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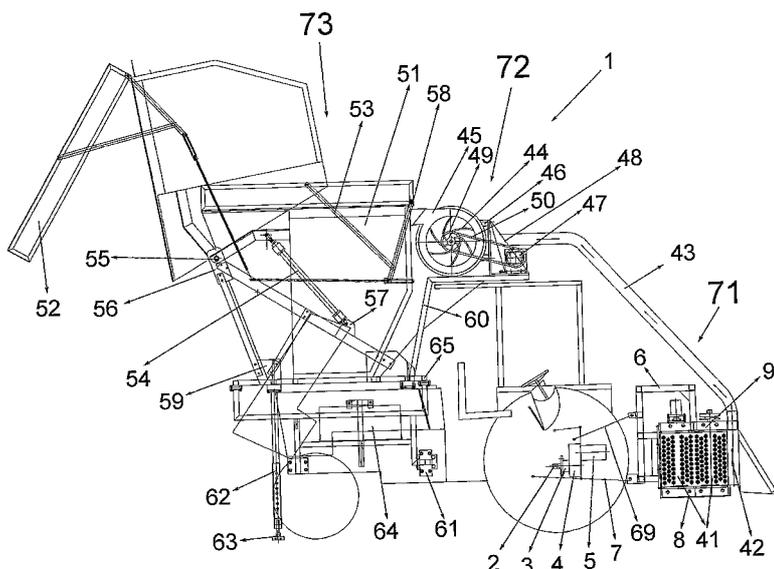
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(54) Title: A COTTON PICKING MACHINE



(57) Abstract: The present invention relates to a cotton picking machine that can be assembled to a tractor (1) having hydraulic lateral arms (7), hydraulic central arm (69), an hydraulic tank (64), and a tail pivot (2) for picking cotton fibers from opened cotton bolls; said cotton picking machine being further characterized in comprising a picking unit (71), which can be assembled to the central and lateral arms (69, 7) of said tractor (1), and which picks cotton from opened bolls in a cotton field; a storage unit (73), which stores the cotton fibers collected by means of said picking unit (71), and which provides an easy discharge of such content to transporter means, preferably such as a trailer; and at least one suction unit (72), which transfers picked cotton from the picking unit (71) to the storage unit (73).

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## A COTTON PICKING MACHINE

### Technical Field

The present invention relates to a cotton picking machine that is capable to easily remove seed cotton from opened bolls, to carry out cotton agriculture, and  
5 to pick cotton fibers in any kind of fields.

### Background of Invention

There are crop collecting machines available in the background art. Such kind of machines, however, are generally operated with a rotary-type system, wherein cotton fibers are wound on spindles around a rotating drum, and are slipped off  
10 and thus removed with the aid of rubber disks rotating on said spindles during such rotation. The most significant drawback of this system is that malign forces are encountered on fibers as they are slipped off so as to impair their structure.

Another drawback of the currently-used system is that knots or nodes are formed on fibers, since cotton fibers are removed from such spindles by means  
15 of forcing and that rubber pieces from said rubber disks employed with slipping-off purposes become tangled in said fibers during the slipping-off operation so as to reduce the product quality.

A further drawback of the currently-employed system is that rotary-type cotton picking machines can solely be operated and maneuvered in relatively large  
20 areas, regarding both their dimensional and operational criteria.

Yet a further drawback of the currently-used system is that product-losses are encountered during the picking process, since such machines have a rotary-type operation system.

Finally, the necessity towards a machine that more safely picks the cotton fibers  
25 and that minimizes the product-losses during harvesting and the inadequacy of the current solutions require developments be made in the relevant technical field.

### Brief Description of Invention

The present invention relates to a cotton picking machine that meets the

aforesaid requirements, eliminates all drawbacks, and brings some additional advantages in order to more safely collect the cotton fibers and minimize product-losses during harvesting.

5 The objective of the present invention is to produce a machine that maintains the cotton quality as high as possible during harvesting.

Another objective of the present invention is to produce a machine that carries out the picking operation by pulling and slipping off the seed cotton from opened bolls only, in place of plucking the cotton by means of a rotary-type system, while seed cotton is harvested or picked.

10 A further objective of the present invention is to produce a machine that prevents any foreign substance (rubber) to get tangled in the fibers, while the slipping-off operation.

Still a further objective of the present invention is to produce a harvesting machine that keeps product-losses in a relatively low level, while the cotton is  
15 harvested, or picked.

Yet a further objective of the present invention is to produce a cotton picking machine that picks opened seed cotton in the cotton plant without harming unopened bolls.

Another objective of the present invention is to produce a harvesting machine,  
20 wherein the picking unit, suction unit, and the storage unit are readily assembled in order to efficiently carry out the harvesting operation.

In order to realize the aforesaid advantages that shall be elaborated hereunder, the present invention provides a cotton picking machine that can be assembled to a tractor having hydraulic lateral arms, hydraulic central arm, an hydraulic  
25 tank, and a tail pivot for picking cotton fibers from opened cotton bolls; said cotton picking machine being further characterized in comprising a picking unit, which can be assembled to the central and lateral arms of said tractor and which picks cotton from opened bolls in a cotton field; a storage unit, which stores the cotton fibers collected by means of the picking unit and which  
30 discharges such content to transporter means, preferably such as a trailer; and

a suction unit, which transfers picked cotton from the picking unit to the storage unit.

5 In a preferred embodiment of the present invention, said picking unit further comprises a spindle, which pulls the cottons into the unit from opened cotton bolls by retaining on such cottons; a hydromotor, which provides the for and back linear displacement of the spindle; and a rotary hydromotor, which, in addition to its linear displacement, rotates and provides with a continuous rotational motion said spindle in order to let it more efficiently catch the cotton.

10 In another preferred embodiment of the present invention, said machine further comprises a linear displacement hydromotor chain gear, setsquare, linear displacement cam, cam shaft, cam shaft bearing, cam arm, mobile-frame coupling shaft, cam chain gear, coupling setsquare, rail shaft, rail shaft bearing, and linear displacement chain, in order to transfer the displacement produced by said linear displacement hydromotor to said spindles.

15 In a further preferred embodiment of the present invention, said machine further comprises spindle rotating hydromotor gear, spindle hydromotor coupling setsquare, spindle rotating gear, spindle rotating shaft, spindle rotating shaft bearing, spindle rotating counter conical gear, spindle centering bush, spindle centering tightening nut, and spindle mobile coupling plate, in order to transfer  
20 the rotational motion produced by said rotary hydromotor to said spindles.

Yet in a further preferred embodiment of the present invention, said machine further comprises spindle slipping-off and centering bush, spindle slipping-off nut and claw, spindle centering and slipping-off plate, and spindle slipping-off bearing, in order to slip off the cottons wrapped around the spindles, which are  
25 the picking/collecting elements, during the cotton picking operation, and collect such cotton fibers in a cotton reservoir.

Still in a further preferred embodiment of the present invention, said machine further comprises cotton plant directing elements, which bring close the cotton plants to said spindles, the picking elements, while such tractor moves among  
30 said cotton plants; and cotton plant compressing wall, which pulls the cotton out from opened cotton bolls, and prevent said picking spindle or spindles from

damaging unopened bolls.

Yet in another preferred embodiment of the present invention, said machine further comprises a cotton suction channel to transfer any cotton collected in the cotton reservoir to the storage unit, and cotton suction pipe, where a  
5 transferring pipe can be coupled.

Still in another preferred embodiment of the present invention, said suction unit further comprises a fan producing a vacuum effect in order to transfer any cotton accumulated in the picking unit to the storage unit by means of said transferring pipe, and a fan hydromotor driving said fan.

10 In a preferred embodiment of the present invention, said machine further comprises a fan protecting element, which protects the fan from external factors, a fan protection frame, which allows the assembly of fan to the tractor, a fan hydromotor coupling setsquare, a hydromotor drum to transfer the motion produced by the fan hydromotor to the fan, and a drum belt.

15 In a further preferred embodiment of the present invention, said storage unit further comprises a reservoir to accumulate the cotton from the suction unit during the collecting process, at least one lid to easily empty such cotton accumulated in the reservoir to a trailer or any other area, when the reservoir is filled, a lid opening group, which opens the lid that stays normally closed, and a  
20 reservoir lid opening shaft.

Yet in a further preferred embodiment of the present invention, said machine further comprises a reservoir overturning hydraulic cylinder to discharge said reservoir, when it is filled, a reservoir overturning cylinder joint, a cylinder coupling plate, and a reservoir overturning coupling plate.

25 Still in a further preferred embodiment of the present invention, said machine further comprises a reservoir coupling frame, a frame coupling plate, coupling leg in order to assemble the reservoir to the tractor, and a leg adjustment mechanism providing the height adjustment of the reservoir.

Yet in another preferred embodiment of the present invention, said machine  
30 further comprises a slipping nut and claw, which slip off any picked cotton from

the spindle and make such picked cotton fall into the reservoir, and which further rotates in the same direction and speed with the spindle.

Still in another preferred embodiment of the present invention, said machine further comprises a stationary rail, which supports the spindle's linear and rotational motions and the spindle slipping-off and centering bushes, and balls  
5 on said rail providing the completion of the spindle movement by reducing the friction on the rail.

In a preferred embodiment of the present invention, said machine further comprises a picking unit main frame, at least one picking unit lower lid and  
10 upper lid to assemble the picking unit to the tractor and to carry the machine elements.

In a further preferred embodiment of the present invention, a hydraulic pump, which is driven by a reductor and its interconnection which are coupled to said tail shaft of said tractor in order to acquire hydraulic material from said hydraulic  
15 tank to said hydromotors.

In another respect, the present invention provides a cotton picking method that provides the sensitive picking of cotton from opened cotton plants by means of a system that can be assembled onto a tractor, wherein cotton plants are picked without damaging unopened bolls by means of a picking unit, any picked cotton  
20 is accumulated in a storage unit during the cotton picking operation, and any collected cotton is transferred to said storage unit by means of a suction unit.

In a preferred application of the present method, opened cotton plants are directed to the picking unit by means of directing means, and opened cotton plants are transferred to picking elements by means of compressing walls such  
25 that any unopened bolls are kept out of the process.

In another preferred application of the present method, cottons are pulled to the picking unit by means of both the linear forward and back displacement and the rotational motion of the spindles, namely the picking elements.

In a further preferred application of the present method, said spindles are  
30 simultaneously provided with linear and rotational motions by means of said

hydromotors fed by the tractor and by means of transmission elements transmitting the drive obtained from such motors.

Yet in a further preferred application of the present method, said slipping nut and claw are rotated in the same direction and speed with the spindles in order  
5 to slip off any cottons picked by said spindles.

Still in a further preferred application of the present method, any cotton accumulated in the picking unit is vacuumed and transferred to the storage unit with a transferring hose by means of the drive that a fan located at the top of the tractor receives from a hydromotor.

10 Yet in a further preferred application of the present method, said reservoir is overturned by means of a reservoir overturning hydraulic cylinder in order to discharge the cotton accumulated in the reservoir to a trailer or any other area, said overturning hydraulic cylinder being controlled by a reservoir overturning valve handle on the tractor.

15 Still in another preferred application of the present method, a cam handle is positioned in a cam in an out-of-the-axis manner, in order to convert the rotational motion from the hydromotor to linear motion for the picking spindles.

The structural and characteristic features of the present invention shall be made clear with the annexed figures, which are described hereunder, and with a  
20 detailed disclosure of the present invention, wherein such figures are referred to. Therefore the present invention is to be considered by taking into account such figures and the detailed description.

### **Brief Description of Figures**

Figure 1, gives a side view of the present cotton picking machine.

25 Figure 2, gives a top view of the present cotton picking machine's picking unit.

Figure 3, gives a front view of the present cotton picking machine's picking unit.

Figure 4, gives a side view of the present cotton picking machine's picking unit.

Figure 5, gives a cross-sectional view of the present cotton picking machine's picking unit.

Figure 6, gives a cross-sectional view of the linear displacement group.

Figure 7, gives a cross-sectional view of the spindle rotating group.

Figure 8, gives a front view of the linear slipping-off rail.

### Reference Numbers in Figures

1.	Tractor	38.	Cotton reservoir
2.	Tail shaft	39.	Cotton plant director
3.	Reductor interconnection	40.	Cotton plant compressing wall
4.	Reductor	41.	Cotton suction channel
5.	Hydraulic pump	42.	Cotton vacuum pipe
6.	Picking unit main frame	43.	Cotton transferring pipe
7.	Hydraulic side arm	44.	Fan (vacuum)
8.	Picking unit lower lid	45.	Fan protector
9.	Picking unit upper lid	46.	Fan protecting frame
10.	Linear displacement hydromotor	47.	Fan hydromotor
11.	Linear displacement hydromotor chain gear	48.	Fan hydromotor coupling setsquare
12.	Linear displacement hydromotor setsquare	49.	Fan hydromotor drum
13.	Linear displacement cam	50.	Fan hydromotor drum belt
14.	Linear displacement cam shaft	51.	Reservoir
15.	Linear displacement cam shaft bearing	52.	Reservoir upper lid
16.	Linear displacement cam arm	53.	Reservoir upper lid opening group
17.	Mobile frame coupling shaft	54.	Reservoir overturning hydraulic cylinder
18.	Cam chain gear	55.	Reservoir overturning cylinder joint
19.	Linear displacement coupling setsquare	56.	Reservoir overturning cylinder coupling plate
20.	Linear displacement rail shaft	57.	Reservoir overturning cylinder joint plate
21.	Linear displacement rail shaft bearing	58.	Reservoir lid opening shaft
22.	Linear displacement chain	59.	Reservoir overturning coupling plate
23.	Spindle rotating hydromotor	60.	Reservoir coupling frame

24.	Spindle rotating hydromotor gear	61.	Reservoir coupling frame coupling plate
25.	Spindle hydromotor coupling setsquare	62.	Storage unit coupling leg
26.	Spindle rotating gear	63.	Storage unit leg adjustment mechanism
27.	Spindle rotating shaft	64.	Hydraulic tank
28.	Spindle rotating shaft bearing	65.	Reservoir overturning valve handle
29.	Spindle rotating counter conical gear	66.	Ball
30.	Spindle centering bush	67.	Stationary rail
31.	Spindle centering tightening nut	68.	Slipping claw
32.	Spindle mobile coupling plate	69.	Hydraulic central arm
33.	Spindle	70.	Linear Slipping Rail
34.	Spindle slipping and centering bush	71.	Picking Unit
35.	Spindle slipping nut	72.	Suction Unit
36.	Spindle Centering and Slipping Plate	73.	Storage Unit
37.	Spindle slipping bearing		

### Detailed Description of Invention

In this detailed description, preferred embodiments of the subject cotton picking machine, which is embodied to more safely pick up cotton fibers and to minimize product-losses during harvesting, are given for only making clear the present invention without imposing any restrictions thereto.

The subject harvesting or picking machine picks up cotton fibers more safely, carries out this operation by means of a picking system making a linear displacement, and thus minimizes the product-losses during harvesting.

As is seen in Figure 1, the subject harvesting machine is assembled to a tractor (1), preferably having a HP of 70 or above, in three separate units: picking unit (71), suction unit (72), and storage unit (73). Additionally, the steering wheel of the tractor (1) and the driver seat can readily be assembled in the reverse moving direction to let the driver carry out the harvesting operation more easily

and reliably.

The reservoir (51) can easily be mounted to the fastening points on the tractor (1) by means of adjustable legs (62) with the use of bolts or other fastening elements.

5 As can be seen in Figure 1, the storage unit (73) comprises a reservoir upper lid (52), reservoir upper lid opening group (53), reservoir overturning hydraulic cylinder (54), reservoir overturning cylinder joint (55), reservoir overturning cylinder coupling plate (56), reservoir overturning cylinder joint plate (57), reservoir lid opening shaft (58), reservoir overturning coupling plate (59),  
10 reservoir coupling frame (60), reservoir coupling frame coupling plate (61), storage unit coupling leg (62), and reservoir unit leg adjustment mechanism (63).

The suction unit (72) comprises a cotton suction channel (41), cotton vacuum pipe (42), fan (vacuum) (44), fan protector (45), fan protector frame (46), fan  
15 hydromotor (47), fan hydromotor coupling setsquare (48), fan hydromotor drum (49), and fan hydromotor drum belt (50).

As for the picking unit (71), it is assembled to the rear of the tractor (1) by means of the hydraulic side arms (7) and hydraulic central arm (69), and comprises a lower lid (8), upper lid (9), and picking unit main frame (6).

20 The operation of tractor (1), as it is the case for all tractors, is performed by transmitting the drive from the fluid power to be obtained from the hydraulic pump (5) to be assembled to the reductor (4) outlet to be fastened on the tail shaft (2), to work producing elements.

The cooperation between the tail shaft (2) and the reductor (4) is carried out by  
25 the reduce interconnection (3).

When operated, the tractor (1) transmits the driving energy received from the motor by means of the power transmitting elements contained therein, to the tail shaft (2), whereas the latter drives the reductor (4) that is assembled on itself. The fluid power provided with a hydraulic pump (5) assembled to the reductor (4)  
30 is transmitted to the fan hydromotor (47), linear displacement hydromotor (10),

and the spindle rotating hydromotor (23). These hydromotors (47, 10, 23) convert such obtained fluid energy to drive or motion energy. The hydraulic pump (5) provides the required fluid from the hydraulic tank (64).

5 While the tractor (1) is driven between crop lines in the field, the directors or directing elements (39) directs the cotton plant to the picking area. The compressing wall (40) on the picking area direct the cotton plant to the picking unit (71). The spindles (33) driven by means of the spindle rotating hydromotor (23) and linear displacement hydromotor (10) enter into the cotton plant, and pick the opened seed cotton. Meanwhile, it does not damage the unopened  
10 bolls.

Seed cotton wound around the spindles (33) is slipped off with the spindle slipping and centering bushes (34) that rotate in the same direction with the spindles (33). Then are they vacuumed by means of a fan (44) and transferred to the reservoir (51) via the cotton transferring hoses (43). When the reservoir is  
15 filled (51), the tractor (1) is driven close to a trailer, and the tractor driver activates the reservoir overturning hydraulic cylinder (54) by moving the reservoir overturning valve handle (65). While the reservoir (51) is overturned on the trailer by means of the reservoir overturning cylinder joint (55), the reservoir lid (52) is opened with the aid of the reservoir lid opening shaft (58). The seed  
20 cotton in the reservoir (51) is discharged to the trailer.

The linear displacement of the picking unit (71) of the subject cotton picking machine is provided by means of a linear displacement hydromotor (10), which is operated by making use of the fluid power received from the hydraulic pump (5), and which is fastened onto said unit (71).

25 As can be seen in Figure 6, the linear displacement group comprises a linear displacement hydromotor (10), linear displacement hydromotor chain gear (11), linear displacement hydromotor setsquare (12), linear displacement cam (13), linear displacement cam shaft (14), linear displacement cam shaft bearing (15), linear displacement cam shaft arm (16), mobile coupling frame shaft (17), cam  
30 chain gear (18), linear displacement coupling setsquare (19), linear displacement rail shaft (20), linear displacement rail shaft bearing (21), and the

linear displacement chain (22), functioning in performing the linear displacement, as can be seen in Figure 2 as well.

The linear displacement hydromotor gear (11) assembled on the picking unit (71) drives the linear displacement cam (13) by means of the linear displacement chain. The linear displacement cam arm (16) positioned out-of-the-axis on the linear displacement cam (13) converts the rotational motion into linear motion.

As can be seen in Figure 7, the picking unit (71) of the subject cotton picking machine, comprises a spindle rotating hydromotor gear (24) and spindle hydromotor coupling setsquare (25), along with spindle rotating hydromotor (23), spindle rotating hydromotor gear (24), spindle hydromotor coupling setsquare (25), spindle rotating gear (26), spindle rotating shaft (27), spindle rotating shaft bearing (28), spindle rotating counter conical gear (29), spindle centering bush (30), spindle centering tightening nut (31), spindle mobile coupling plate (32), spindle (33), spindle slipping and centering bush (34), spindle slipping nut and claw (35), spindle centering and slipping plate (36), spindle slipping bearing (37), and cotton reservoir (38), as can be seen in Figure 3 as well. In addition, as is seen in Figure 10, seed cotton that is wound on the spindle is subjected to a linear and rotational action on an operating rail (67), so as to become easily slipped off by means of slipping claws (68) on the extremities. Linear slipping rail (70) comprises ball (66), stationary rail (67), and slipping claw (68).

Spindles (33), which are connected onto the spindle mobile coupling plate (32), and which are assembled on mobile spindle coupling plate (32) rotated by the spindle rotating hydromotor (23), wind seed cotton on themselves by preferably making two linear displacement per second into/from cotton plants that are directed to the picking unit (71). Seed cotton wound on the spindles (33) is easily slipped off by means of a stationary action (preferable relative speed = 0) formed by the claw (68), spindle slipping nut (35), and the spindle slipping and centering bush (34), which are supported by special bearings connected to the spindle slipping-centering plate (36) and which rotate in the same direction, once the linear displacement pulls back the spindle coupling plate (32). Slipped-off seed

cotton falls down to the suction channel (41). The seed vacuum is vacuumed from the suction channel with the suction power produced by the fan (44) and is transferred to the reservoir (51) by means of the cotton transferring pipe (43).

5 The protection scope of this application is set forth in the claims section, and is not to be restricted with the foregoing exemplary disclosure in no way. It is obvious that a person skilled in the art can produce the novelty under the present invention by making use of similar embodiments and/or can benefit from this embodiment in other fields in the relevant technique with similar purposes. Therefore, it must be clear that such embodiments shall be lacking from novelty  
10 and particularly from the criterion of going beyond the background art.

**CLAIMS**

1. A cotton picking machine that can be assembled to a tractor (1) having hydraulic lateral arms (7), hydraulic central arm (69), an hydraulic tank (64), and a tail pivot (2) for picking cotton fibers from opened cotton bolls; said cotton picking machine being further characterized in comprising a picking unit (71), which can be assembled to the central and lateral arms (69, 7) of said tractor (1), and which picks cotton from opened bolls in a cotton field; a storage unit (73), which stores the cotton fibers collected by means of said picking unit (71), and which provides an easy discharge of such content to transporter means, preferably such as a trailer; and at least one suction unit (72), which transfers picked cotton from the picking unit (71) to the storage unit (73).
2. A cotton picking machine according to Claim 1, characterized in that said picking unit (71) comprises a spindle (33), which pulls the cottons into the unit (71) from opened cotton bolls by retaining on such cottons; at least one hydromotor (10), which provides the for and back linear displacement of said spindle (33); and at least one rotary hydromotor (23), which, in addition to its linear displacement, rotates and provides with a continuous rotational motion said spindle (33) in order to let it more efficiently catch the cotton.
3. A picking unit (71) according to Claim 2, characterized in further comprising a linear displacement hydromotor chain gear (11), setsquare (12), linear displacement cam (13), cam shaft (14), cam shaft bearing (15), cam arm (16), mobile frame coupling shaft (17), cam chain gear (18), coupling setsquare (19), rail shaft (20), rail shaft bearing (21), and linear displacement chain (22) in order to transfer the displacement produced by said linear displacement hydromotor (10) to said spindles (33).
4. A picking unit (71) according to Claim 2, characterized in further comprising a spindle rotating hydromotor gear (24), spindle hydromotor coupling setsquare (25), spindle rotating gear (26), spindle rotating shaft (27), spindle rotating shaft bearing (28), spindle rotating counter conical gear (29), spindle centering bush (30), spindle centering tightening nut (31), and

spindle mobile coupling plate (32), in order to transfer the rotational motion produced by said rotary hydromotor (23) to said spindles (33).

- 5 5. A picking unit (71) according to Claim 2, characterized in further comprising a spindle slipping-off and centering bush (34), spindle slipping-off nut and claw (35), spindle centering and slipping-off plate (36), and spindle slipping-off bearing (37), in order to slip off the cottons wound around the spindles (33), which are the picking/collecting elements, during the cotton picking operation, and collect such cotton fibers in a cotton reservoir (38).
- 10 6. A picking unit (71) according to Claim 2, characterized in further comprising at least one cotton plant directing element (39), which bring the cotton plants close to said spindles (33), the picking elements, while said tractor (1) moves between said cotton plants; and at least one cotton plant compressing wall (40), which let(s) said picking spindle or spindles pull the cotton out from opened cotton bolls, and prevent said picking spindle or  
15 spindles (33) from damaging unopened bolls.
7. A picking unit (71) according to Claim 2, characterized in further comprising at least one cotton suction channel (41) to transfer any cotton collected in the cotton reservoir (38) to the storage unit (73), and at least one cotton suction pipe (42), whereto a transferring pipe (43) can be coupled.
- 20 8. A cotton picking machine according to Claim 1, characterized in that said suction unit (72) further comprises at least one fan (44) producing a vacuum effect in order to transfer any cotton accumulated in the picking unit (71) to the storage unit (73) by means of said transferring pipe (43), and at least one fan hydromotor (47) driving said fan (44).
- 25 9. A suction unit (72) according to Claim 8, characterized in further comprising a fan protecting element (45), which protects the fan (44) from external factors; a fan protection frame (46), which allows the assembly said fan (44) to the tractor (1); a fan hydromotor coupling setsquare (48), a hydromotor drum (49) and a drum belt (50) in order to transfer the motion produced by  
30 the fan hydromotor (47) to said fan (44).
10. A cotton picking machine according to Claim 1, characterized in that said

storage unit (73) further comprises at least one reservoir (51) to accumulate the cotton from the suction unit (72) during the collecting process; at least one lid (52) to easily empty or discharge such cotton accumulated in the reservoir (51) to a trailer or any other area, when the reservoir (51) is filled; a lid opening group (53), which opens the lid (52) that stays normally closed; and a reservoir lid opening shaft (58).

5  
11. A storage unit (73) according to Claim 10, characterized in further comprising at least one reservoir overturning hydraulic cylinder (54) to discharge said reservoir (51), when it is filled; reservoir overturning cylinder joint (55), cylinder coupling plate (56), and reservoir overturning coupling plate (59).  
10

12. A storage unit (73) according to Claim 10, characterized in further comprising at least one reservoir coupling frame (60), a frame coupling plate (61), and coupling leg (62) in order to assemble said reservoir (51) to said tractor (1), and a leg adjustment mechanism (63) providing the height adjustment of the reservoir.  
15

13. A picking unit according to Claim 2, characterized in further comprising at least one slipping nut (35) and claw (68), which slip off any picked cotton from the spindle (33) and make such picked cotton fall into the cotton reservoir (38), and which further rotates in the same direction and speed with said spindle (33).  
20

14. A picking unit according to Claim 2, characterized in further comprising at least one stationary rail (67), which supports the spindle's (33) linear and rotational motions and the spindle slipping-off and centering bushes (34), and balls (66) on said rail (67) providing the completion of the spindle movement by reducing the friction on the rail.  
25

15. A picking unit according to Claim 2, characterized in further comprising at least one picking unit main frame (6), at least one picking unit lower lid (8), at least one picking unit upper lid (9) to assemble said picking unit (71) to said tractor and to carry the machine elements.  
30

16. A picking unit according to Claim 2, characterized in further comprising a

hydraulic pump (5), which is driven by a reductor (4) and its interconnection (3) which are coupled to said tail shaft (2) of said tractor (1) in order to acquire hydraulic material from said hydraulic tank (64) to said hydromotors (10, 23, 47).

- 5 **17.** A cotton picking method that provides the sensitive picking of cottons from opened cotton plants by means of a system that can be assembled onto a tractor, wherein cotton plants are picked without damaging unopened bolls by means of a picking unit (71), any picked cotton is accumulated in a storage unit (73) during the cotton picking operation, and any collected  
10 cotton is transferred to said storage unit (73) by means of said suction unit (72).
- 18.** A cotton picking method according to Claim 17, wherein opened cotton plants are directed to the picking unit (71) by means of directing means (39), opened cotton plants are transferred to picking elements by means of  
15 compressing walls (40) such that any unopened bolls are kept out of the process.
- 19.** A cotton picking method according to Claim 17, wherein cottons are pulled to the picking unit (71) by means of both linear for and back displacement and the rotational motion of the spindles (33), as the picking elements.
- 20 **20.** A cotton picking method according to Claim 17, wherein said spindles (33) are simultaneously provided with linear and rotational motions by means of said hydromotors (10, 23) fed by said tractor (1) and by means of transmission elements transmitting the drive obtained from such motors.
- 25 **21.** A cotton picking method according to Claim 17, wherein said slipping nut (35) and claws (68) are rotated in the same direction and speed with the spindles (33) in order to slip off any cottons picked by said spindles (33).
- 22.** A cotton picking method according to Claim 17, wherein any cotton accumulated in the picking unit (71) is vacuumed and transferred to the storage unit (73) with a transferring hose (43) by means of the drive that a  
30 fan (44) located at the top of said tractor (1) receives from a hydromotor (47).

23. A cotton picking method according to Claim 17, wherein said reservoir (51) is overturned by means of a reservoir overturning hydraulic cylinder (54) in order to discharge the cotton accumulated in the reservoir (51) in said storage unit (73) to a trailer or any other area, said overturning hydraulic cylinder (54) being controlled by a reservoir overturning valve handle (65) on the tractor (1).
24. A cotton picking method according to Claim 17, wherein a cam handle (16) is positioned in a cam (13) in an out-of-the-axis manner, in order to convert the rotational motion from the hydromotor (10) to linear motion for the picking spindles (33).

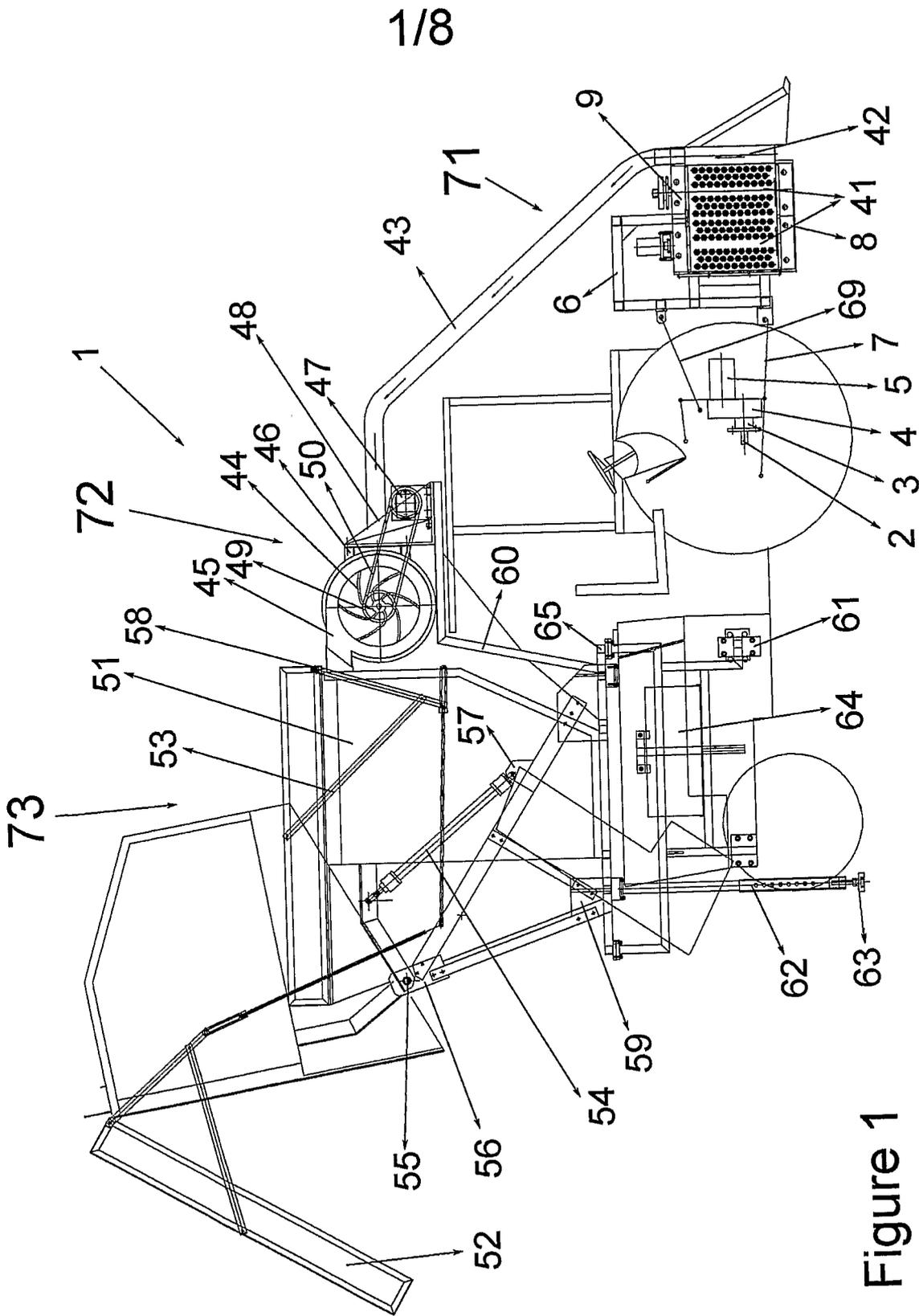


Figure 1

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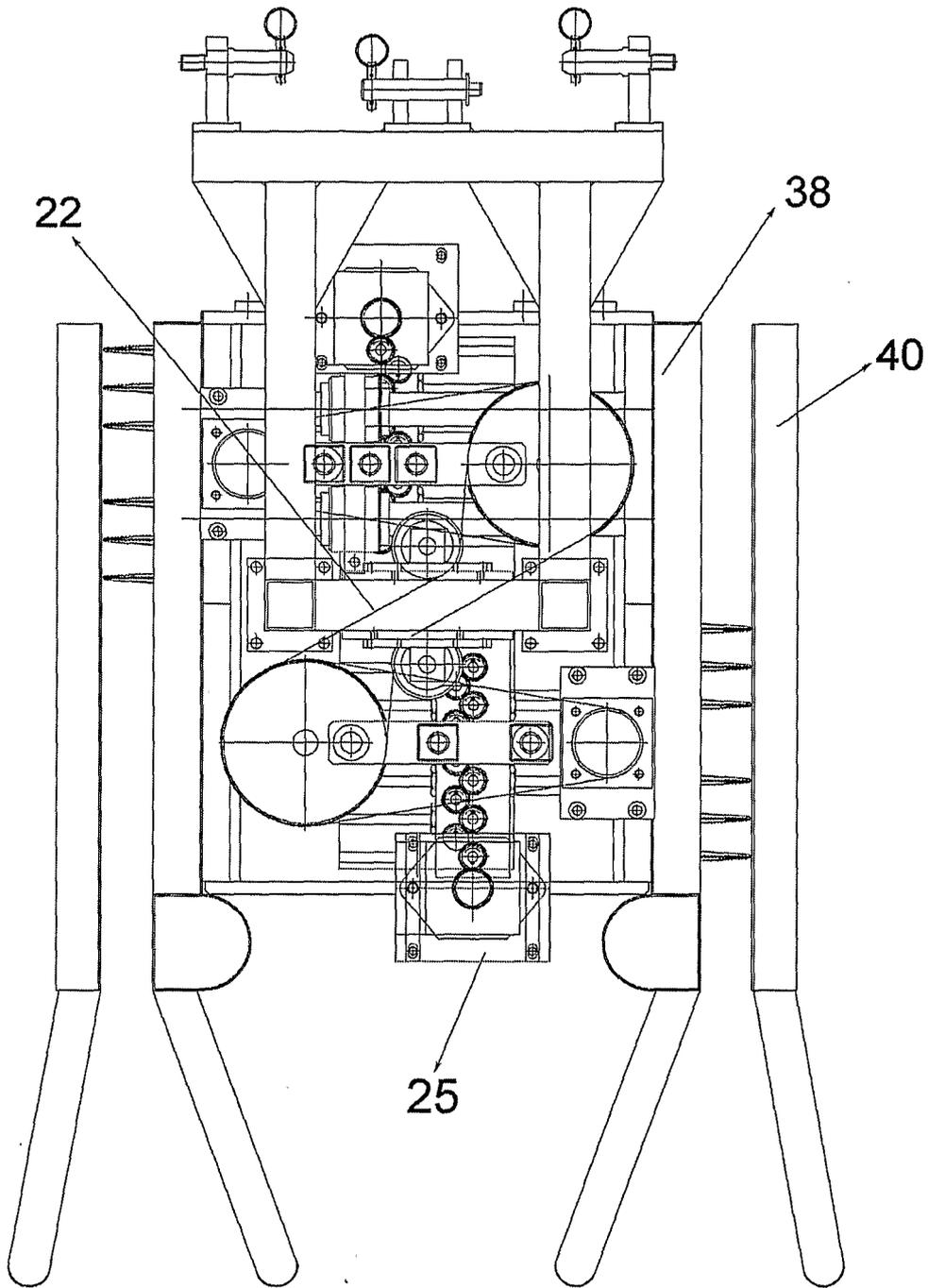


Figure 2

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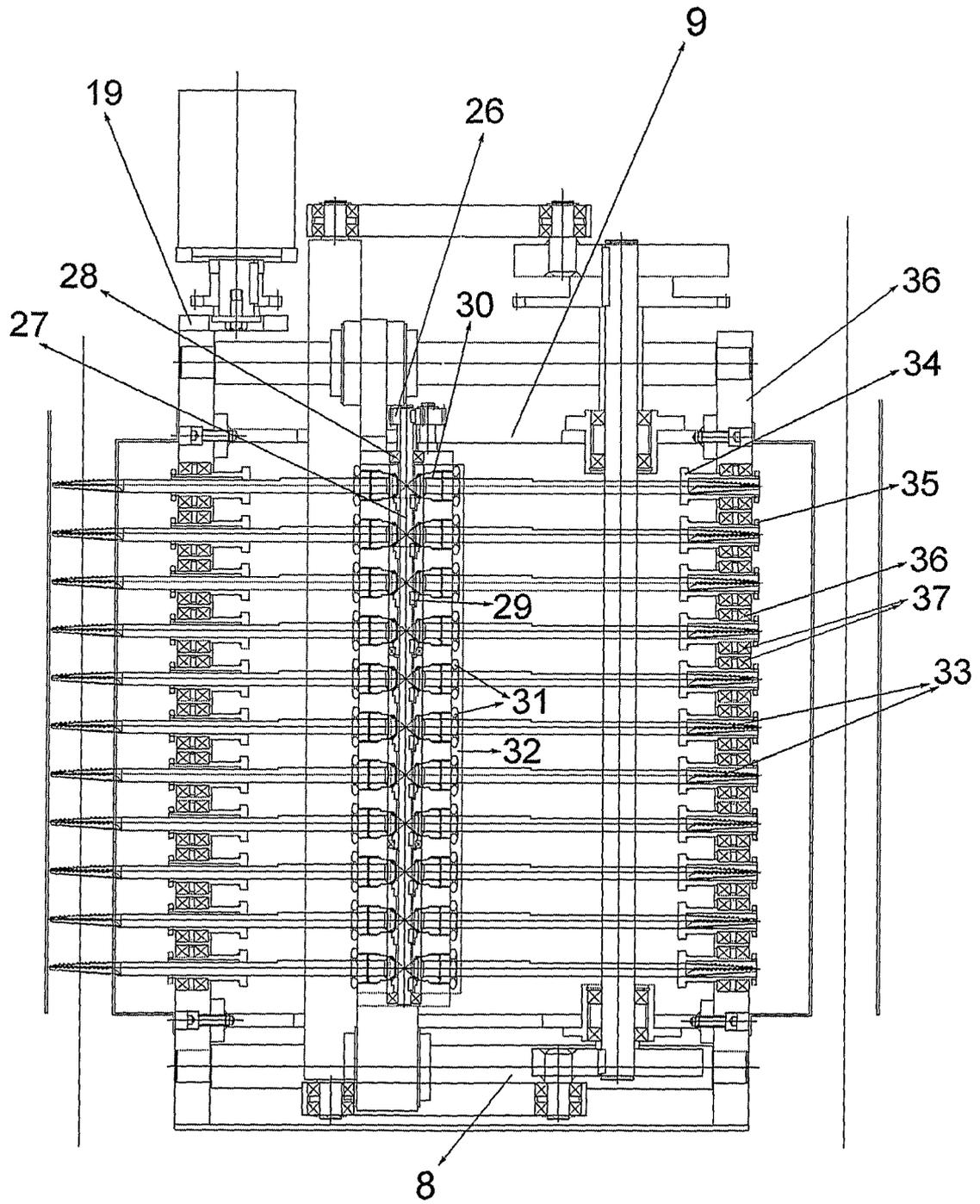


Figure 3

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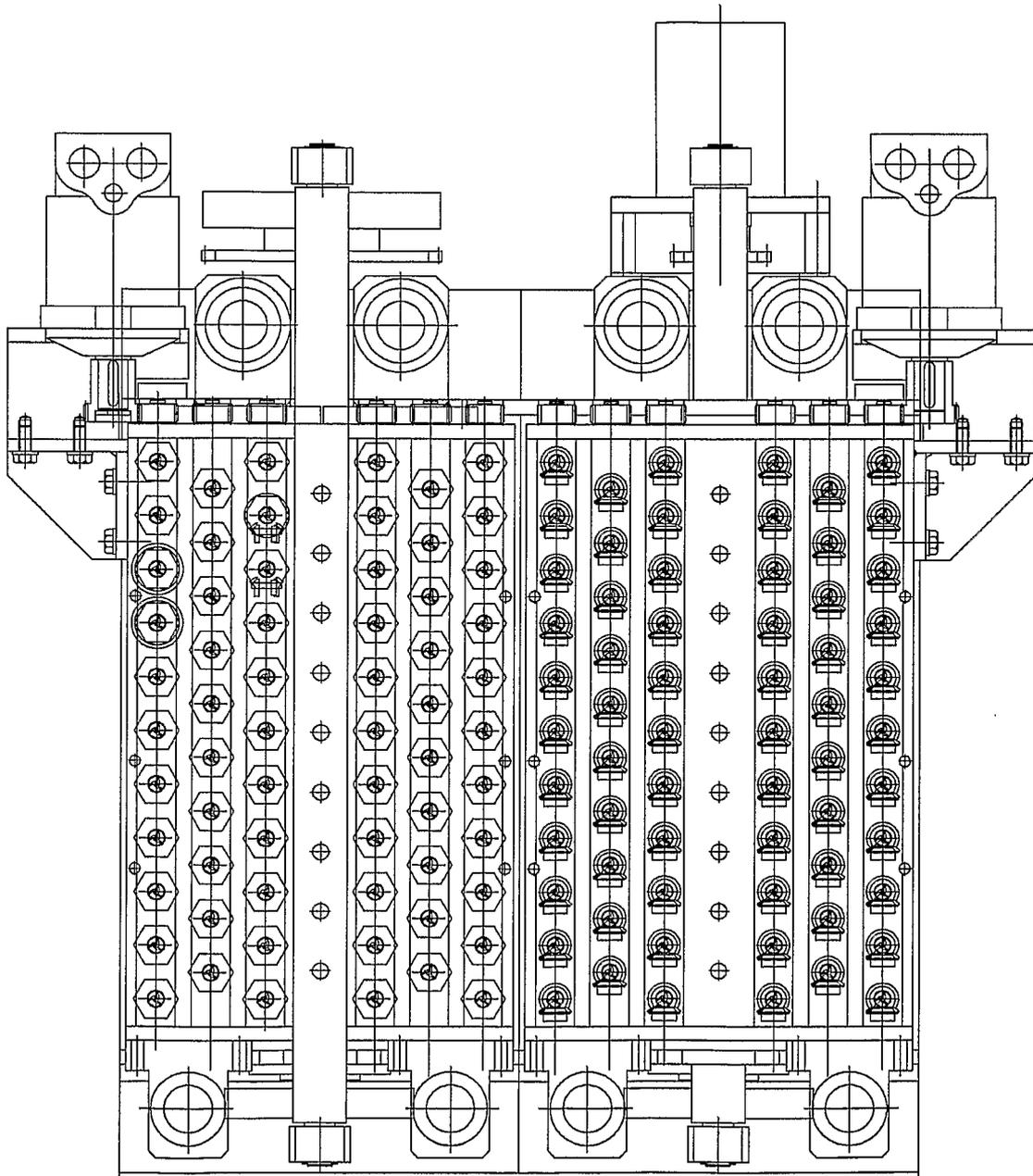


Figure 4

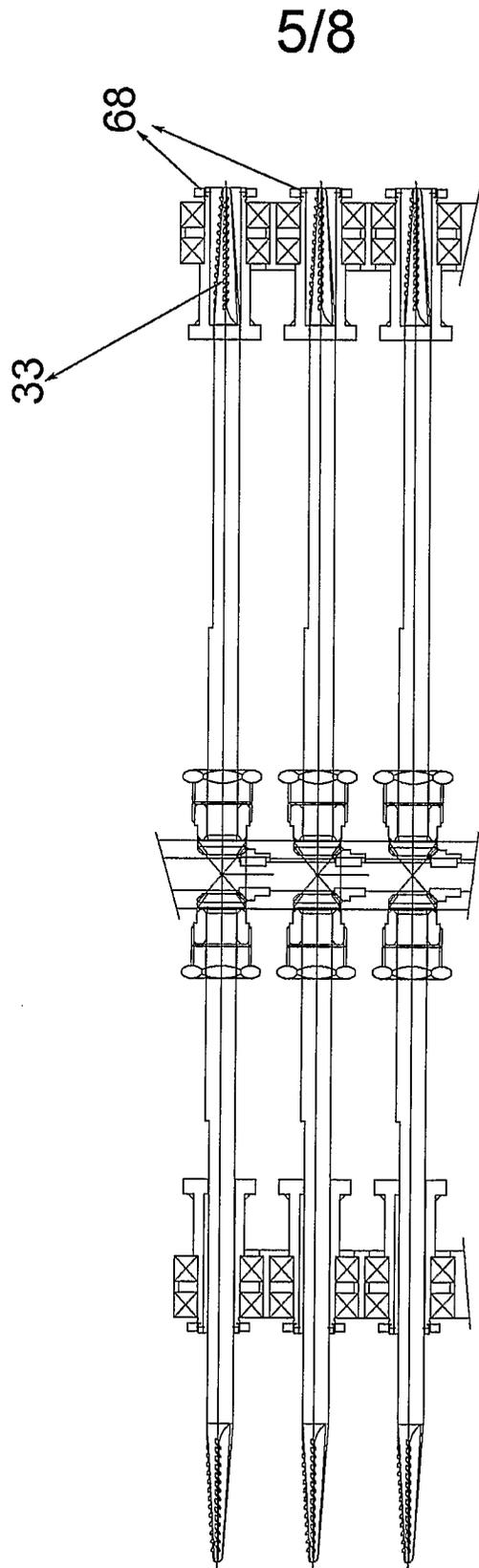


Figure 5

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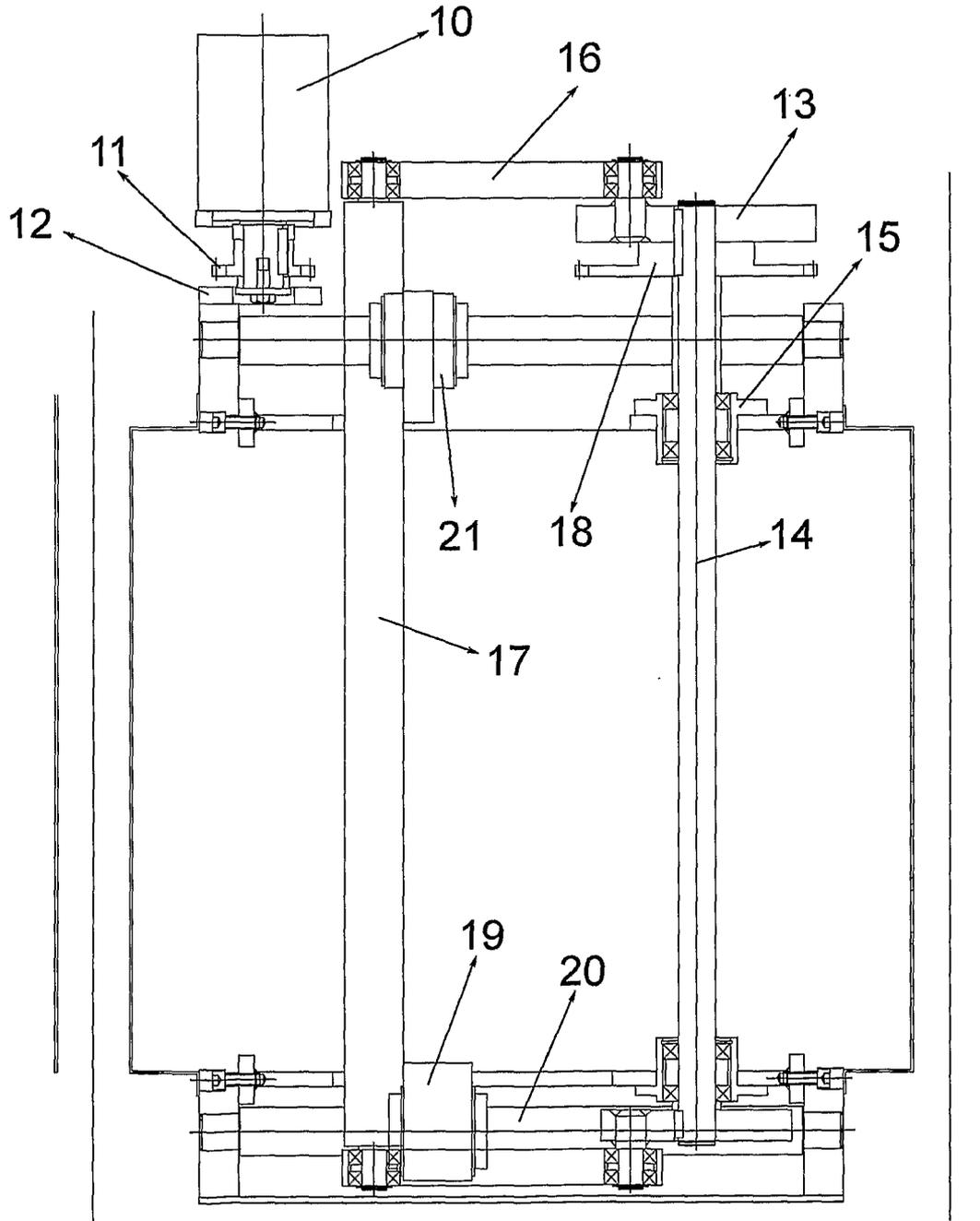


Figure 6

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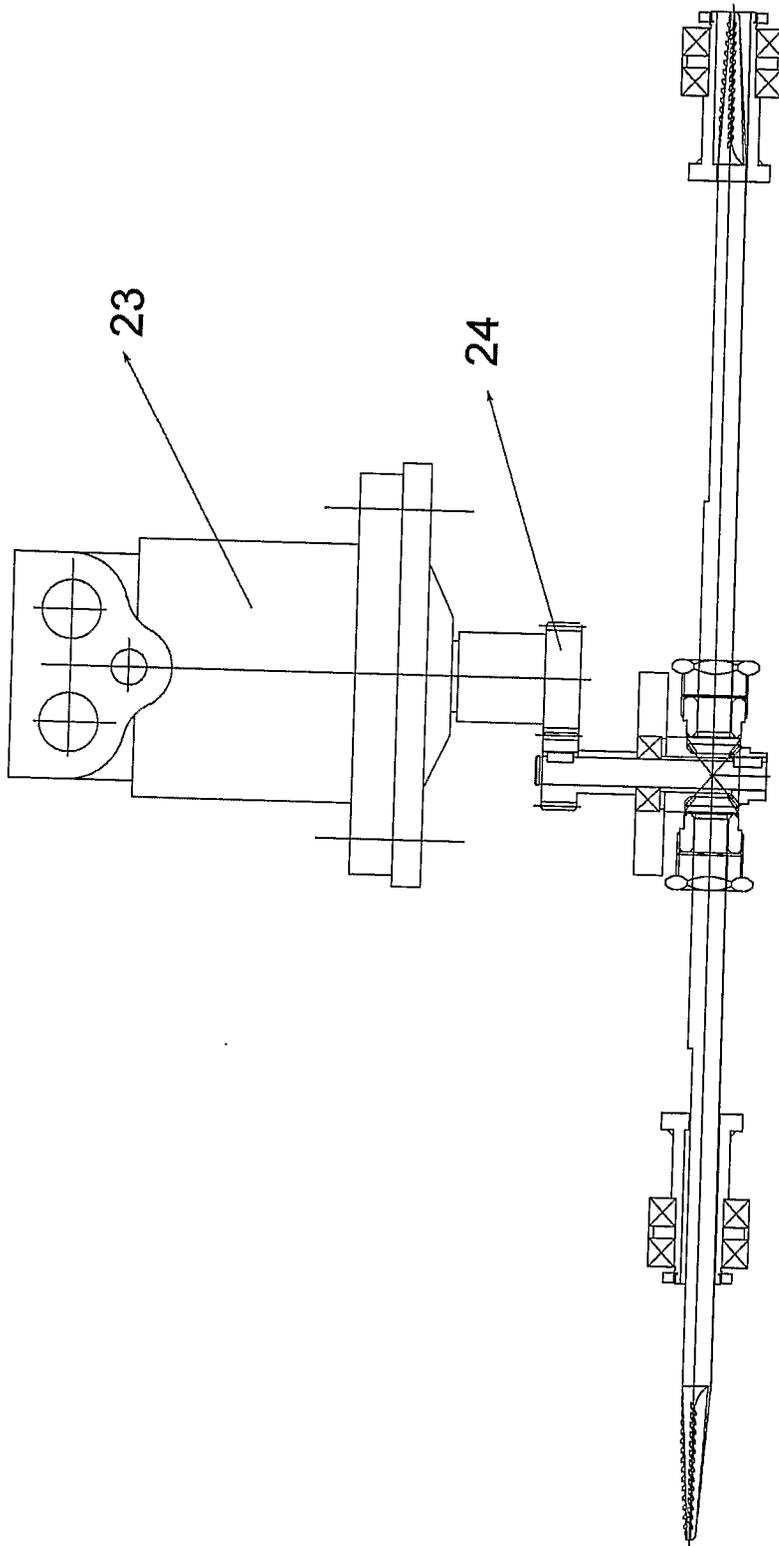


Figure 7

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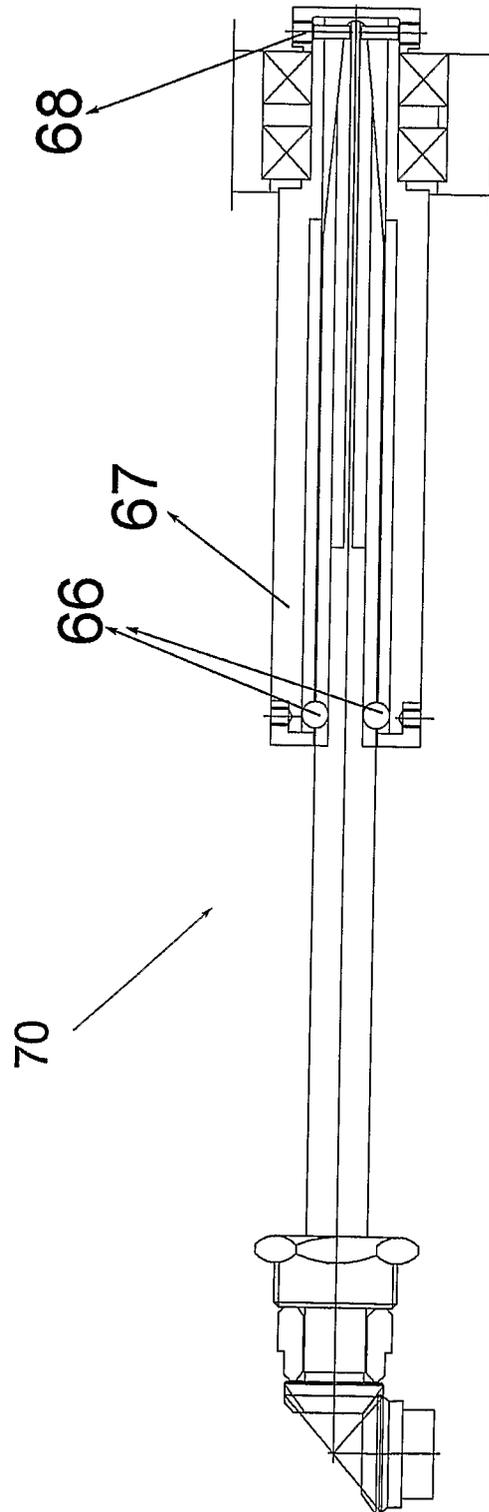


Figure 8

## INTERNATIONAL SEARCH REPORT

International application No

PCT/TR2005/000038

## A. CLASSIFICATION OF SUBJECT MATTER

INV. A01D46/08 A01D46/14 A01D46/16

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 359 712 A (HUBBARD ARTHUR L) 26 December 1967 (1967-12-26) column 1, line 32 - line 66 column 3, line 38 - line 70 column 5, line 13 - line 60 figures 1,2,10,11	1
Y	----- -/--	2,6, 10-12, 15,22



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents :

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Date of the actual completion of the international search

15 May 2006

Date of mailing of the international search report

24/05/2006

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/TR2005/000038

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	US 4 082 034 A (WRIGHT ET AL) 4 April 1978 (1978-04-04) column 2, line 55 - column 3, line 4 column 3, line 47 - line 56 figures 1,4	10,11
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International application No

PCT/TR2005/000038

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