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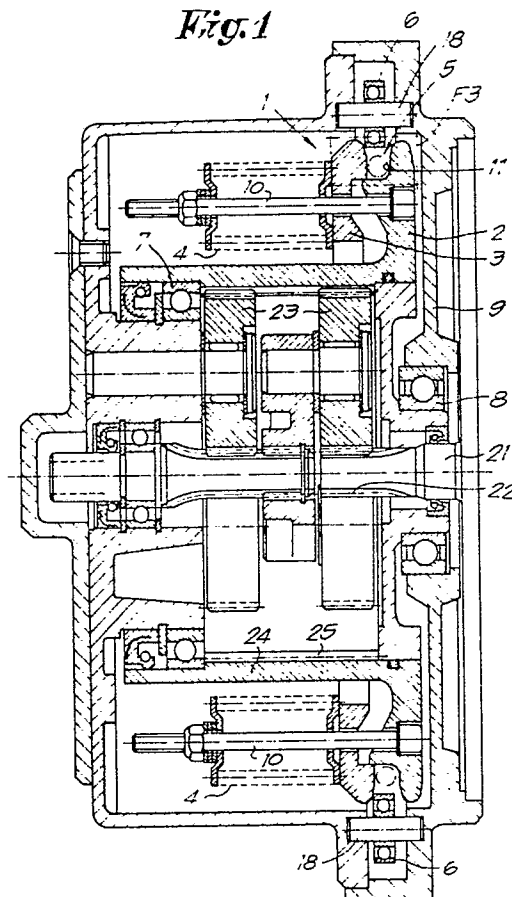
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54 Hoist.

57 Hoist, characterized in that it mainly consists of a combination of a driving pulley (1), consisting of two parallel pulley halves (2, 3); elastic means (4) axially pressing together the pulley halves (2, 3); and a cable groove (5) formed by the two pulley halves (2, 3) having parallel flank parts (12, 13), at least in the area where the cable (11) is gripped; and small cable guiding wheels (6) working together with the cable groove (5), more specifically along its entire angle of contact.



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Hoist

This invention relates to a hoist, in other words to a device to lift or lower charges or for pulling loads by means of a cable being guided over a driving pulley. The invention particularly relates to a hoist of the type where one driving pulley is formed by two combined pulley halves forming together a cable groove.

From the European patent application Nr 189.219 a hoist is known where two pulley halves pressed together by means of elastic means, forming a V-shaped cable groove, are used. Such hoist however, has the main disadvantage that as a result of the great force with which the two pulley halves are pressed against each other on the one hand, and the V-shape of the groove on the other hand, the cable is radially forced outwards, causing therefore interferences and irregularities affecting the good working of the device.

And so the first aim of the present invention is to provide for a hoist where the said disadvantage is systematically avoided. More generally still the invention is intended to provide for a hoist offering the combination of the following favourable characteristics:

- a uniform pressure on the cable over the entire angle of contact, mainly by using pulley halves being in a parallel position with each other;
- an easy, automatic cabling of the device after the cable end has been presented to it;
- the cable remains in its correct position between the two pulley halves under all circumstances, in other words is not tending to move away radially from the centre of the cable pulley.

Therefore the invention consists of a hoist characterized in that it mainly consists of the combination of a driving pulley, consisting of two pulley halves; elastic means axially pressing the two pulley halves together; a by means of the two pulley halves formed cable groove having, at least in the area where the cable is gripped, parallel flank parts and small cable guide wheels, working together, more particularly over the angle of contact. With a view to show the better the characteristics of the invention a description of a preferred embodiment is given hereafter as an example without any restrictive character, referring to the attached drawings, where:

figure 1 shows a cross-section of the hoist according to the invention;

figure 2 shows a cross-section between the two pulley halves;

figure 3 shows the part marked by F3 in figure 1 on a larger scale.

As indicated in figures 1 and 2 the hoist according to the invention mainly consists of a driving

pulley 1 consisting of two parallel pulley halves 2 and 3; elastic means 4 pressing the pulley halves 2 and 3 axially together; a cable groove 5 formed by the two pulley halves and a number of small cable guiding wheels 6 along the outer circumference of the cable groove 5.

In the embodiment shown the pulley half 2 is mounted rotatably with respect to the casing 9 by means of bearings 7 and 8. The second pulley half 3 is held in place with respect to the first half 2 by means of a number of bolts 10, supporting at the same time the aforementioned elastic means 4.

The elastic means 4 axially pressing the pulley halves 2 and 3 together may consist of springs chosen at random such as Belleville springs, helical springs, etc. It is noted that the tension of the springs is determined by the force to be exerted on the cable 11, in such a way that is not deformed on the one hand and there will be sufficient friction to have the charges lifted by the hoist without any danger of slipping on the other hand.

A remarkable characteristic of the invention lies in the fact that a combination is provided for where the two pulley halves 2 and 3 are parallel, while the cable groove 5 formed by the pulley halves 2 and 3 in the area where the cable is gripped will have parallel flank parts 12 and 13, as is shown more specifically in figure 3.

Another particular characteristic of the invention consists in the fact that this cable groove 5 over its angle of contact presents inclined flank parts 14 and 15 fitting with the parallel flank parts 12 and 13 and forming a V-shaped part. Preferably the inclining flank parts 14 and 15 will make an angle A with the main plane of cable pulley 1, being 12,5 degrees. At their extreme outer circumference the pulley halves 2 and 3 may be provided with roundings 16 and 17.

The aforementioned small cable guiding wheels 6 are, as shown in figure 2, mainly situated along the entire circumference of the cable groove 5. They preferably consist of bearings, mounted on small shafts 18, fixed in casing 9.

Preferably but not necessarily one small cable guiding wheel 6A will be used near the area 19 where the free end 20 of the cable 11 is introduced respectively leaves, having a larger diameter than the other small cable guiding wheels 6. The advantage of it will be explained hereafter.

It is clear that all small wheels 6-6A may have the same diameter.

The hoist is driven preferably by means of a driving shaft 21 and an external toothing 22; planetary gears 23 situated round the driving shaft 21 and working together with it; and a bush 24 fixed to

the driving pulley 1, meshing with the planetary gears 23 by means of an external tothing 25. The shaft 21 may be driven either manually by means of a crank or similar device, or automatically for instance by an electric motor either fixed to the aforementioned casing 9 or not.

The use of the aforementioned planetary linking mainly has the advantage that the hoist will be particularly compact.

It is clear that the hoist will be provided with means 26 or 27 permitting to fix the unit in an efficient way.

The working of the hoist can be easily deduced from the drawings. First one end of cable 11 is introduced into the device either through passage 28, or through passage 29, whereby same will be automatically guided round the cable pulley 1 by means of the small cable guiding wheels 6. Hereby is mentioned that thanks to the special design of the cable groove 5 a resulting force will be developed, in such a way that when introducing the cable 11 the two pulley halves 2 and 3 are pushed apart and the cable is brought into the correct working position. During normal working the cable 11 lies in the cable groove 5 in such way - as shown in figure 1 - that it will be gripped between the two parallel flank parts 12 and 13 of the pulley halves 2 and 3.

It is also to be noted that the small cable guiding wheels 6 don't exert any pressure on the cable 11 during normal use of the hoist. On the other hand the small cable guiding wheel 6A near the area 19 where the cable is introduced or leaves the device will exert a certain pressure on the cable 11, in order to keep it down in the cable groove 5. According to a first possibility the small cable guiding wheel 6A may be mounted fixed, while according to a second possibility it may be pushed in the direction of the cable pulley 1, by means of springs or similar, not shown on the drawing.

The present invention is in no way limited to the embodiment described as an example, but such a hoist may be realized in different forms and dimensions without going beyond the scope of this invention.

Claims

1.- Hoist, characterized in that it mainly consists of a combination of a driving pulley (1) consisting of two parallel pulley halves (2, 3); elastic means (4) pressing the pulley halves (2, 3) axially together; a cable groove (5) formed by the two pulley halves (2, 3) having, at least where the cable (11) is gripped, parallel flank parts (11, 12); and

small cable guiding wheels (6) working together with the cable groove (5), more specifically along the entire angle of contact.

2.- Hoist according to conclusion 1, characterized in that the cable groove (5) has inclined flank parts (14, 15) in its circumferential area, fitting to the parallel flank parts (12, 13).

3.- Hoist according to conclusion 2, characterized in that the inclined flank parts (14, 15) will make an angle A with the main plane of the Cable pulley (1).

4.- Hoist according to conclusion 3, characterized in that the aforementioned angle A is 12,5 degrees.

5.- Hoist according to conclusion 1, 2 or 3, characterized in that the small cable guiding wheels (6-6A) are all of the same diameter.

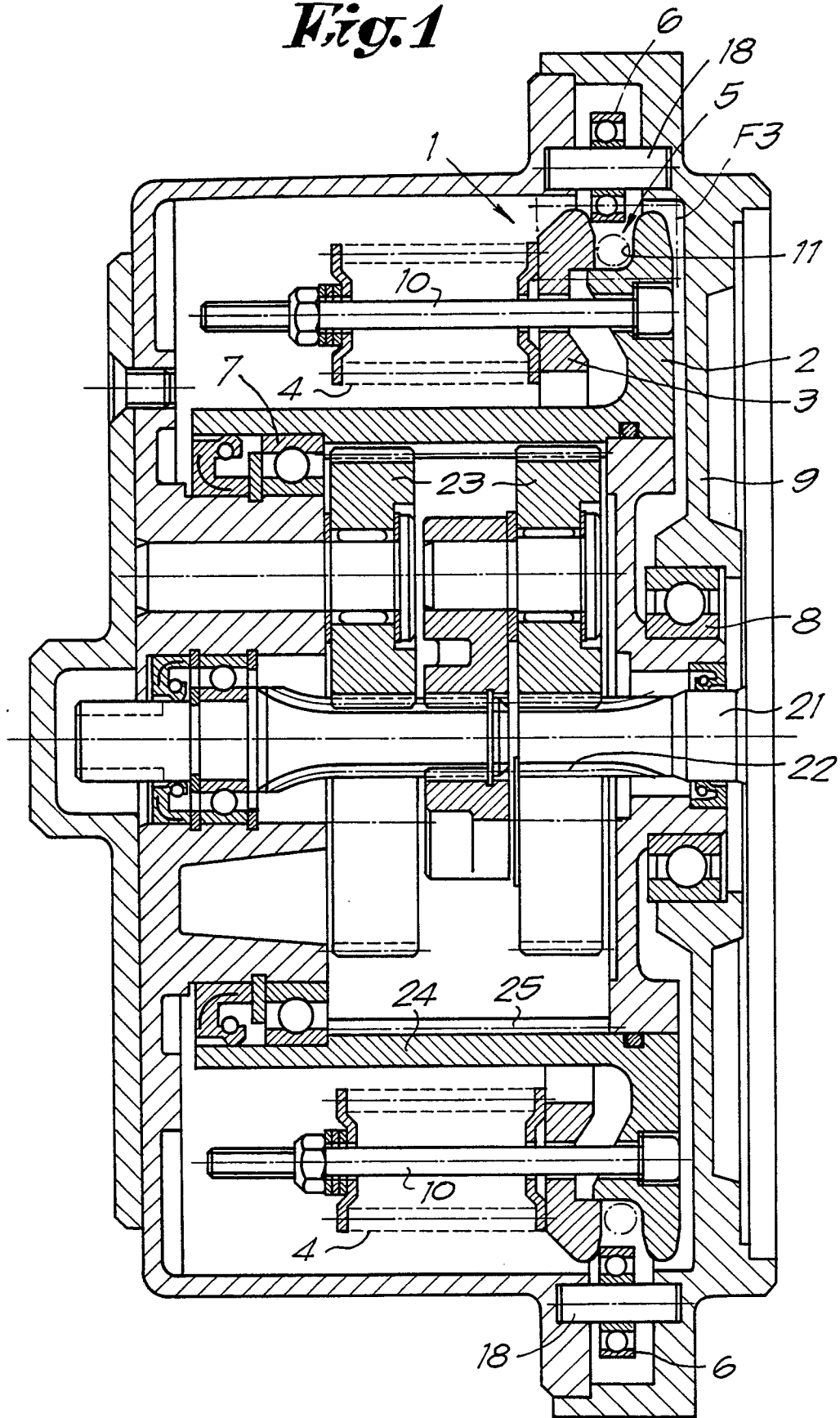
6.- Hoist according to conclusion 1, 2 or 3, characterized in that at least one small cable guiding wheel (6A) near the area (19) where the free end (20) of the cable (11) is introduced or leaves, is of a larger diameter than the other small cable guiding wheels (6).

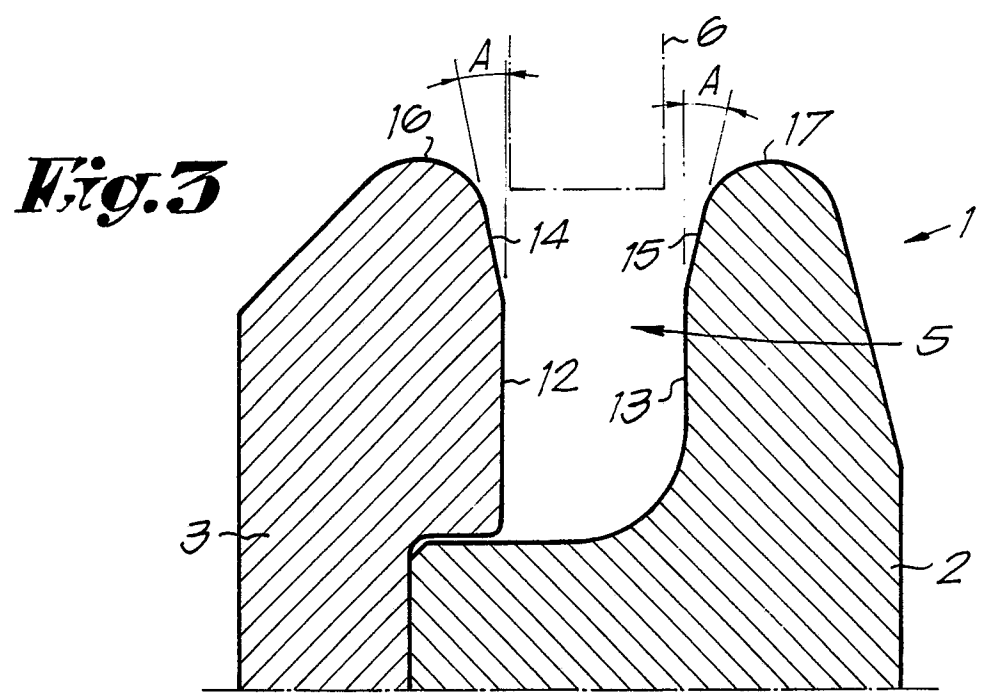
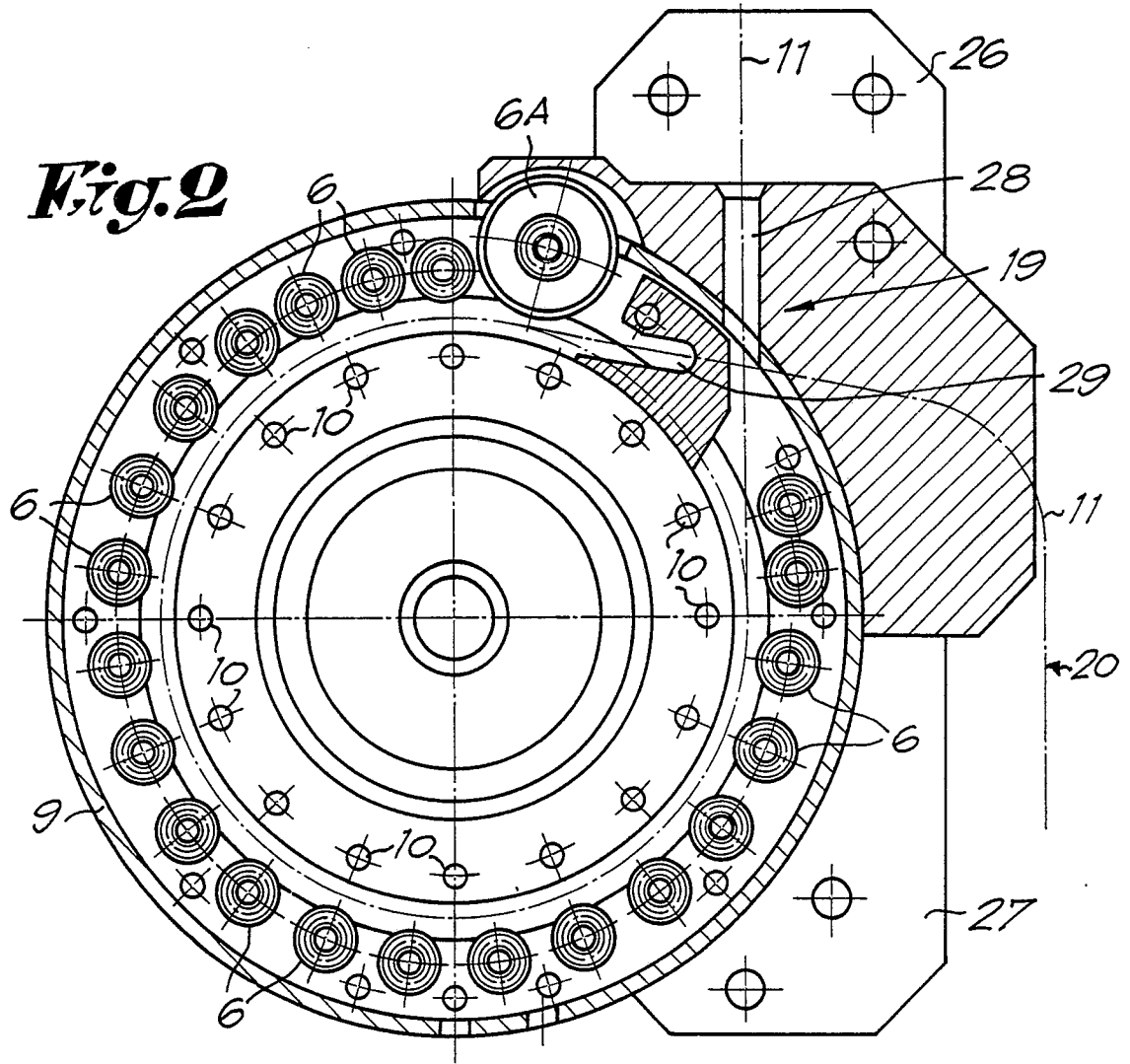
7.- Hoist according to conclusion 6, characterized in that the small cable guiding wheel (6A) is mounted in such a way that its external circumference rests against the cable (11).

8.- Hoist according to conclusion 6, characterized in that the small cable guiding wheel (6A) is pressed against the cable (11) by means of springs or similar devices.

9.- Hoist according to one of the preceding conclusions, characterized in that it is provided with a central driving shaft (21) with external tothing (22); planetary gears (23) situated around and working together with the driving shaft (21) and a bush (24) fixed to the cable pulley (1) and driven by the planetary gears (23) through an internal tothing (25).

Fig. 1







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.4)
X	BE-A- 833 841 (WESTERN GEAR EUROPE) * Page 4, paragraphs 2,3,4,5; page 6, paragraphs 3,4 *	1,2,3,5	B 66 D 1/74
Y	---	6,7,8,9	
D,Y	EP-A-0 189 219 (SKY CLIMBER EUROPE) * Page 8, lines 20-27; page 9, lines 15-21; page 10, lines 22-30; page 11, lines 8-21 *	6,7	
D,A	---	2,3,5	
Y	FR-A-2 557 866 (TRACTEL) * Page 2, lines 2-5,25-30; page 3, lines 2-6 *	8,9	
A	---	2,3	
X	US-A-3 332 597 (MISSIOUX) * Whole document *	1,5	
A	FR-A- 549 510 (FAURE) ---		
A	DE-A-2 522 033 (GREIFZUG GESELLSCHAFT FÜR HEBEZEUGBAU) ---		
A	BE-A- 836 134 (WESTERN GEAR EUROPE) ---		
A	BE-A- 860 619 (WESTERN GEAR EUROPE) -----		TECHNICAL FIELDS SEARCHED (Int. Cl.4) B 66 D F 16 H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14-10-1988	Examiner VAN DEN BERGHE E.J.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	