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(54) Hoist for quickly lifting and positioning an object to a suitable height

(57) A hoist for quickly lifting and positioning an object to a suitable height includes a mast (10) and multiple legs (12) connected to the mast (10) for standing the mast (10). A fixed pulley (31) is mounted on a top end of the mast (10). At least two first cables (52) are driven by a controlling device (40), and have first ends connected to the controlling device (40) and second ends secured on a lower end (32) of a telescopic post (30) that is partially slidably received in the mast (10). A second pulley (61) is mounted to an upper end of the telescopic post (30). At least two second cables (62) having a first end secured on a top (64) of the mast (10) and a second end secured on a lower end (63) of a telescopic rod (60) that is partially slidably received in the telescopic post (30).

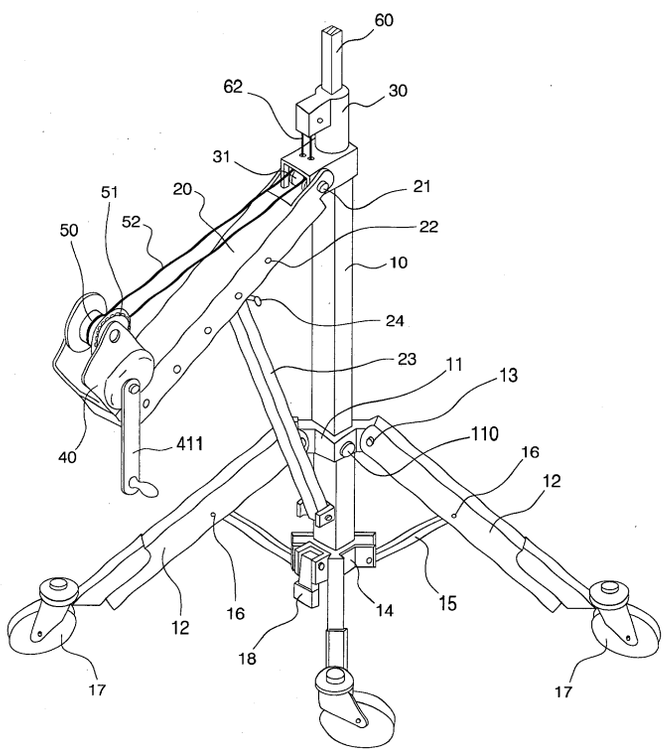

FIG. 1

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a hoist, and more particularly to a hoist for quickly lifting and positioning an object to a suitable height and having a simple structure.

2. Description of Related Art

[0002] A conventional hoist in accordance with the prior art usually has a complicated structure that needs a lot of time for manufacturing. However, the manpower cost becomes high day by day. The manufacturer must simplify the structure of the conventional hoist to decrease the manufacturing cost and effectively enhance the effect of the conventional hoist.

[0003] The present invention has arisen to mitigate and/or obviate the disadvantages of the conventional hoist.

SUMMARY OF THE INVENTION

[0004] The main objective of the present invention is to provide an improved hoist for quickly lifting and positioning an object to a suitable height and having a simple structure.

[0005] To achieve the objective, the hoist in accordance with the present invention comprises a mast and multiple legs connected to the mast for standing the mast. A fixed pulley is mounted on a top end of the mast. At least two first cables is driven by a controlling device, and has a first end connected to the controlling device and a second end secured on a lower end of a telescopic post that is partially slidably received in the mast. A pulley is mounted to an upper end of the telescopic post. At least two second cables each has a first end secured on a top of the mast and a second end secured on a lower end of a telescopic rod that is partially slidably received in the telescopic post. Consequently, the hoist of the present invention has a simplified structure for reducing the manufacturing cost. The telescopic post and the telescopic rod simultaneously upwardly extend so that the hoist of the present invention can quickly lift the object to a suitable height.

[0006] Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007]

Fig. 1 is a perspective view of a hoist for lifting and positioning an object to a suitable height in accordance with the present invention;

Fig. 2 is a partially cross-section view of the hoist in Fig. 1;

Fig. 3 is an operational top plan view of a controlling device of the hoist in accordance with the present invention; and

Fig. 4 is an operational view of a reel of the hoist in accordance with the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0008] Referring to the drawings and initially to Figs. 1-4, a hoist for quickly lifting and positioning an object to a suitable height in accordance with the present invention comprises a mast (10) that is hollow. A slider (11) is movably sleeved around the mast (10). Multiple legs (12) each includes a first end pivotally connected to the slider (11) by a first pivot (13) and a second end having a roller (17) mounted thereon for easily moving the hoist of the present invention. The mast (10) includes a lower end having a connecting seat (14) mounted thereon. A stretcher (15) includes a first end pivotally connected to the connecting seat (14) and a second end pivotally connected to a corresponding one of the multiple legs (12) by a second pivot (16) so that the multiple legs (12) is foldable relative to the mast (10).

[0009] A fixing member (110) is mounted to the slider (11) to selectively hold the slider (11) in place on the mast (10). In the preferred embodiment of the present invention, the fixing member (110) is a screw and securely abutting an outer periphery of the mast (10) after being screwed through the slider (11).

[0010] A stopper (18) includes a first end pivotally connected to the connecting seat (14) and a second end adapted to push a supporting surface to prevent the hoist of the present invention from an unexpected movement.

[0011] An operating arm (20) has a first end pivotally connected to a top of the mask (10) by a third pivot (21) and multiple positioning holes (22) laterally defined in the operating arm (20).

[0012] A linkage (23) has a first end pivotally connected to the mast (10), and a second end extending into the operating arm (20) and aligning with a corresponding one of the multiple positioning holes (22). A wedge (24) extends through the corresponding positioning hole (22) and the second end of the linkage (23) to hole the second end of the linkage (23) in place and adjust an elevation of the operating arm (20).

[0013] A telescopic post (30) partially received in the mast (10) and longitudinally moved relative to the mast (10). The telescopic post (30) includes a lower end received in the mast (10) and having an end piece (not numbered) attached thereon. The end piece abuts an inner periphery of the mast (10) to prevent the telescopic post (30) from being wavered. A fixed pulley (31) is mounted to a top end of the mast (10).

[0014] A controlling device (40) is mounted in a second end of the operating arm (20) opposite to the mast (10). The controlling device (40) includes a shaft (41) laterally extending through the controlling device (40) and having a threaded portion (42) formed on the shaft (41) after extending through the controlling device (40). A drive gear (44) is mounted around the threaded portion (42), a brake pad (46) is mounted around the threaded portion (42) and a washer (45) is mounted between the drive gear (44) and the brake pad (46). The drive gear (44), the washer (45) and the brake pad (46) can be laterally moved on the shaft (41) due to the threaded portion (42). A ratchet wheel (43) is mounted on the threaded portion (42) to prevent the washer (45) and the brake pad (46) from detaching from the shaft (41). A crank (411) is mounted on the shaft (41) for driving the ratchet wheel (43) and the drive gear (44).

[0015] A pawl (47) is pivotally mounted to the controlling device (40) by an axle (48) for selectively being engaged to the ratchet wheel (43) to make the ratchet wheel only rotate in a single direction and a torsion spring (49) is mounted around the axle (48) for providing a restitution force to the pawl (47).

[0016] A reel (50) is pivotally mounted in the controlling device (40). A driven gear (51) is laterally mounted to one end of the reel (50) and engaged to the drive gear (44) so that the reel (50) is rotated when the crank (411) is circularly operated.

[0017] At least two first cables (52) each has a first end secured on the reel (50) and a second end secured on a bottom end (32) of the telescopic post (30) after detouring on the fixed pulley (31) so that the telescopic post (30) is moved relative to the mast (10) when the reel (50) is rotated to reel the at least two first cables (52).

[0018] A telescopic rod (60) is partially and slidably received in the telescopic post (30). The telescopic rod (60) includes a lower end slidably received in the telescopic post (30) and an upper end having adapted to support and lift an object. An end piece (not numbered) is attached to the lower end of the telescopic rod (60) and abuts an inner periphery of the telescopic post (30) to prevent the telescopic rod from being wavered.

[0019] A pulley (61) is mounted on an upper end of the telescopic post (30). At least two second cables (62) each has a first end secured on a top end (64) of the mast (10) and a second end secured on the bottom end (63) of the telescopic rod (60) after detouring the pulley (61) so that the telescopic rod (60) upwardly extends when the two second cables (62) are pulled and the telescopic post (30) upwardly extends.

[0020] When operating the hoist in accordance with the present invention, the user only needs to rotate the crank (411) for driving the drive gear (44), the driven gear (51) and the reel (50), thereby reeling the at least two first cables (52) on the reel (50) to upwardly moved the telescopic post (30). At the same time, the at least two second cables (62) upwardly move the telescopic rod (60) because each second cable has a second end secured on the lower end of the telescopic rod (60) and a first end secured on the upper end of the mast (10), and is detoured on the second pulley (61) that is mounted to the upper end of the telescopic post (30). As described above, the telescopic post (30) and the telescopic rod (60) upwardly extend at the same time so that the hoist of the present invention can quickly lift the object to a suitable height.

[0021] When stopping operating or the object being lifted to a suitable height, the user only needs to let go the crank (411), and the first cables (52) and the second cables (62) reversely pull the reel (50) due to the gravity. Consequently, the driven gear (51) reversely drives the drive gear (44) to laterally push the washer (45) and the brake pad (46) toward the ratchet wheel (43) due to the threaded portion (42) of the shaft (41). The telescopic post (30) and the telescopic rod (60) are fixed when the brake pad (46) laterally abuts the ratchet wheel (43) and the pawl (47) can prevent the ratchet wheel from being reversely rotated. Consequently, the hoist of the present invention can effectively position the object on a suitable height.

[0022] As shown in the figures of the preferred embodiment of the present invention, the hoist of the present invention has two first cables (52) and two second cables (62) so that the present invention has no immediate danger when one of the two first/second cables (52/62) is broken. Consequently, the security of the hoist is enhanced. In addition, the two first cables (52) and the two second cables (62) are respectively connected to the telescopic post (30) and the telescopic rod (60) and do not extending through the telescopic post (30) and the telescopic rod (60) so that the telescopic post (30) and the telescopic rod (60) can maintain the completeness of the structures of the telescopic post (30) and the telescopic rod (60).

[0023] As described above, the hoist of the present invention comprises a simplified structure for reducing the manufacturing cost. The telescopic post (30) and the telescopic rod (60) simultaneously upwardly extend so that the hoist of the present invention can quickly lift the object to a suitable height, and the pawl (47) only allows the ratchet wheel being rotated in a single direction so that the present invention can effectively positioning the object at the suitable height.

[0024] Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.

Claims

1. A hoist for quickly lifting and positioning an object to a suitable height comprising:

a hollow mast having multiple legs pivotally connected to the mast for standing the mast, a fixed pulley mounted to a top end of the mast;

an operating arm having a first end pivotally connected to a top of the mask;

a linkage having a first end pivotally connected to the mast and a second end connected to the operating arm for supporting the operating arm;

a telescopic post partially received in the mast and longitudinally moved relative to the mast, the telescopic post having a lower end received in the mast;

a controlling device mounted in a second end of the operating arm opposite to the mast, the controlling device including a shaft laterally extending through the controlling device and having a threaded portion formed on the shaft, a drive gear and a brake pad mounted around the threaded portion, the drive gear and the brake pad can be laterally moved on the shaft due to the threaded portion, a ratchet wheel mounted on the threaded portion to prevent the brake pad from detaching from the shaft and the brake pad being situated between the ratchet wheel and the drive gear, a crank mounted on the shaft for driving the ratchet wheel and the drive gear;

a pawl pivotally mounted to the controlling device for selectively being engaged to the ratchet wheel to make the ratchet wheel only rotate in a single direction;

a reel pivotally mounted in the controlling device, a driven gear laterally mounted to one end of the reel and engaged to the driven gear so that the reel is rotated when the crank is circularly operated;

at least two first cables each having a first end secured on the reel and a second end secured on a bottom end of the telescopic post after detouring on the fixed pulley so that the telescopic post is moved relative to the mast when the reel is rotated to reel the at least two first cables;

a telescopic rod partially and slidably received in the telescopic post, the telescopic rod including a lower end slidably received in the telescopic post and an upper end adapted to support and lift an object; and

a pulley mounted on an upper end of the telescopic post and at least two second cables each having a first end secured on a top end of the mast and a second end secured on the lower end of the telescopic rod after detouring the pulley so that the telescopic rod upwardly extends when the two second cables are pulled and the telescopic post upwardly extends.

2. The hoist as claimed in claim 1, wherein the operating arm comprises multiple positioning holes laterally defined therein and the second end of the linkage extending to aligning with a corresponding one of the multiple positioning holes, a wedge extending the corresponding one of the multiple positioning holes and the second end of the linkage for adjusting an elevation of the operating arm.

3. The hoist as claimed in claim 1 further comprising a stopper including a first end pivotally connected to a lower end of the mast and a second end adapted to push a supporting surface to prevent the hoist of the present invention from an unexpected movement.

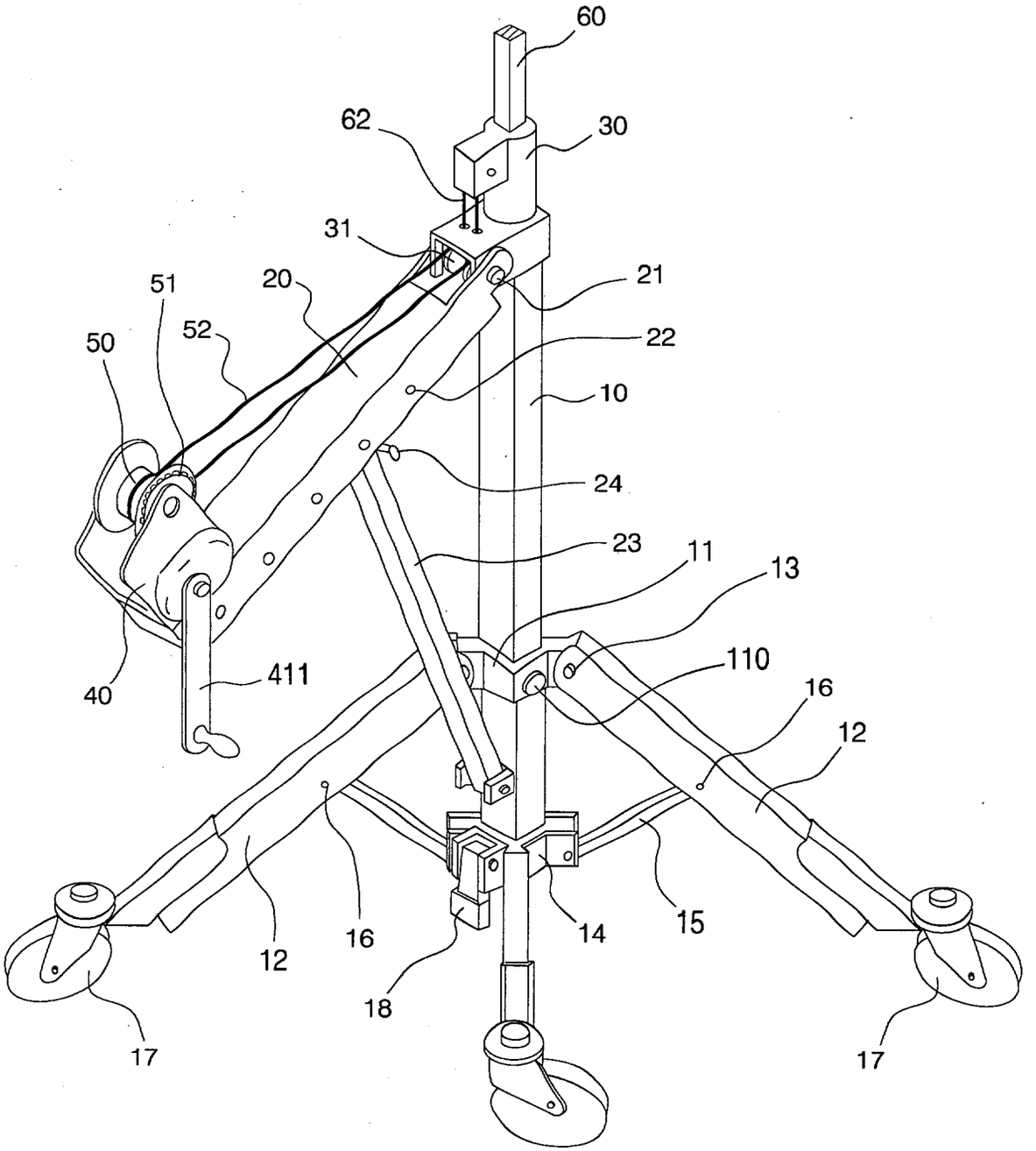
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FIG. 1

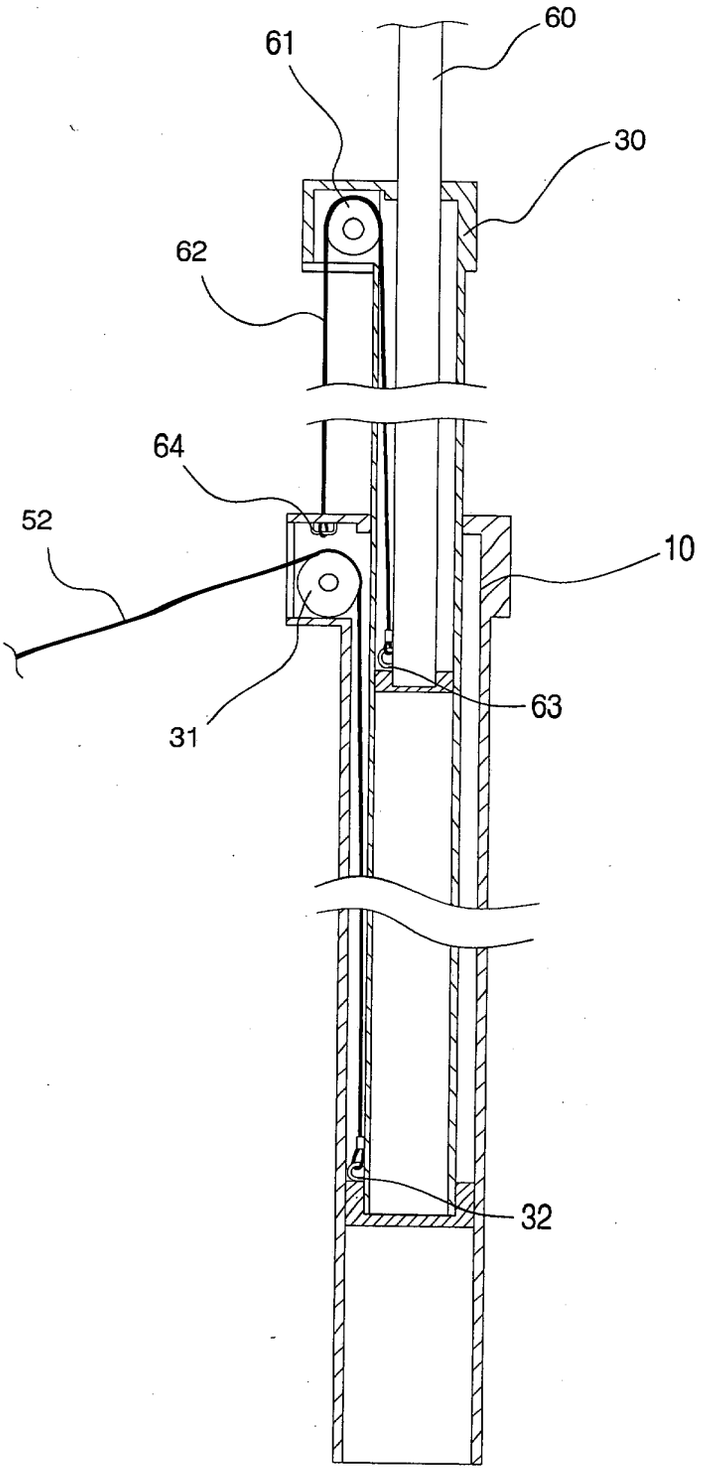

FIG. 2

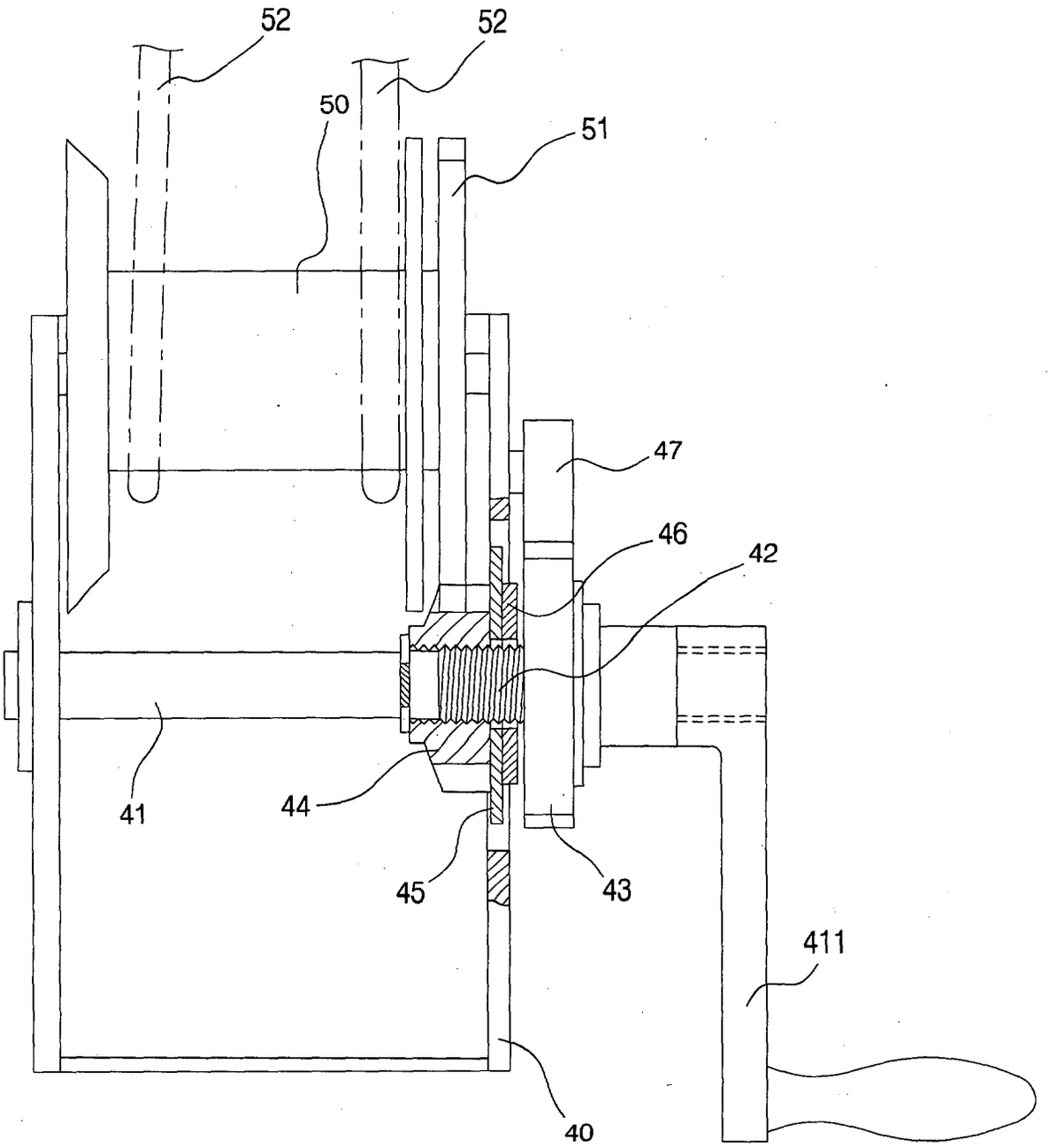

FIG. 3

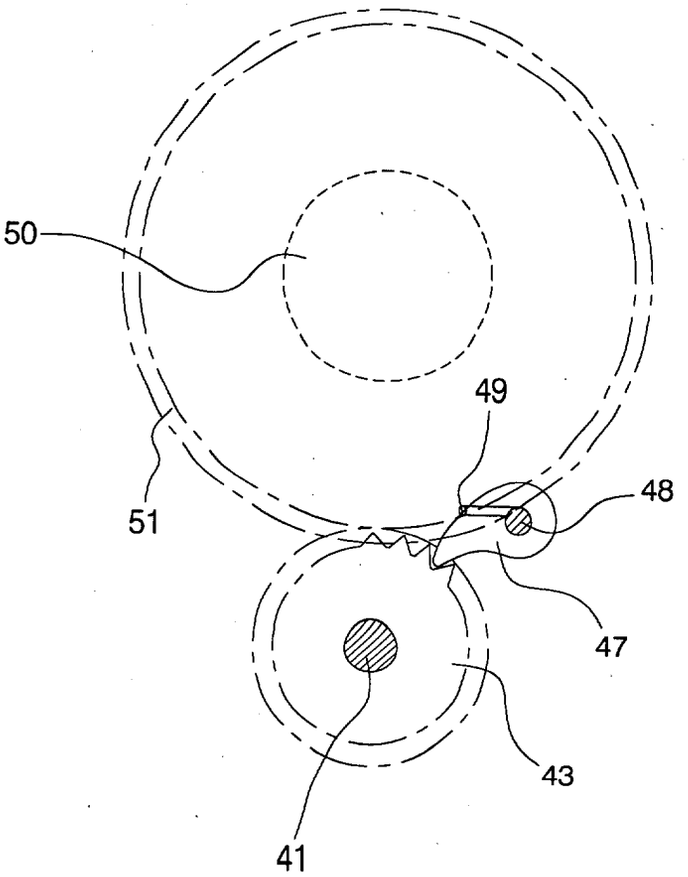

FIG. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 03 02 4902

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.7)
A	US 4 600 348 A (PETTIT EARL O) 15 July 1986 (1986-07-15) * column 2 - column 5, line 6; figures 1-5 * ---	1	B66C23/48 B66F3/00
A	US 4 508 316 A (MILLARD RALPH A) 2 April 1985 (1985-04-02) * column 4, line 21 - line 40; figures 1,2,4,7 * ---	1	
A	US 326 336 A (J. E. SANDBERG & M. AKESON) 15 September 1885 (1885-09-15) * the whole document * ---	1	
A	US 2 634 875 A (R. P. TRAUTNER) 14 April 1953 (1953-04-14) * figure 2 * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B66C
B66F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	25 February 2004	Masset, M

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4600348 A	15-07-1986	NONE	
US 4508316 A	02-04-1985	NONE	
US 326336 A		NONE	
US 2634875 A	14-04-1953	NONE	

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