

DESCRIPTION

FLAT HOIST FOR ELEVATOR

Technical Field

[0001.] This invention relates to a flat hoist for an
5 elevator.

Background Art

[0002.] FIGS. 3A and 3B are a front view and a
longitudinal sectional view showing a conventional flat hoist
for an elevator which is shown in a patent document 1. FIG.
10 4 is an enlarged view showing a portion A in FIG. 3B. A
numeral 1 is a support member. The support member 1
includes a hollow shaft portion 1a, and a disc-shaped fixing
portion 1b extending in a radial direction from one end of
the shaft portion 1a. The support member 1 is fixed to an
15 elevator hoistway and so on. A rotor 2 includes a rotor
iron core 3, and permanent magnets 4 mounted on an outer
circumference of the rotor iron core 3. The rotor 2 is
rotatably supported on the shaft portion 1a of the support
member 1 through a bearing 5. The rotor iron core 3
20 includes a smaller diameter portion 3a which is formed on
one end portion of the rotor iron core 3, and which
protrudes. A sheave 6 is mounted and fixed on the smaller
diameter portion 3a of the rotor iron core 3. The sheave 6
includes a rope groove 6a formed in an outer circumference
25 portion of the sheave 6. A rope 7 for suspending an
elevator car which goes up and down in the elevator
hoistway is wound around the rope groove 6a.

[0003.] Moreover, a brake drum 8 is formed on an end portion of the rotor iron core 3 which is on the smaller diameter portion 3a's side, and on an outer circumference portion of the rotor iron core 3. The brake drum 8 has a diameter larger than the diameter of the sheave 6. The brake drum 8 has an outside diameter which is larger than an outside diameter of the rotor 2, and which is smaller than an outside diameter of the support member 1. On the other hand, the stator 11 includes a stator iron core 9 and a stator winding 10. The stator iron core 9 is integrally mounted on the support member 1 by a mounting bolt 12. A brake drum cover 13 is mounted on a side surface of the support member 1 which is on the sheave 6's side. The brake drum cover 13 covers the side surface of the brake drum 8.

[0004.] A motor section of the hoist which includes the stator 11 and the rotor 2 has a flat shape in which a length of the iron core is extremely shorter than a diameter of the iron core. Moreover, a brake pad (not shown) is engaged with the brake drum 8 to brake the rotor 2, that is, the hoist.

Prior Art Document

Patent Document

[0005.] Patent Document 1: Japanese Patent Application Publication No. 2003-134768

Summary of The Invention

[0006.] In the above-described conventional flat hoist for the elevator, the brake drum cover 13 is provided on the side surface of the support member 1 which is on the sheave 6's side. The brake drum cover 13 covers the side

surface of the brake drum 8. Moreover, the brake drum cover 13 has an inside diameter larger than the outside diameter of the sheave 6. An oil included in the rope 7 wound around the rope groove 6a of the outer circumference of the sheave 6 passes through a portion between the outer circumference of the sheave 6 and the inner circumference of the brake drum cover 13, and may be adhered (attached) to the side surface of the brake drum 8. This oil adhered to the side surface of the brake drum 8 flows by a centrifugal force to sliding surfaces between the outer circumference surface of the brake drum 8 and the brake pad. This may remarkably decrease the braking force.

[0007.] It is, therefore, an object of the present invention to provide a flat hoist for an elevator which is devised to dissolve the above-mentioned problems, to prevent the oil included in the rope for suspending the elevator car from adhering to the side surface of the brake drum, and to prevent the decrease of the braking force.

[0008.] According to one aspect of the present invention, the flat hoist comprises: a rotor which has a diameter smaller than a diameter of a support member, and which is rotatably supported through a bearing by the support member; a stator fixed to the support member; a sheave that is mounted on a protruding smaller diameter portion of the rotor, and that includes a rope groove which is formed in an outer circumference of the sheave, and around which a rope for suspending an elevator car arranged to go up or down in an elevator hoistway; a brake drum which is formed on the rotor, and which has a diameter larger than

a diameter of the sheave; a brake drum cover mounted on a side surface of the support member which is on the sheave's side, and which covers the side surface of the brake drum; and a groove formed in a portion of the sheave which is on the brake drum's side, the brake drum cover including an inner end inserted into the groove.

[0009.] According to another aspect of the present invention, the brake drum cover includes a turn-back portion which is turned back in an outward direction, and which is formed at the inner end of the brake drum cover; and the groove includes a receiving portion receiving the turn-back portion.

[0010.] By the above-described aspect, the groove is formed in a portion of the sheave which is on the brake drum's side. The inner end of the brake drum cover is inserted into this groove. The brake drum cover is positioned between the rope and the side surface of the brake drum. Accordingly, it is possible to prevent the oil of the rope from adhering to the side surface of the brake drum, to prevent the oil from adhering to the outer circumference surface of the brake drum, and to prevent the decrease of the braking force.

[0011.] Moreover, by the another aspect, an outward turn-back portion which is turned (folded) back in the outward direction is formed at an inner end of the brake drum cover which is inserted into the groove of the sheave. The groove includes a receiving portion for receiving the turn-back portion. With this, it is possible to prevent the oil of the rope from adhering to the side surface of the brake drum cover by the brake drum cover positioned

between the rope and the brake drum cover, and also by the turn-back portion of the inner end of the brake drum cover and the receiving portion of the groove of the sheave for the turn-back portion. Accordingly, it is possible to
5 further surely prevent the oil from adhering to the side surface and the circumference surface of the brake drum cover, and to further surely prevent the decrease of the braking force.

Brief Description of Drawings

10 [0012.] FIG. 1 is a longitudinal sectional partially enlarged side view showing a flat hoist for an elevator according to a first preferred embodiment of the present invention.

[0013.] FIG. 2 is a longitudinal sectional partially
15 enlarged side view showing a flat hoist for an elevator according to a second preferred embodiment of the present invention.

[0014.] FIGS. 3A and 3B are a front view and a longitudinal sectional side view showing a conventional flat
20 hoist for an elevator shown in the patent document 1 and so on.

[0015.] FIG. 4 is an enlarged view showing a portion A in FIG. 3B.

Detailed Description of The Invention

25 [0016.] First Embodiment

Hereinafter, a best mode for attaining the present invention is illustrated with reference to drawings. FIG. 1 is a longitudinal sectional partially enlarged side view showing a flat hoist for an elevator according to a first
30 embodiment of the present invention. A numeral 6b is a

groove formed in a portion of a sheave 6 which is on a
brake drum 8's side. A numeral 14 is a brake drum cover
mounted on a surface of a support member 1 which is on a
sheave 6's side. The brake drum cover 14 covers a side
5 surface of the brake drum 8. An inner end portion of the
brake drum 14 is inserted into the groove 6b. Other
structures are identical to those of the conventional
apparatus.

[0017.] In the first preferred embodiment, the inner end
10 of the brake drum cover 14 is inserted into the groove 6b
formed in the portion of the sheave 6 which is on the brake
drum 8's side. The brake drum cover 14 partitions between
the rope 7 and the side surface of the brake drum 8. With
this, it is possible to prevent the oil of the rope 7 from
15 adhering to the side surface and the circumference surface
of the brake drum 8, and to prevent the decrease of the
braking force.

[0018.] Second Embodiment

FIG. 2 is a longitudinal sectional partially enlarged
20 side view showing a flat hoist for an elevator according to a
second embodiment of the present invention. A numeral 6c
is a groove formed in a portion of the sheave 6 which is on
the brake drum 8's side. A numeral 15 is a brake drum
cover mounted on the side surface of the support member
25 1 which is on the sheave 6's side. The brake drum cover
15 covers the side surface of the brake drum 8. An inner
end of the brake drum cover 15 is inserted into the groove
6c. An outward turn-back portion 15a which is turned
(folded) back in the outward direction is formed at the
30 inner end of the brake drum cover 15. This turn-back

portion 15a is inserted into a receiving portion 6d formed in the groove 6c. The other structures are identical to those of the conventional apparatus.

[0019.] In the second preferred embodiment, the inner
 5 end of the brake drum cover 15 is inserted into the groove 6c of the sheave 6. The outward turn-back portion 15a is formed at the inner end of the brake drum cover 15. This turn-back portion 15a is received in the receiving portion 6d formed in the groove 6c. It is possible to prevent the
 10 oil of the rope 7 from adhering to the side surface and the circumference surface of the brake drum 8 by the brake drum cover 15, and also by the turn-back portion 15a of the inner end of the brake drum cover 15 and the receiving portion 6d of the groove 6c. Accordingly, it is possible to
 15 further surely prevent the oil from adhering to the side surface and the circumference surface of the brake drum 8, and to surely prevent the decrease of the braking force.

Explanation of Symbols

[0020.] 1 ... support member
 20 2 ... rotor
 3 ... rotor iron core
 3a ... smaller diameter portion
 5 ... bearing
 6 ... sheave
 25 6a ... rope groove
 6b, 6c ... grooves
 6d ... receiving portion
 7 ... rope
 8 ... brake drum
 30 11 ... stator

14, 15 ... brake drum cover

15a ... turn-back portion

CLAIMS

- 1 1. A flat hoist for an elevator, the flat hoist comprising:
2 a rotor which has a diameter smaller than a diameter
3 of a support member, and which is rotatably supported
4 through a bearing by the support member;
5 a stator fixed to the support member;
6 a sheave that is mounted on a protruding smaller
7 diameter portion of the rotor, and that includes a rope
8 groove which is formed in an outer circumference of the
9 sheave, and around which a rope for suspending an
10 elevator car arranged to go up or down in an elevator
11 hoistway;
12 a brake drum which is formed on the rotor, and which
13 has a diameter larger than a diameter of the sheave;
14 a brake drum cover mounted on a side surface of the
15 support member which is on the sheave's side, and which
16 covers the side surface of the brake drum; and
17 a groove formed in a portion of the sheave which is on
18 the brake drum's side,
19 the brake drum cover including an inner end inserted
20 into the groove.
- 1 2. The flat hoist for the elevator defined in claim 1,
2 wherein the brake drum cover includes a turn-back portion
3 which is turned back in an outward direction, and which is
4 formed at the inner end of the brake drum cover; and the
5 groove includes a receiving portion receiving the turn-back
6 portion.