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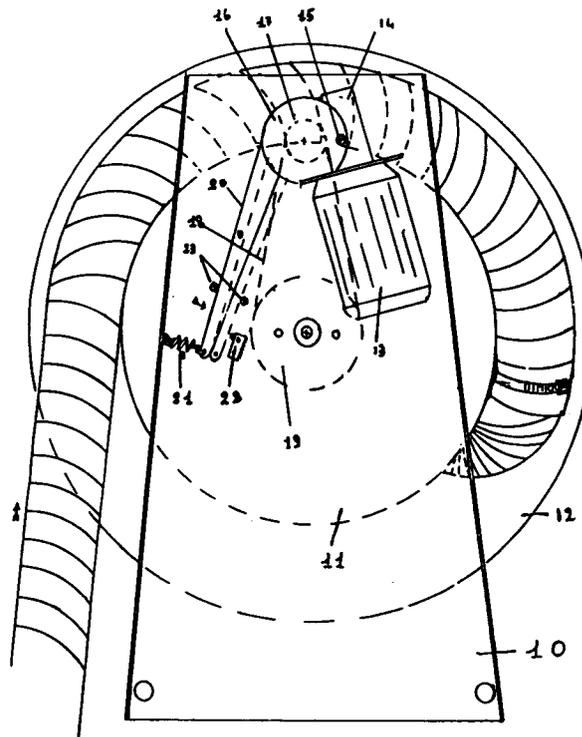
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Powered tube winding winch.

Powered winch for winding tubing used for gas suction, e.g. motor vehicle exhaust gas, with a transmission arrangement for the winding drum (11) comprising a transmission chain (18) and optionally provided with an electromechanical safety device (22).

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Fig. 1



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Field of the Invention

The present invention relates to a powered winch for winding exhaust gas collection tubing in which the winch is driven by a motor which acts on a gear wheel which by means of a transmission chain or an equivalent mechanical device transmits movement to another gear wheel in turn connected to the winch winding drum and optionally equipped with an electromechanical safety device.

State of the Art

It is known that for exhaust of toxic fumes such as for example those resulting from motor vehicle engine combustion processes, necessary for example during repairs in closed environments, there are used special exhaust tubes which, at the end of operations, are wound on appropriate winches. Said winches are normally driven by an electric motor and associated reduction gear normally arranged coaxially with the winding drum and acting on a gear wheel integral with the winding drum to impart the necessary rotation. This system has however the drawback of subjecting to considerable stress the parts engaged in the movement and in particular the reducing gear pinion gear so that when the wound tube is particularly long and hence heavy the reducing gear can no longer move the winding roller with resulting breakage of the teeth of the engaged circular ring.

A similar problem also appears if during the winding phase the tube tangles or is suddenly prevented from running.

Detailed description of the invention

The present invention obviates the above problems with a winch for winding gas exhaust tubing wherein the winding movement is provided by means of two gear wheels connected together by a transmission chain or an equivalent mechanical device wherein the first gear wheel is integrally connected to the reducing gear shaft while the second communicates movement to the winch to which it is connected integrally through appropriate engagement means.

With the above system the load is more uniformly distributed and hence there are no problems of damage to the mechanism even with considerable weights.

In addition, to prevent an unexpected blockage of running of the cable causing damage to the winding mechanism, in particular to the reducing gear, there is provided a safety system consisting of a flange connected to the side of the winch by means of a pin on which said flange is free to rotate. To said flange is connected integrally the

reducing gear and motor block and the flange also has a lever connected integrally thereto at one end and in turn connected at the other end to the side by means of an appropriately calibrated spring.

When the winch locks following an accidental stopping of running of the tube the reducing gear shaft continuing to turn causes a counter rotation of the reducing gear and motor block and hence of the flange to which it is integrally connected and of the associated lever connected to said flange. The lever in this manner acts on a switch and stops movement of the motor and thus protects the integrity of the reducing gear. After cessation of the stress the spring recalls the lever which thus brings back the flange, reducing gear and motor block to the working position.

The winch in accordance with the present invention is now described and illustrated by way of non limiting example with reference to the two drawings shown in FIGS. 1 and 2.

FIG. 1 shows a side view of the winch in accordance with the present invention while FIG. 2 shows a front view thereof.

As may be seen in the FIGS. the winch in accordance with the present invention consists of two sides 10 for support of the winch drum 11 on which the tube winds. The drum 11 is provided at its two ends with a preferably round plate 12 which contains the tube laterally.

On one of the sides 10 is applied the flange 16 by means of the pin 15 around which it is free to rotate and to said flange 16 is integrally applied the reducing gear and motor block 13,14. To the reducing gear shaft is integrally connected the gear wheel 17 in turn connected by means of the transmission chain or an equivalent mechanical device, 18 to a second gear wheel 19 which communicates movement to the winch drum 11. To further improve the load distribution ratio of the loads, the gear wheel 17 is connected to the reducing gear shaft and preferably has a diameter smaller than that of the gear wheel 19 connected to the winch drum.

To the plate 16 is in turn connected by appropriate fastening means one end of the bar 20 whose other end is connected to the side 10 by means of the appropriately calibrated spring 21. When upon blocking of the winch the reducing gear shaft is no longer able to rotate the drum, the rotary movement of the shaft is transmitted to the flange, reducing gear and motor block which under this effect rotates on the pin 15 and thus brings the bar 20 to touch the switch 22 (see broken lines of FIG. 1) which breaks the current until the obstacle to running of the tube has been removed.

To prevent the bar 20 from acting with too much force on the switch 22 and to limit the recall action of the spring 21 on said bar there can be

provided appropriate stop rabbets 23.

Claims

1. Powered winch for winding gas collection tubes in which the reducing gear shaft (14) bears a gear wheel (17) connected by means of a transmission chain or belt to a second gear wheel (19) which communicates the movement to the winch and in which is optionally present an electromechanical safety system (22) which operates to break current when the reducing gear (14) is subjected to a stress greater than that predetermined.

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2. Powered winch in accordance with claim 1 consisting of two sides (10) for support of the winch drum (11) provided at its two ends with a plate (12) for side containment of the tube and wherein on one of the sides (10) are applied with appropriate fastening means the motor & reducing gear block (13-14) and the gear wheel (19) integral with or connected with appropriate engagement means to the winch drum (11) in which said gear wheel (19) is connected to the gear wheel (17) integral with the shaft of the reducing gear (14) by means of the transmission chain (18).

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3. Powered winch in accordance with claim 1 wherein the motor & reducing gear block (13-14) is integrally applied to a flange (16) in turn connected to the side (10) by means of a pin (15) around which said flange is free to rotate and in which a bar (20) is fixed at one of its ends to the flange (16) and at the other end to the side (10) by means of the appropriately calibrated spring (21).

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4. Powered winch in accordance with claim 3 in which is present an appropriate device (22) which breaks the current when in contact with the bar (20).

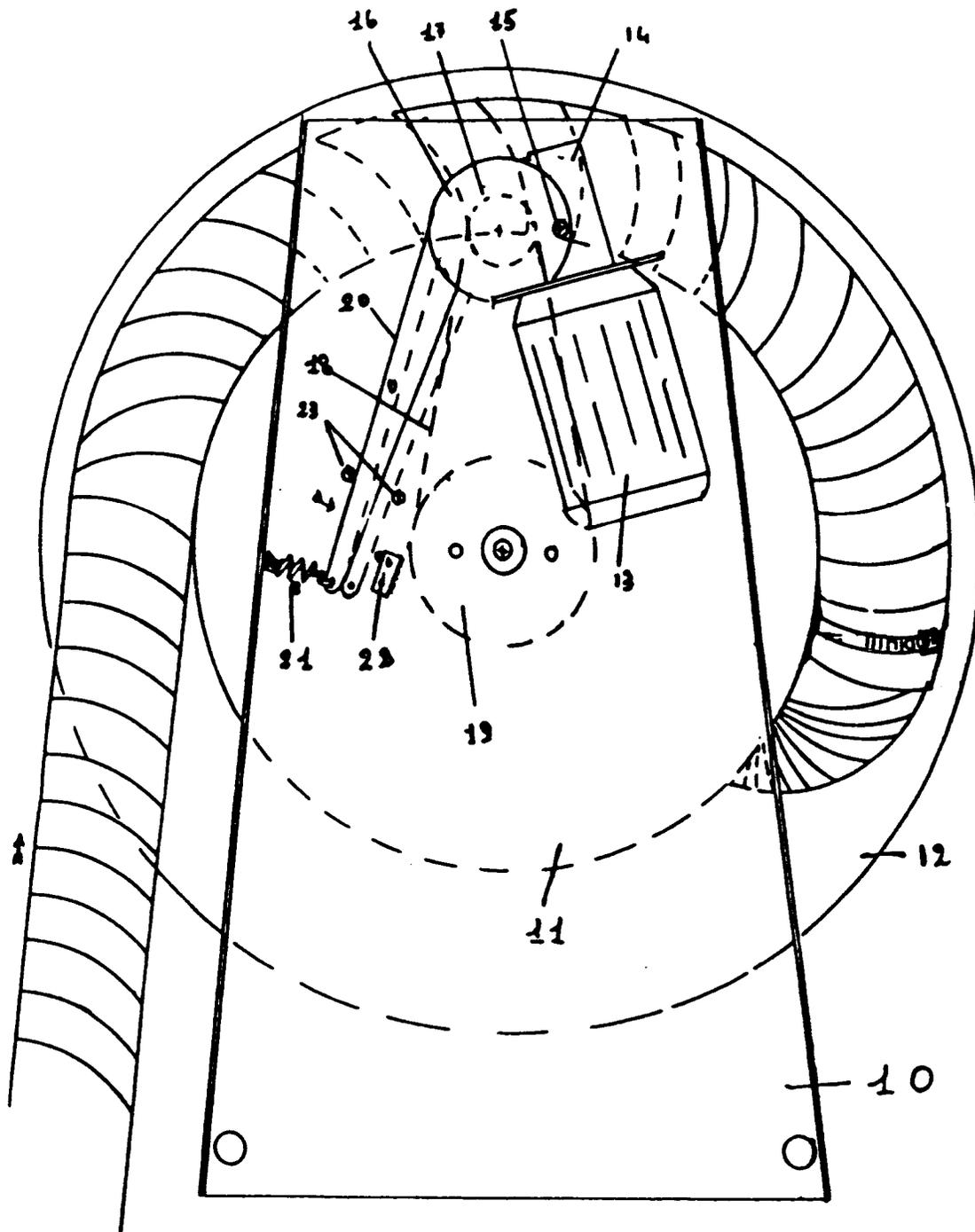
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5. Method of winding gas collection tubing in which is used a winch in accordance with claims 1-4.

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Fig. 1



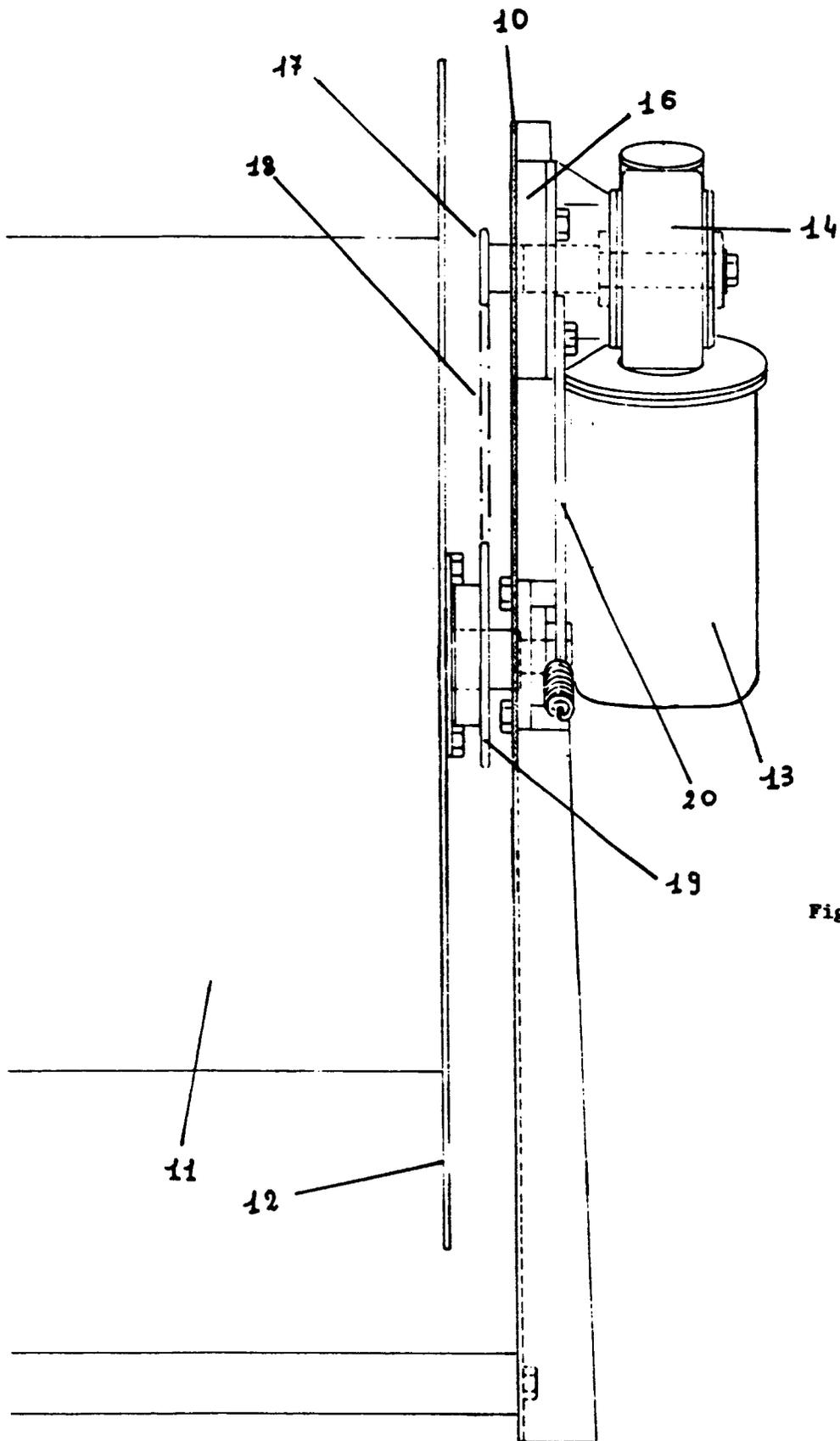


Fig. 2



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EUROPEAN SEARCH REPORT

Application Number

EP 92 11 1053

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y A	US-A-1 506 517 (A.DOWRELIO) * page 1, line 62 - page 2, line 110 * ---	1,5 2	B65H75/34
Y	FR-A-2 068 289 (SOCIETE D'APPAREILS AUXILIAIRES DE MANUTENTION) * page 3, line 2 - line 22 * * page 4, line 16 - line 33 * ---	1,5	
A	US-A-4 917 362 (B.WILSON) * column 3, line 13 - line 37 * ---	3,4	
A	US-A-3 175 574 (M.A.MORFORD) * column 2, line 26 - column 3, line 31 * ---	1-3	
A	EP-A-0 125 570 (ASPIRGAS S.R.L.) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B65H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 OCTOBER 1992	Examiner GOODALL C.J.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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