to the swivelling nozzles 21, a large area can be covered in water, extinguishing the fire in an efficient manner.

[0024] The fire hose support 1 can be moved to a new location as desired and thereby allowing for a versatile fire fighting operation with minimal risk of damages to the personnel involved.

[0025] In another embodiment, the fixation arrangement 4, 5, 6 can be arranged so that it is the first fixation portion 4 that moves in relation to the second fixation portion 5, or that they both move simultaneously. The supply hose or supply tube can alternatively be attached to the main nozzle body 20 directly, allowing the support body 3 to be a solid body to provide extra stability and strength to the fire hose support 1. Many other variations to the construction can be envisaged within the scope of the appended claims, as will be readily understood by the person skilled in the art.

Claims

1. A fixable and movable fire hose support (1), comprising a nozzle arrangement (2), a support body (3) that is connected to said nozzle arrangement (2), and a fixation arrangement (4, 5, 6) comprising a first fixation portion (4) arranged at said nozzle arrangement (2) or adjacent one first end of said support body (3) and a second fixation portion (5) arranged at a distance from said first end of said support body (3) and a locking mechanism (6) for locking into place onto said support body (3) at least one of said first and second fixation portions (4, 5), wherein at least one of said first and second fixation portions (4, 5) is slide ably arranged onto said support body (3) so that a distance (d) between said first and second fixation portions (4, 5) can be decreased.
2. A fire hose support according to claim 1, wherein said nozzle arrangement (2) is connected to a supply tube for supplying a fluid to said nozzle arrangement (2).
3. A fire hose support according to claim 2, wherein said support body (3) is said supply tube.
4. A fire hose support according to any of the previous claims, wherein said nozzle arrangement (2) comprises a main nozzle body (20) connected to said supply tube and at least one nozzle (21) connected to said main nozzle body (20) so that a fluid can be conveyed from the supply tube, through the main nozzle body (20) and to said at least one nozzle (21).

5. A fire hose support according to claim 4, wherein said at least one nozzle (21) is arranged to swivel.

6. A fire hose support according to any of the previous claims, wherein said locking mechanism (6) comprises a lever (61) with a toothed section (63) that is arranged to engage a corresponding toothed rack (33) of the support body (3) for pressing one of the first or second fixation portion (4, 5) towards the other, and wherein said locking mechanism (6) further comprises a locking agent (62) for locking said lever (61) in relation to said support body (3).

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7. Method for fixation of a movable fire hose support (1), comprising the steps of providing a nozzle arrangement (2), a support body (3) that is connected to said nozzle arrangement (2), and a fixation arrangement (4, 5, 6) comprising a first fixation portion (4) arranged at said nozzle arrangement (2) or adjacent one first end of said support body (3) providing a second fixation portion (5) at a distance from said first end of said support body (3) and a locking mechanism (6) for locking into place onto said support body (3) at least one of said first and second fixation portions (4, 5), wherein at least one of said first and second fixation portions (4, 5) is slide ably arranged onto said support body (3) to decrease a distance (d) between said first and second fixation portions (4, 5).

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8. Method according to claim 7, comprising the step of connecting said nozzle arrangement (2) to a supply tube for supplying a fluid to said nozzle arrangement (2).

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9. Method according to claim 8, providing said support body (3) to also form said supply tube.

10. Method according to any of the previous claims, providing said nozzle arrangement (2) comprising a main nozzle body (20) connected to said supply tube and at least one nozzle (21) connected to said main nozzle body (20) so that a fluid can be conveyed from the supply tube, through the main nozzle body (20) and to said at least one nozzle (21).

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11. Method according to claim 10, providing said at least one nozzle (21) to swivel.

12. Method according to any of the previous claims, providing said locking mechanism (6) comprising a lever (61) with a toothed section (63) that is arranged to engage a corresponding toothed rack (33) of the support body (3) for pressing one of the first or second fixation portion (4, 5) towards the other, and further comprising a locking agent (62) for locking said lever (61) in relation to said support body (3).

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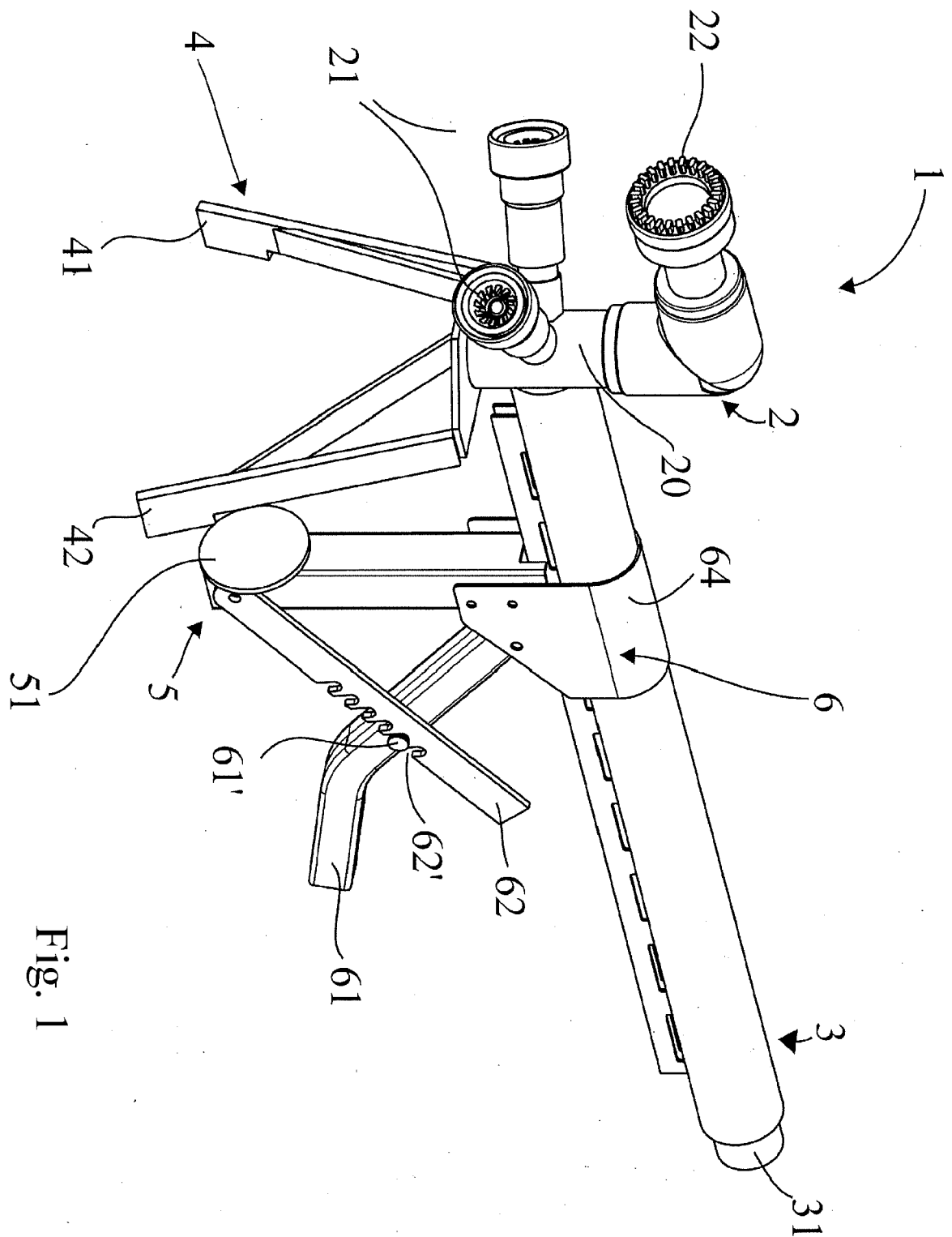


Fig. 1

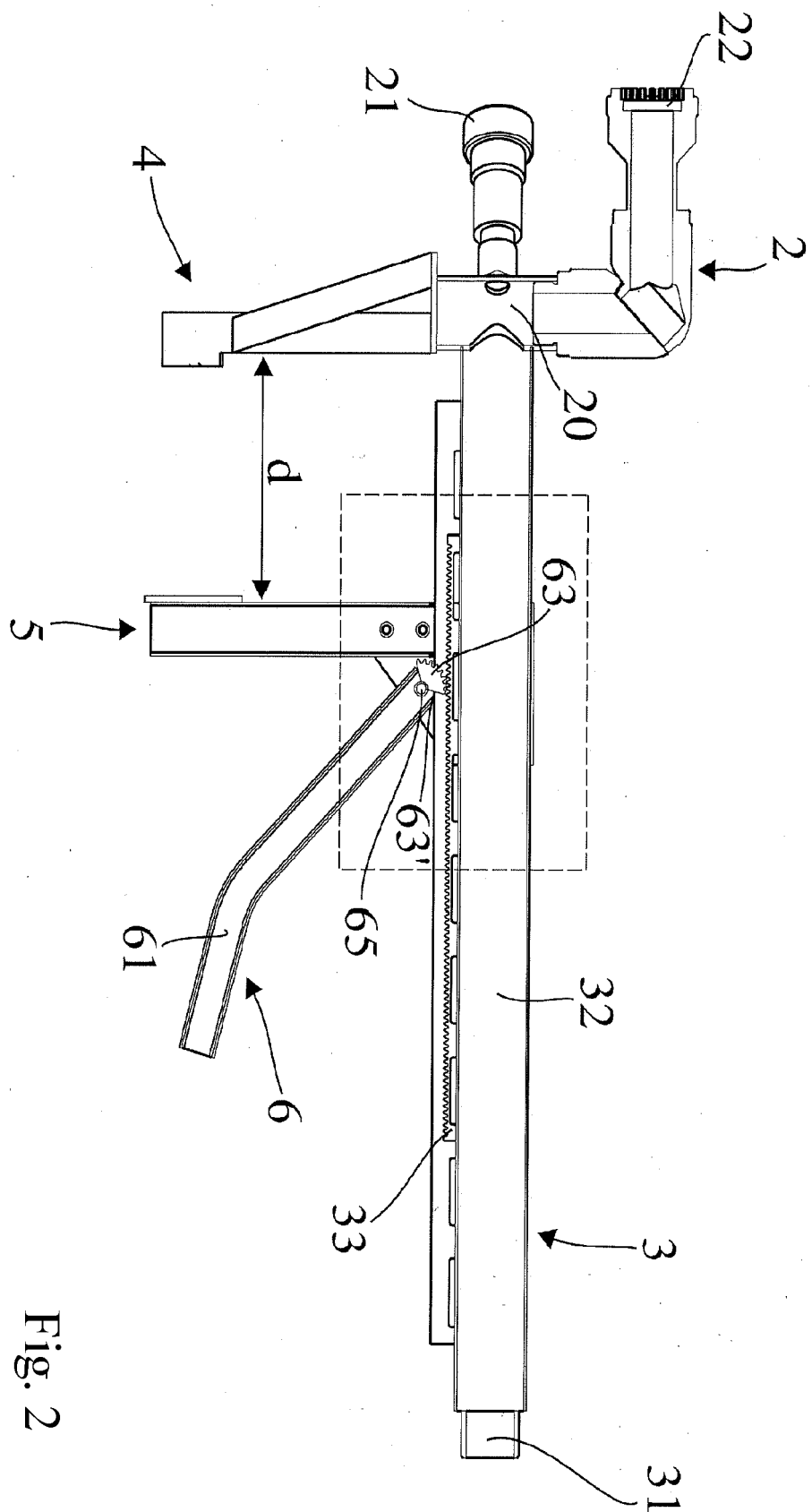
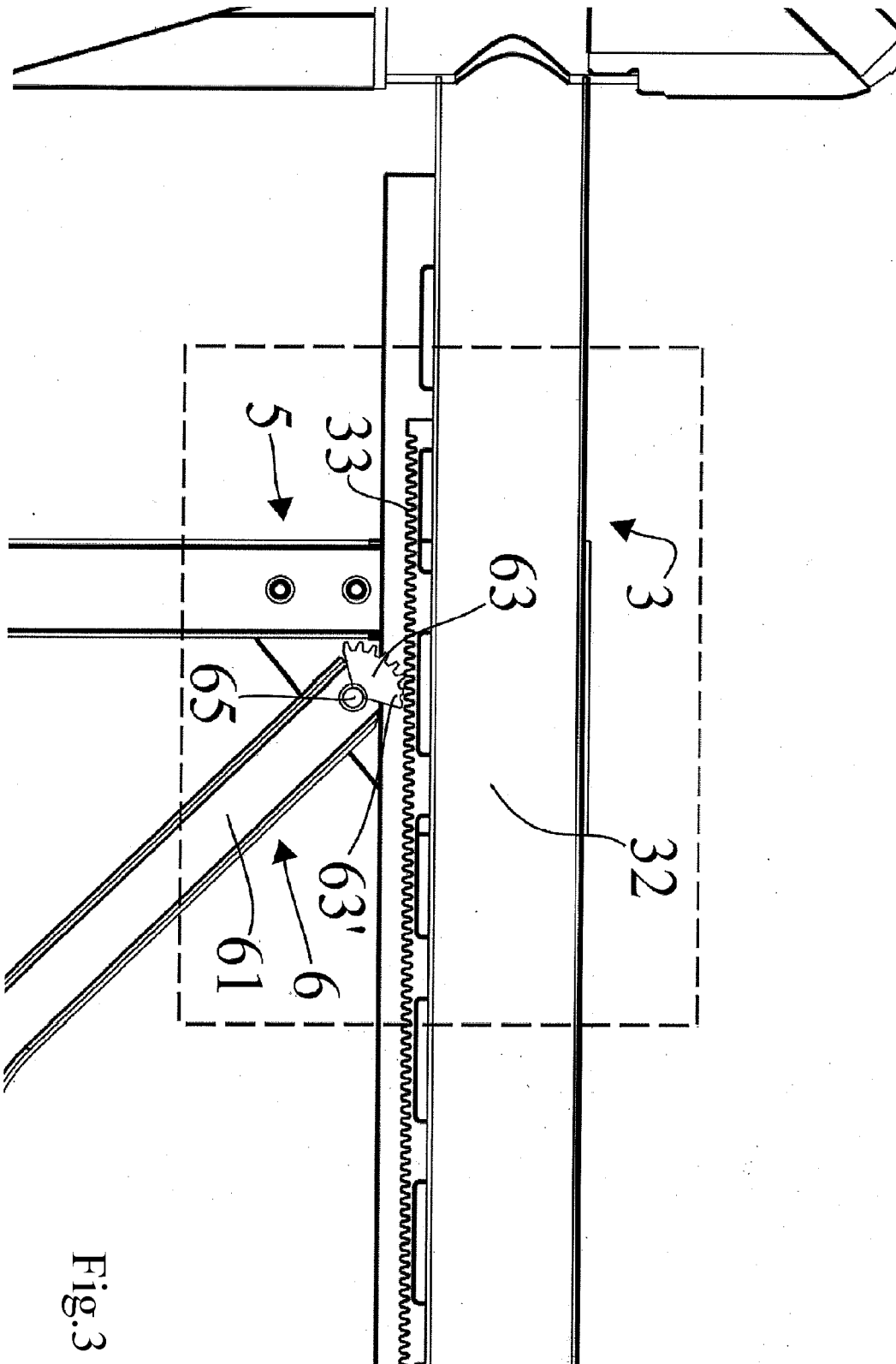


Fig. 2



REFERENCES CITED IN THE DESCRIPTION

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