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DEVICE FOR REMOVING FEED

AREA OF THE INVENTION

The invention relates to a device for removing feed from a feed store, comprising a separating unit for separating feed from the feed store, a conveyor unit for conveying separated feed material from a supply region of the conveyor unit arranged on the separating unit to a discharge region of the conveyor unit, and also a transport container provided for filling with separated feed material in a filling position in the discharge region of the conveyor unit, wherein the separating unit comprises a separating tool embodied as a milling machine, and the conveyor unit is embodied as a fan, wherein the supply region is embodied as a suction opening of the fan arranged in the region of the milling machine, and the discharge region is embodied as an ejection opening of the fan arranged above the transport container in its filling position.

PRIOR ART

To feed livestock, it is necessary to remove feed, for example silage, forage, or hay from a feed store, supply it to a mixing container, and transport the separated and mixed feed to the feed alley, where the feed is discharged.

A feed transporter having a weighing unit is disclosed in DE 201 05 747 U1, wherein it comprises a mixing chamber and a receiving device, using which feed is separated and introduced into the mixing chamber, preferably on flat silos.

EP 1 712 123 B1 discloses a device for removing and processing silage for cattle comprising a receiving device, which consists of a cutting plate arranged on a rotating arm, and a container for removed silage.

A feed transporter is disclosed in DE 10 2014 116 882 A1, which essentially comprises a mixing container, a receiving device, a dispensing device for silage, and a weighing unit for the silage to be received.

Further devices for removing feed were described in WO 2017/069614 A1, NL 2 015 654 B1, DE 198 55 082 A1, US 2 877 057 A, DE 22 25 73 A1, DE 25 14 308 A1, and DE 28 09 928 A1.

One disadvantage of the known devices, however, is that heaps of feed which collect on the floor in front of the cutting face of the feed store due to the disintegration losses arising during the separation cannot be reached and accommodated by the conveyor unit. Particularly jagged cutting faces tend toward disintegration, so that frequently easily spoiling feed collects on the floor in front of the cutting face, which, on the one hand, makes it difficult to keep the floor surface of the feed store clean and, on the other hand, causes feed losses to increase.

OBJECT OF THE INVENTION

It is therefore the object of the invention to propose a device for removing feed from a feed store, which overcomes the disadvantages of the prior art and reduces feed losses and also makes it easier to keep the floor surface of the feed store clean.

DESCRIPTION OF THE INVENTION

This object is achieved by the features of Claim 1. Claim 1 relates to a device for removing feed from a feed store, comprising a separating unit for separating feed from the feed store, a conveyor unit for conveying separated feed material from a supply region of the conveyor unit arranged on the separating unit to a discharge region of the conveyor unit, and also a transport container provided for filling with separated feed material in a filling position in the discharge region of the conveyor unit, wherein the separating unit comprises a separating tool embodied as a milling machine, and the conveyor unit is embodied as a fan, wherein the supply region is embodied as a suction opening of the fan arranged in the region of the milling machine, and the discharge region is embodied as an ejection opening of the fan arranged above the transport container in its filling position. According to the invention, it is proposed for this purpose that the transport container is embodied as a self-propelled wagon movable independently of the separating unit, which is also embodied as a mixing container having a mixer for the received

feed and includes a weighing unit or volume monitor which monitors the quantity of the received feed.

The device according to the invention for removing feed from a feed store may be summarized as follows: While the milling machine separates the feed, the transport container is located in a predetermined filling position, which can be located inside the feed store or outside the feed store. To fill the transport container, the transport container first assumes a filling position, wherein the separating unit is activated after reaching the filling position. During the filling, it is necessary to move the separating tool, wherein different conveyor distances between the separating tool and the transport container have to be managed in a conventional manner with the aid of complex conveyor units. One possibility for simplifying the conveyor unit is to track the transport container while the supply region remains the same, or to track the supply region while the discharge region remains the same. According to the invention, with unmoving ejection opening, the suction opening of the fan arranged in the region of the milling machine can be tracked with the milling machine, since different conveyor distances can be effectuated easily with the aid of a fan. The use of a milling machine ensures here that the feed is pulverized appropriately during the separation from the feed store, in order to subsequently be able to transport it in the airflow of a fan.

The separated feed material is carefully conveyed in the further process with the aid of the fan from the region of a cutting face into the transport container. The separated feed material is thus loosened and ventilated by the transport in the airflow, which increases the digestibility for the cattle. In addition, the fan can also suction up feed material which has fallen on the floor as the milling machine approaches the vicinity of the floor, whereby disintegration losses are significantly reduced, and it is made easier to keep the floor surface of the feed store clean. After ending the filling, which can be performed, for example, by a control unit according to the specification of a required material quality of separated silage in cooperation with a weighing unit of the transport container, the milling machine stops, and the transport container can be moved to the feeding points.

According to the invention, the transport container is embodied as a movable, self-propelled wagon, wherein for a navigation of the transport container for lane guidance, for example, guide wires, induction loops, magnets, cameras, laser sensors or ultrasonic sensors, or position determination systems, for example GPS, can be used. Since an unchanged filling position in spite of moving separating unit is enabled according to the invention, the transport container solely has to approach a predetermined filling position, for example below the ejection opening of the fan. The transport container is also embodied as a mixing container having a mixer for the received feed, wherein the quantity is monitored by means of a weighing unit or a volume monitor. The transport container furthermore has a discharge device, via which the received feed can be deposited, for example, in a feed alley at the location of the feed supply in a metered manner. After the filling process, the transport container can again move autonomously independently of the separating unit. Since the separating unit and the conveyor unit can remain at the feed store, however, any component which has to be moved to the location of the discharge, namely the transport container, can be embodied as small and compact and above all having significantly lower weight. The transport container essentially only comprises the mixing chamber for the separated feed and possible mixing and weighing units, and also further control and drive units having the corresponding sensors. In this way, the transport container can also easily be equipped with an electrical drive to avoid noise and exhaust gas emissions. Of course, the separating unit can also be equipped with an electrical drive for its movement relative to the feed store, since the movement distances of the separating unit are comparatively short.

In one preferred embodiment, the milling machine is arranged on a movable framework, so that the milling machine can move with the aid of the movable framework relative to the feed store and can thus assume different positions to separate the feed.

The framework preferably comprises a first framework part and a second framework part, wherein the milling machine is guided so it is vertically movable on the first framework part, and the first framework part is guided so it is horizontally movable on the second framework part. The framework of the separating tool thus comprises a vertical structure in the form of the first framework part, and a horizontal bottom part in the form of the second framework part. With the aid of the first framework part, the separating tool can autonomously remove vertical tracks, for

example beginning from the upper to the lower edge of silage, and can then be displaced with the aid of the second framework part in the transverse direction in order to remove an adjacent vertical track of silage.

The second framework part is furthermore preferably horizontally movable in a movement direction of the separating tool perpendicular to the vertical and perpendicular to the horizontal movement direction of the first framework tool, for example with the aid of rollers or wheels. With the aid of the two framework parts, the separating tool can thus be moved in a direction oriented perpendicular to the movement plane of the separating tool, for example, to enable a mobility in the longitudinal direction of a flat silo.

In one preferred embodiment variant of the device according to the invention for removing feed, it is moreover provided that the fan comprises a flexible hose, which connects the suction opening to the ejection opening. The flexibility of the hose can, for example, compensate for movements of the framework and the milling machine when the ejection opening is fixed, wherein a continuous transport of the separated feed material from the vicinity of the milling machine into the transport container is ensured independently of the position of the milling machine.

In one preferred embodiment variant of the device according to the invention for removing feed, it can furthermore be provided that a support unit arranged in the circumferential region of the milling machine is provided for limiting the cutting depth. The support unit protects, for example, during the separation of silage, the milling machine from “eating into” the silage, which could result in undesired stopping of the milling process.

In a further preferred embodiment variant, the milling machine comprises a power sensor for detecting the consumed power. The power sensor is thus used for monitoring and regulating the advancing speed of the milling machine. For example, if an increase of the power of the milling machine occurs, the advancing speed is reduced until the power setpoint value of the milling machine is reached. If the power value of the milling machine should drop, the advancing speed increases accordingly. This control is also assumed by the control unit.

Moreover, it is proposed that the movable framework is provided with a winding unit for a cover film covering the feed store. In order to protect the feed from environmental influences such as wind or rain, the feed store is generally covered by a tarpaulin, preferably a silo cover tarpaulin, or also multiple tarpaulins, which can also be spanned by a net in order to protect the tarpaulins from damage by birds. These tarpaulins are/This tarpaulin is also used to seal the feed airtight in order to enable the fermentation process. In order to fasten the film, weighting it down using sandbags arranged distributed in lines is known. In order to be able to remove feed from the feed store, first all sandbags have to be removed in the section of the movable silo to be exposed. The film is then manually turned over or rolled up section by section in the direction of the stored feed not to be exposed in order to expose feed. In general, depending on the width of the movable silo, the aid of a second person is generally necessary for this process, wherein it is also sometimes necessary to climb on the feed store. Since this process proves to be extremely work-intensive and sometimes a long period is required for turning over or winding up the film, in general a larger section of the feed is exposed and is to be removed at one time. The remaining exposed section of the feed is generally not covered again after the completed removal because of the great effort and is accordingly no longer protected from weather influences. Moreover, a good seal of the edge region with the aid of correspondingly repositioned sandbags is not always ensured, whereby the quality of the feed suffers. The present invention offers the possibility of a decisive improvement due to the movable framework remaining on the feed store, in that a winding unit for a cover film covering the feed store is provided on the framework. This winding unit can be embodied so that, on the one hand, it permits sealed resting of the cover film in the still unprocessed regions of the feed store and, on the other hand, it receives and winds up the cover film in the regions of the feed store to be processed. The winding unit can also be embodied so that the received regions of the cover film stretch over the separating tool and parts of the movable framework in order in this manner to offer both the separating tool and the framework and also the exposed regions of the feed store a protection from weather influences. In simpler embodiments, in contrast, the winding unit is embodied as a roller resting on the feed store to form a seal. The winding movement of the winding unit is coupled in each case with the advancing movement of the framework into the feed store. This advancing movement takes place

automatically in the scope of the present invention, so that the advancing of the framework to be performed can also be used for the control of the winding movement of the winding unit.

The movable framework remaining on the feed store furthermore offers the option of fastening additional components in order to be able to assess the quality of the feed to be separated. It is thus proposed, for example, that the movable framework is provided with a temperature probe for contactless measurement of the feed average temperature of the feed store. The temperature probe can be coupled to a monitoring unit which monitors the measured feed average temperature and generates a warning signal if the feed average temperature exceeds a permissible value range. This is because an excessively high feed average temperature can be an indication of a quality impairment of the feed, which is vital to investigate. Of course, excessively cold feed is also not suitable for feeding animals.

Moreover, it can be provided that the movable framework is provided with a camera, which is coupled to an image analysis unit for recognizing optically visible quality deficiencies of the feed to be separated. Such an optically visible quality deficiency can be, for example, the formation of mold, which is easy to recognize by means of automated image recognition by corresponding analysis software. If a quality deficiency is recognized by the image analysis unit, a warning signal can in turn be generated. Of course, the camera is oriented on/pointed/directed at? the side of the feed store facing toward the framework and acquires this side of the feed store as a whole or at least in sections.

Furthermore, the movable framework can be provided with sensors or cameras for detecting humans or animals in the operating region of the separating unit and the conveyor unit. If the presence of humans or animals is detected, for example, a warning signal can be generated or a shutdown of the separating tool can be performed immediately. Sensors of this type increase the level of safety of the device according to the invention, which is, after all, to operate completely automatically in practical operation.

BRIEF DESCRIPTION OF THE FIGURES

The invention is explained in greater detail hereinafter on the basis of two exemplary embodiments with the aid of the appended drawings. In the figures

Figure 1 shows an axonometric illustration of an embodiment of the device according to the invention for removing feed from a flat silo,

Figure 2 shows a view of the device according to the invention from Figure 1 for removing feed from a flat silo seen from above,

Figure 3 shows a front view of the device according to the invention from Figure 1 for removing feed from a flat silo,

Figure 4 shows a side view of the device according to the invention from Figure 1 for removing feed from a flat silo, and

Figure 5 shows an axonometric illustration of a second embodiment of the device according to the invention for removing feed from a flat silo.

WAYS OF EMBODYING THE INVENTION

Figures 1 – 4 show a device according to the invention for removing feed from a feed store 1, in the exemplary embodiment shown silage, for example, wherein the feed is stored in a flat silo 2 comprising a movable bottom 13 and side walls 14. The device for removing feed comprises a separating tool embodied as a milling machine 3 for separating the silage, wherein the milling machine 3 is arranged on a framework 4. In the exemplary embodiment shown, the framework 4 comprises two parts, wherein a first framework part 19 is movably guided with the aid of rollers 9 on a second framework part 20 in the transverse direction Q of the flat silo. The second framework part 20 is in turn movable using rollers 21 in the longitudinal direction L of the flat silo 2. Both framework parts 19, 20 are driven using an electric motor.

The milling cutter 3 is guided so it is vertically movable on the first framework part 19 and comprises a power sensor for detecting the consumed power, wherein the power sensor is used for monitoring and regulating the advancing speed of the milling machine 3. The milling machine 3 can thus autonomously remove from the silage vertical tracks 10 having height H (see Figure 2), which corresponds to the height of the silage, and a width B, which corresponds to the width of the milling machine 3, beginning from the upper or the lower edge of the silage. It is recognizable in Figure 2 that the milling machine 3 in the illustrated exemplary embodiment begins on the right side of the cutting face 11 with the removal of the silage and then in the further process separates multiple tracks 10 of the silage adjacent to one another until the milling machine 3 arrives at the left side of the cutting face 11. In the further process, the milling machine 3 now separates tracks 10 of the silage adjacent to one another beginning on the left side until the milling machine 3 has in turn arrived on the right side of the cutting face 11. Alternatively, the milling machine 3 can also be moved to the right side after reaching the left side, in order to begin there with a new layer removal.

As soon the milling machine 3 has removed a track 10 of the silage as described above, the second framework part 20 moves away in the longitudinal direction L from the cutting face 11 of the silage, so that the milling machine 3 no longer touches the cutting face 11. The milling machine 3 subsequently moves with the aid of the first framework part 19 in the transverse direction Q by a distance which corresponds to the width of the milling machine 3. As soon as this position has been reached, the second framework part 20 in turn moves in the longitudinal direction L in the direction of the cutting face 11 until the milling machine 3 has reached a predetermined cutting depth and the milling machine 3 begins to remove a further track 10 of the silage.

Furthermore, the milling machine 3 comprises a support unit 12, which is arranged in the circumferential direction of the milling machine and is provided to support the milling machine 3 on the cutting face 11 of the silage. By using the support unit 12, the milling machine 3 is prevented from “eating into” the silage, which could result in undesired stopping of the milling process.

The device for removing silage 1 furthermore comprises one or more electrically operated transport containers 5 for receiving the feed material 7 separated by the milling machine 3. For example, magnetic ground markers can be used for the navigation of the transport containers 5 outside the flat silo 2. Inside the flat silo 2, the transport containers 5 navigate by means of ultrasonic and distance sensors and others capable of recognizing objects contactlessly and measuring their distance to the sensor, whereby the transport containers 5 can move autonomously inside the flat silo 2.

Moreover, the device comprises a fan for conveying the feed material 7 separated by the milling machine 3 into the transport container 5. The fan comprises a hose 6 and a suction nozzle 16, moreover it includes a suction opening 17 in the vicinity of the milling machine 3 and an ejection opening 18. The filling position of the transport container 5 is located directly below the ejection opening 18. In the present exemplary embodiment, the ejection opening 18 is rigidly connected by means of a holder 15 to the second framework part 20. The filling position thus only changes in the longitudinal direction L with progressing removal of the silage. The hose 6 is embodied to be flexible, so that the hose 6 enables the movement of the milling machine 3 along the entire width of the silage in spite of the fixed ejection opening 18. With the aid of the fan, separated feed material 7 is conveyed from the region of the cutting face 11 of the milling machine 3 via the hose 6 into the transport container 5. As soon as the milling machine 3 separates silage in the lower region of the cutting face 11, the fan also conveys, by way of the suction flow, silage lying on the floor 13, which has previously fallen during the separation of the silage by the milling machine 3 onto the floor 13, into the transport container 5, whereby disintegration losses are avoided and the floor 13 is kept clean.

A new autonomous feeding sequence begins in that the transport container 5 navigates by means of the above-described magnetic ground marker to the flat silo 2. As soon as the transport container 5 is located in front of the flat silo 2, for example in a predetermined waiting position, the transport container 5 transmits a report signal via a signal or data connection to the separating unit or a monitoring unit associated with it, which checks in the further process whether the transport container 5 is permitted to enter the flat silo 2. If the separating unit or a monitoring unit associated with it grants a release, since presently no other transport container 5 is in the

filling position, the transport container 5 enters the flat silo 2. If another transport container 5 is in the filling position, the requesting transport container thus receives a wait command from the separating unit or a monitoring unit associated with it and remains in its waiting position in front of the flat silo 2 until the other transport container 5 is been filled with separated feed 7 and has left the flat silo 2. As soon the waiting transport container 5 receives the travel command from the separating unit or a monitoring unit associated with it, it drives into the flat silo 2 and navigates by means of the above-described ultrasonic and distance sensors to the filling position, which is located below the ejection opening 18 connected rigidly to the second framework part 20.

As soon as the transport container 5 reaches the filling position, the transport container transmits a start signal to the separating unit, whereupon the milling machine 3 is activated and the second framework part 20 moves in the longitudinal direction L in the direction of the cutting face 11, until the milling machine 3 has reached a predetermined cutting depth. The milling machine 3 begins to separate the silage and the transport container 5 is filled with separated feed material 7 with the aid of the fan, wherein the amount of the separated feed material 7 is monitored by means of a weighing unit. After the transport container 5 has been filled as predetermined, the weighing unit transmits a stop signal to the separating unit, so that the milling machine 3 ends the separation of the silage. The milling machine 3 is thereupon moved away from the cutting face 11 by the second framework part 20 in the longitudinal direction L and the transport container 5 leaves the filling position. With the aid of the ultrasonic and distance sensors, the transport container 5 moves out of the flat silo 2 and navigates outside the flat silo 2 with the aid of the magnetic ground marker to the feeding point.

Figure 5 shows a further exemplary embodiment of the device according to the invention for removing feed from a feed store 1, wherein the feed is also silage here, which is stored in a flat silo 2. The structure of the exemplary embodiment shown fundamentally corresponds to that of the first exemplary embodiment, however, the filling position is located at a fixed position outside the flat silo 2, wherein the ejection opening 18 of the fan is also arranged outside the flat silo 2 directly above the filling position. The ejection opening 18 is rigidly connected to a holder 15, which is also located outside the flat silo 2 and does not change its position even upon

progressing removal of the silage. The filling position therefore also does not change upon progressing removal of the silage.

Feed material 7 separated with the aid of the fan is also conveyed from the region of the cutting face 11 of the milling machine 3 via the conveyor unit 8 into the transport container 5 in the second exemplary embodiment. However, the conveyor unit 8 has to be embodied so that depending on the position of the milling machine 3 in the transverse direction Q and in the longitudinal direction L, conveyor distances of different lengths between the suction opening 17 and the ejection opening 18 can be compensated for. There are different options for this purpose, thus, for example, a corresponding flexible hose 6 having bellows-like sections can be used, so that it may be lengthened and shortened. Moreover, it would also be possible to provide the conveyor unit 8 with telescoping sections. A combination of the two above-mentioned variants would also be conceivable. The hose 6 is only schematically shown in Figure 5, so that the actual type of embodiment of the hose 6 remains open. The fan also conveys additional silage lying on the floor 13, which has previously fallen on the floor during the separation of the silage by the milling machine 3, by way of the suction flow in this exemplary embodiment, as soon the milling machine 3 separates silage in the lower region of the cutting face 11 into the transport container 5, whereby disintegration losses are avoided and the floor 13 is kept clean.

In this exemplary embodiment, a new autonomous feeding sequence begins in that the transport container 5 navigates by means of the above-described magnetic ground marker to a waiting position outside the flat silo 2. As soon as it is located in the predetermined waiting position, the transport container 5 transmits a report signal via a signal or data connection to the separating unit or a monitoring unit associated with it, which checks in the further process whether the transport container 5 is permitted to travel further to the filling position, which, as described above, is also located outside the flat silo 2. If the separating unit or a monitoring unit associated with it grants a release, since presently no other transport container 5 is in the filling position, the transport container 5 travels to the filling position. If another transport container 5 should already be located in the filling position, the requesting transport container 5 thus receives a waiting command from the separating unit or a monitoring unit associated with it and remains in the waiting position until the other transport container 5 has been filled with separated feed 7 and has

left the filling position. As soon as the waiting transport container 5 receives the travel command from the separating unit or a monitoring unit associated with it, it travels to the filling position. When the transport container reaches the filling position, the filling of the transport container 5 starts as described in the first exemplary embodiment. It could certainly also be provided that the transport container 5 directly approaches the filling position below the ejection opening 18, for example if only one transport container 5 is used.

The invention thus provides a device for removing feed from a feed store which reduces feed losses and makes it easier to keep the floor surface of the feed store clean. Moreover, the separated feed material 7 is loosened and ventilated by the transport in the airflow, which enhances the attractiveness to the cattle.

LIST OF REFERENCE SIGNS

1	feed store
2	flat silo
3	milling machine
4	framework
5	transport container
6	hose
7	separated feed material
8	conveyor unit
9	rollers of the first framework part
10	vertical track
11	cutting face
12	support unit
13	floor
14	side walls
15	holder
16	suction nozzle
17	suction opening
18	ejection opening
18	first framework part
20	second framework part
21	rollers of the second framework part
L	longitudinal direction
Q	transverse direction
H	height
B	width

Patentkrav

1. Indretning til udtagning af foder fra et foderlager (1), omfattende en separationsindretning til separation af foder fra foderlageret (1), en transportindretning (8) til transport af frasepareret fodermateriale (7) fra et forsyningsområde af transportindretningen (8), der er anbragt på separationsindretningen, til et afgivelsesområde af transportindretningen (8), samt en transportbeholder (5), der er beregnet til fyldning med frasepareret fodermateriale (7) i en fyldningsposition i transportindretningens afgivelsesområde, hvor separationsindretningen omfatter et separationsværktøj, der er udført som fræser (3), og transportindretningen (8) er udformet som en blæser, hvor forsyningsområdet er udformet som en indsugningsåbning (17) af blæseren, der er anbragt i området ved fræseren (3), og afgivelsesområdet er udformet som en udtømningsåbning (18) af blæseren, der er anbragt oven over transportbeholderen (5) i dens fyldningsposition, **kendetegnet ved, at** transportbeholderen (5) er udformet som en selvkørende vogn, som kan køres uafhængigt af separationsindretningen, og som samtidig er udformet som en blandebeholder med en blander til det optagne foder og har en vejningsindretning eller volumenkontrol, som overvåger mængden af det optagne foder.

2. Indretning til udtagning af foder ifølge krav 1,
kendetegnet ved, at fræseren (3) er anbragt på et bevægeligt gitter (4).

3. Indretning til udtagning af foder ifølge krav 2,
kendetegnet ved, at gitteret (4) omfatter en første gitterdel (19) samt en anden gitterdel (20), hvor fræseren (3) er ført vertikalt bevægelig på den første gitterdel (19), og den første gitterdel (19) er ført horisontalt bevægelig på den anden gitterdel (20).

4. Indretning til udtagning af foder ifølge krav 3,
kendetegnet ved, at den anden gitterdel (20) er horisontalt bevægelig i en bevægelsesretning, der er vinkelret på fræserens (3) vertikale bevægelsesretning og vinkelret på den horisontale bevægelsesretning af den første gitterdel (19).

5. Indretning til udtagning af foder ifølge et af kravene 1 til 4, **kendetegnet ved, at** blæseren omfatter en fleksibel slange (6), som forbinder indsugningsåbningen (17) med udtømningsåbningen (18).

6. Indretning til udtagning af foder ifølge et af kravene 1 til 5, **kendetegnet ved, at** der er tilvejebragt en støtteindretning (12), der er anbragt i fræserens omkredsområde, til begrænsning af skæredybden.

7. Indretning til udtagning af foder ifølge et af kravene 1 til 6, **kendetegnet ved, at** fræseren omfatter en effektsensor til registrering af den optagne effekt.

8. Indretning ifølge et af kravene 2 til 7, **kendetegnet ved, at** det bevægelige gitter (4) er forsynet med en opviklingsindretning til en afdækningsfolie, der dækker foderlageret (1).

9. Indretning ifølge et af kravene 2 til 8, **kendetegnet ved, at** det bevægelige gitter (4) er forsynet med en temperaturføler til berøringsfri måling af foderlagerets (1) fodermiddeltemperatur.

10. Indretning ifølge et af kravene 2 til 9, **kendetegnet ved, at** det bevægelige gitter (4) er forsynet med et kamera, som er forbundet med en billedevalueringsenhed til detektering af optisk synlige kvalitetsmangler hos det foder, der skal frasepareres.

11. Indretning ifølge et af kravene 2 til 10,
kendetegnet ved, at det bevægelige gitter (4) er forsynet med sensorer eller kameraer til detektering af mennesker eller dyr i separationsindretningens og transportindretningens (8) driftsområde.

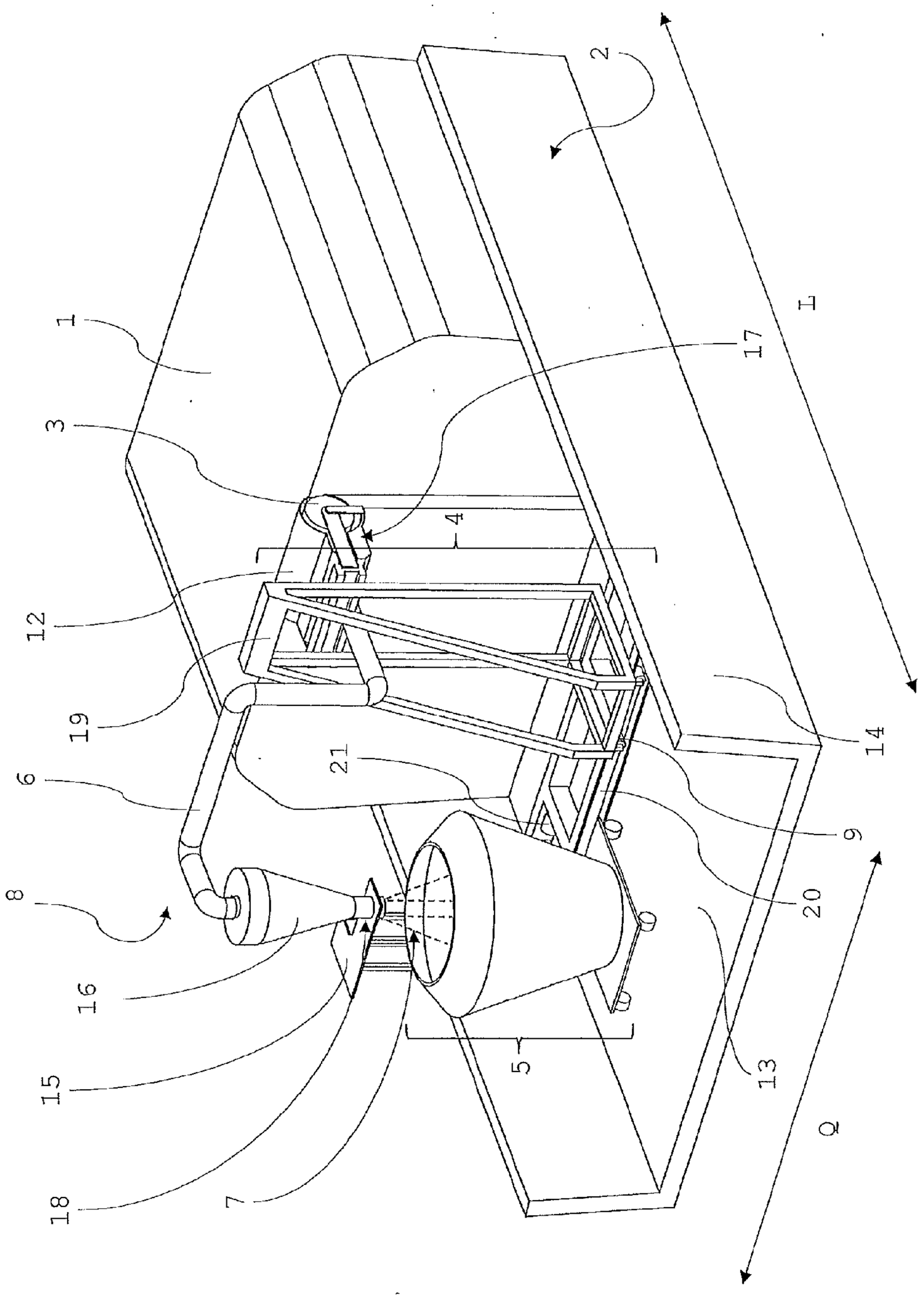

Fig. 1

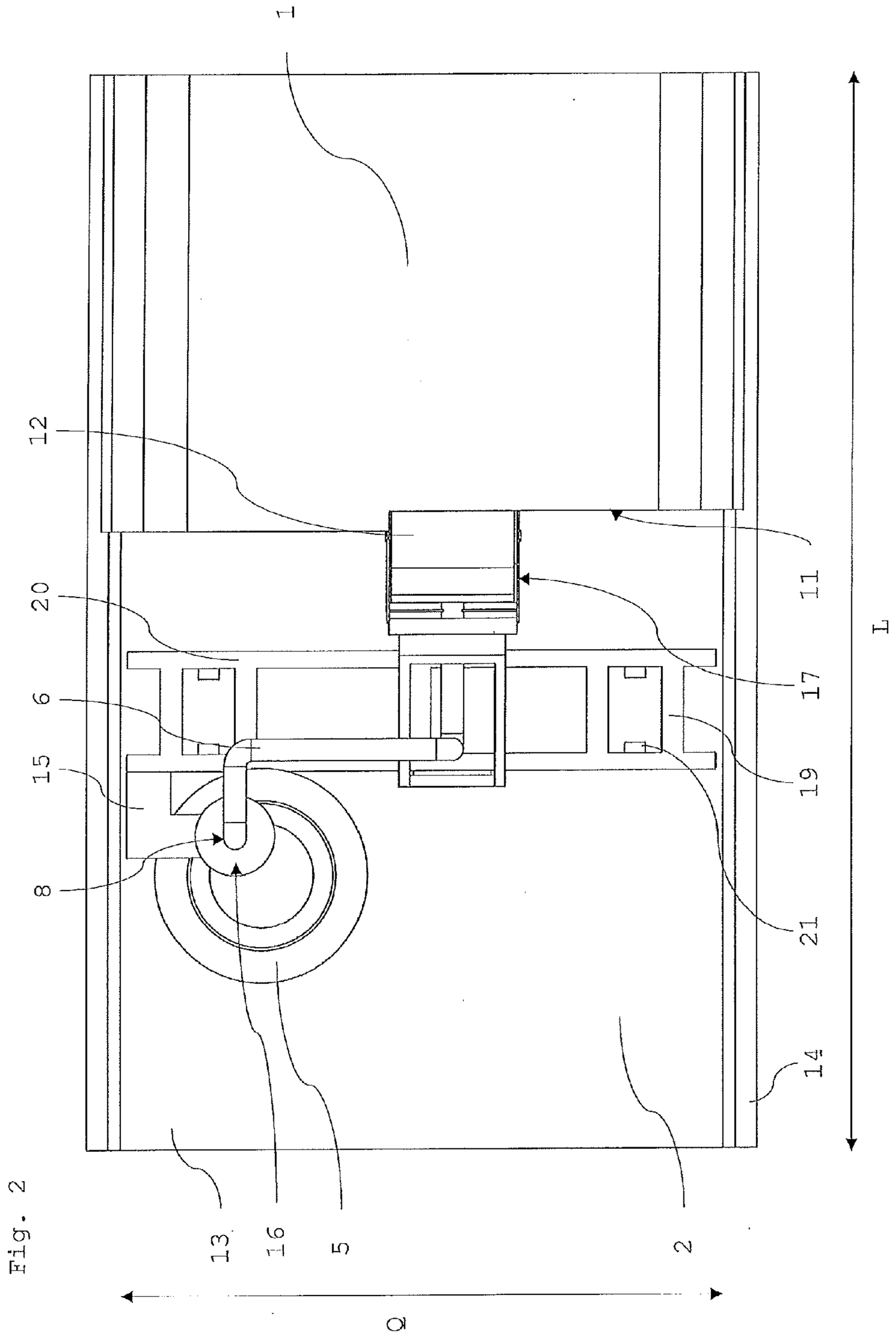

Fig. 1

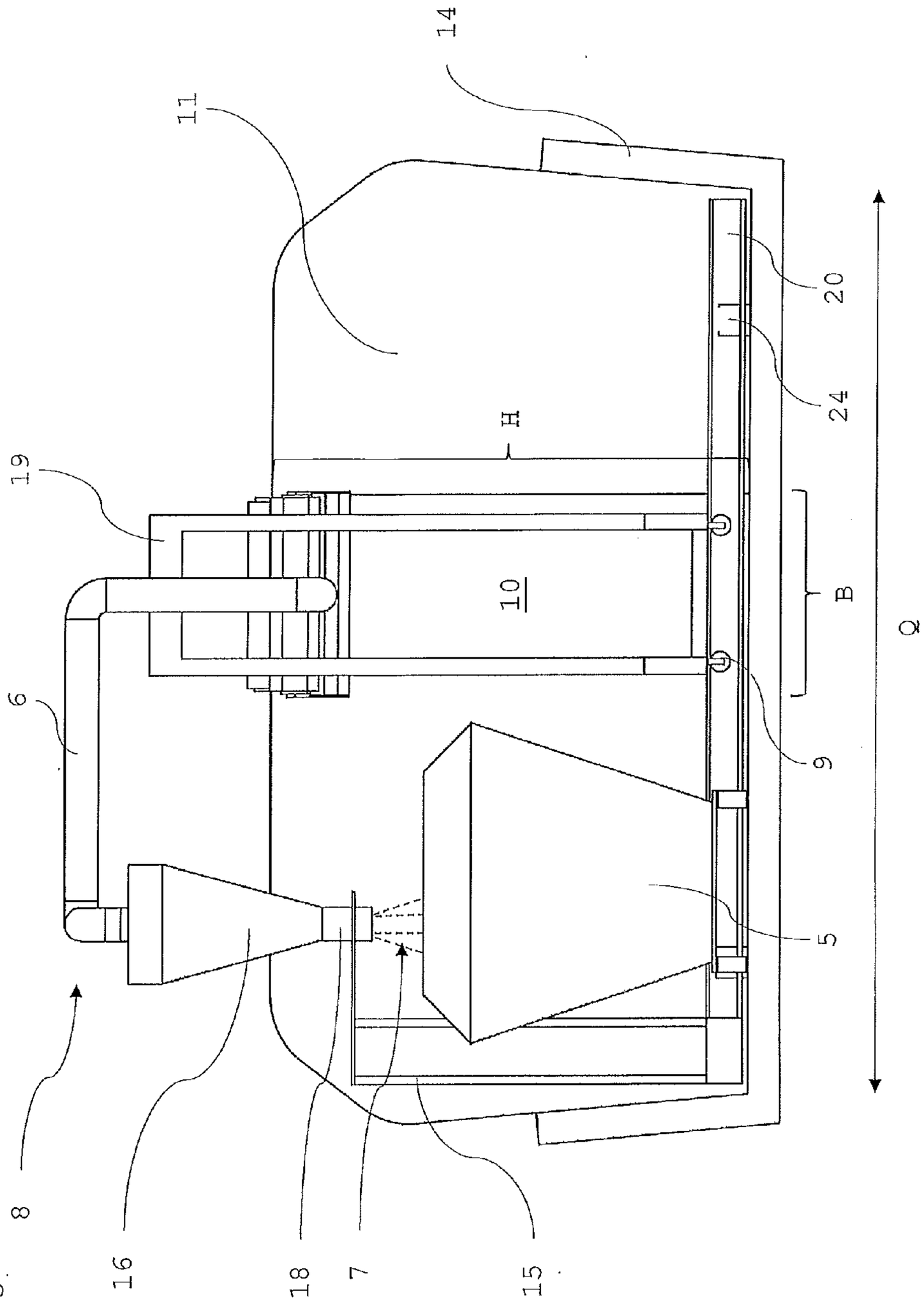

Fig. 3

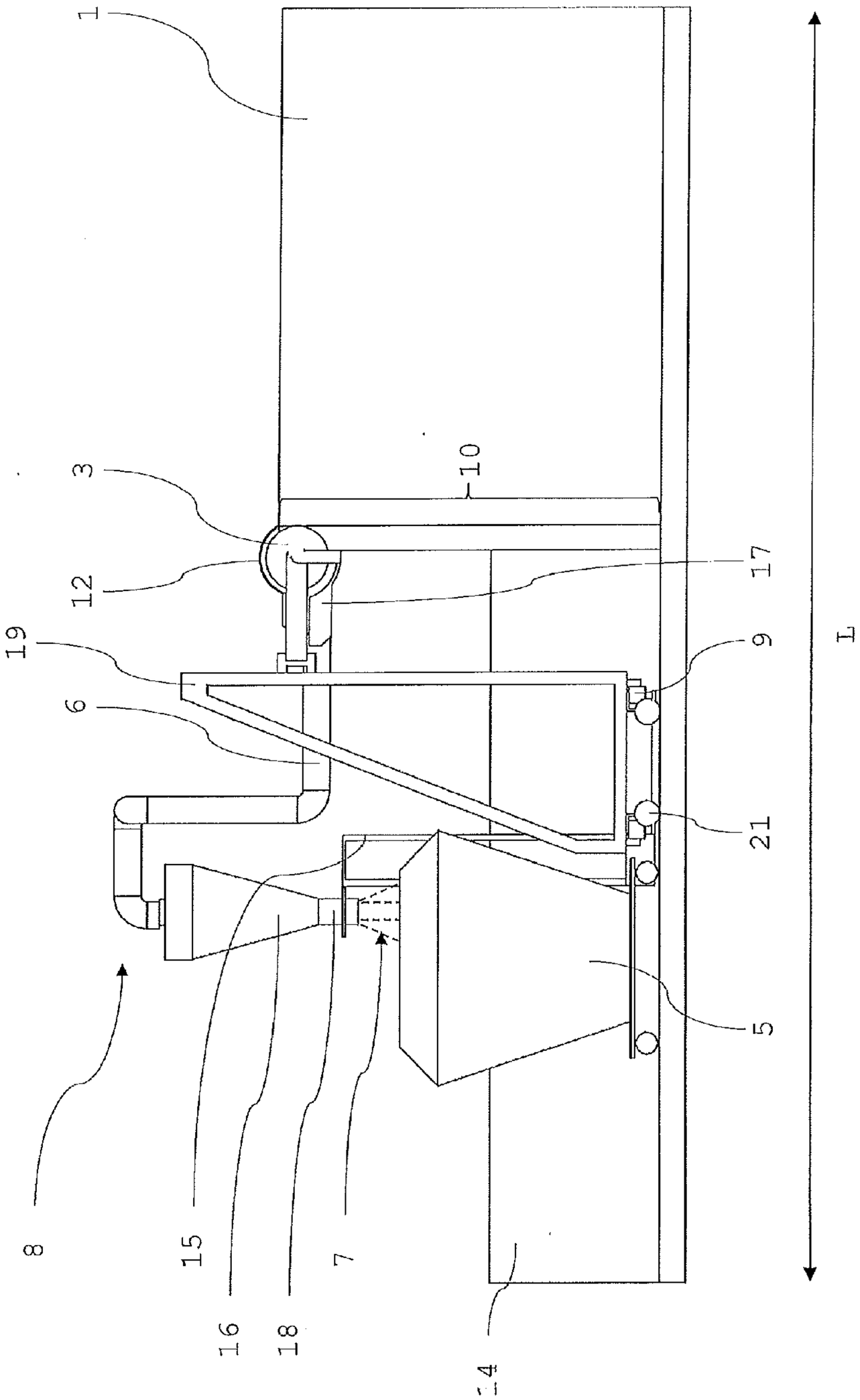

Fig.

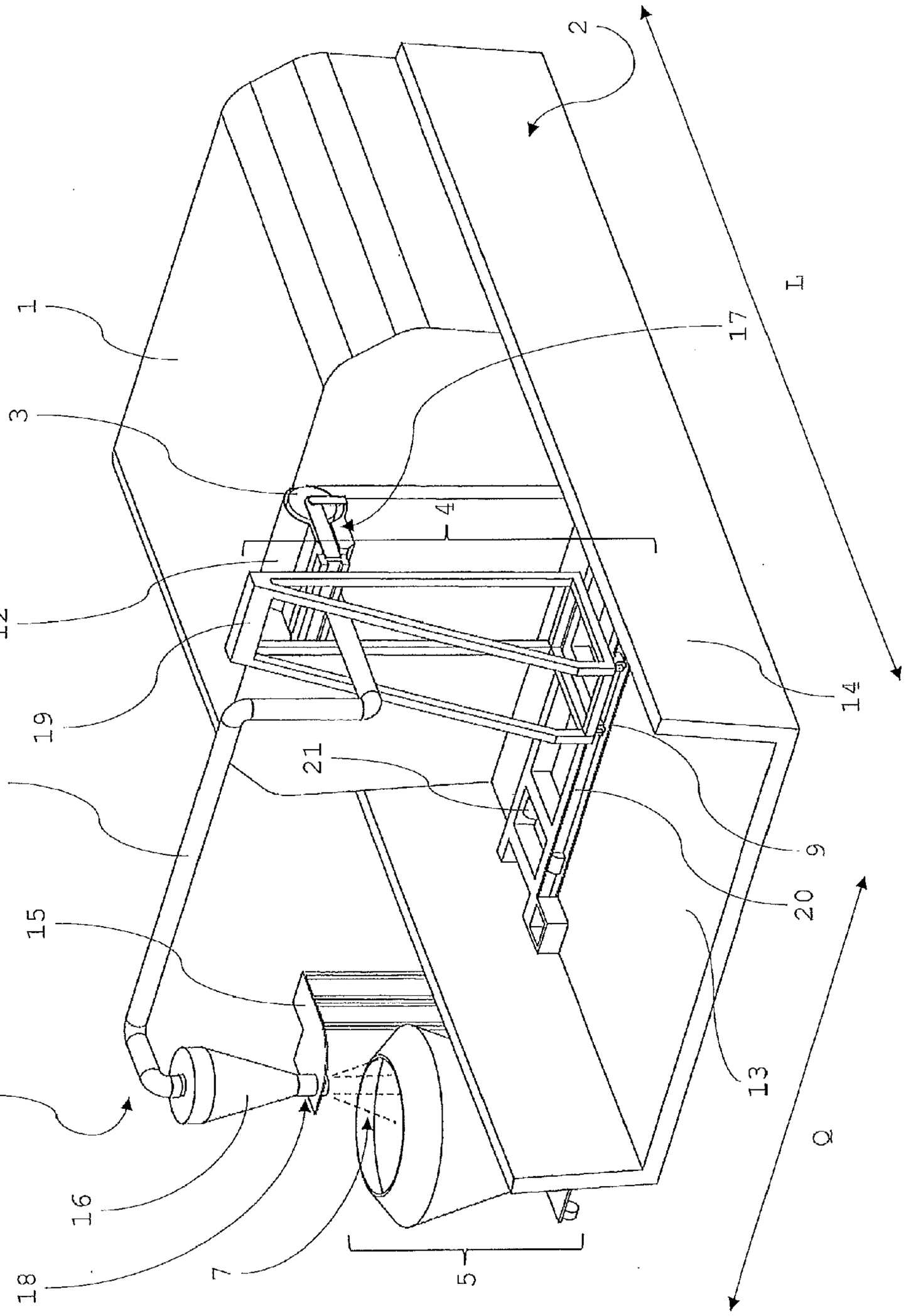

Fig. 5