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54 **METHOD OF DRIVING HEALD FRAME FOR NEGATIVE DOBBY MACHINE, NEGATIVE CAM MACHINE.**

57 A method of driving a heald when flexible transmission members (3a, 3b), such as ropes or the like, connected to the shedding levers of a negative doobby machine, negative cam machine, etc. are provided above a heald frame (11). The flexible transmission members (3a, 3b) and the heald frame (11) are connected via operation levers (4a, 4b) arranged at the side or above the heald frame (11) and a connecting rod (8) or the like, so that the spring tension acting on the heald frame (11) is small and the members (3a, 3b) and an operation member (2) for the negative doobby machine body, negative cam machine body, etc. less wear in case that the tension of the falling warp is larger than the tension of a lifted warp. The heald frame (11) is lowered by the tension of the members (3a, 3b) and raised by the force of spring (13) arranged above or beside the heald frame (11)

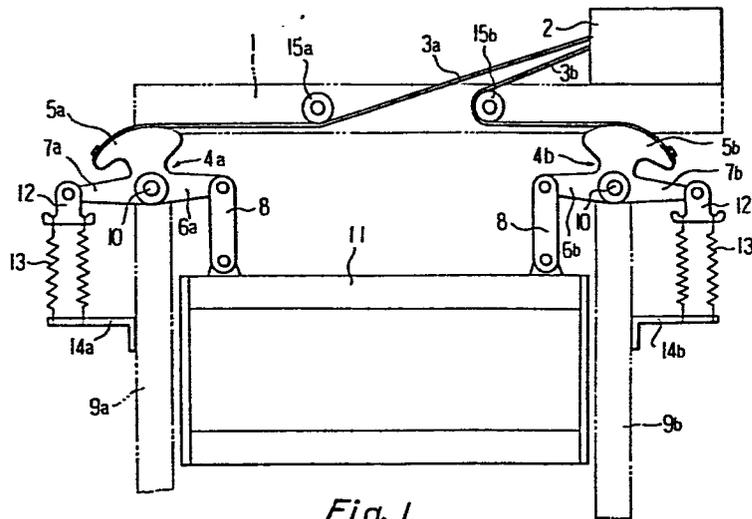


Fig. 1

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Technical Field

5 This invention relates to driving method for moving a heald frame up and down in negative dobby machines or negative cam machines installed to looms.

Background Art

10 In prior art, when resilient transmission member such as ropes connected to a shedding lever of negative dobby machines or cam machines is disposed above a heald frame, heald frame driving method is performed by raising the heald frame using tension of the rope and depressing it using spring restoring force. In this driving method, however, for example, when spun yarn
15 fabric is woven in refined clothing fashion, if tension of downward warp is made larger than that of upward warp, spring tension must be increased. Since the heald frame is raised against the above mentioned spring tension, large strength acts on the rope and on the negative dobby machine body or the negative cam machine body,
20 thereby abrasion is accelerated in such part and power is lost. Moreover, since the spring and members relating to this are disposed below the heald frame, treatment is inconvenient and workability is not favorable.

Disclosure of Invention

25 This invention is characterized in heald frame driving method when resilient transmission member such as rope connected to a shedding lever of negative dobby machines or cam machines is disposed above a heald frame, wherein the resilient transmission



(2)

1 member is engaged with the heald frame through a working lever,
a connecting rod or the like, driving is effected so that the
heald frame is moved downwards by tension of the resilient
transmission member and upwards by restoring force of a spring,
5 and the operating lever, connecting rod, spring and the like are
arranged at lateral side or upper side of the heald frame.

An object of this invention is to provide heald frame
driving method wherein spring tension acting on a heald frame
is small when tension of downward warp is less than that of upward
10 warp, and abrasion is small at resilient transmission member at
working member such as negative dobby machine body or cam machine
body.

Another object of this invention is to provide heald
frame driving method, wherein the working lever, connecting rod
15 and spring to engage the resilient transmission member with the
heald frame are arranged at lateral side or upper side of the
heald frame, and treatment and adjustment are easy.

Still another object of this invention is to provide
heald frame driving method wherein power loss is small.

20 Above mentioned and other objects and features of this
invention will be apparent from the following description
referring to the accompanying drawings.

Brief Description of the Drawings

Fig. 1 is a schematic front view of an embodiment of
25 this invention.

Best Mode Carrying Out the Invention

Fig. 1 shows an embodiment of method according to this
invention. In the figure, a negative dobby machine body 2 is
mounted on the right end of upper surface of a top beam 1 of a



(3)

1 loom, and a plurality of heald frames 11, which correspond to a
plurality of shedding levers (not shown) of the negative dobbie
machine body 2 and have the same number as that of the shedding
levers, are arranged in longitudinal direction. One shedding
5 lever is connected to two ropes 3a, 3b for one heald frame 11
corresponding thereto.

The top beam 1 of the loom is provided with pins projecting on
leftward and rightward portions from the center of the beam, and
a plurality of guide pulleys 15a, 15b corresponding to the heald
10 frames 11 are rotatably supported by respective pins. Shafts
10 project respectively on both side frames 9a, 9b of the loom
at sideward portion of the heald frames 11, and a plurality of
working levers 4a and 4b are pivotally supported respectively
by the shafts 10 corresponding to each heald frame 11. The
15 working levers 4a and 4b are formed in lateral symmetry and
provided with sector portions 5a, 5b on upper side, connecting
portions 6a, 6b on inner side, and arms 7a, 7b on outer side,
the rope 3a guided by the guide pulley 15a is connected to the
sector portion 5a; the rope 3b guided by the guide pulley 15b is
20 connected to the sector portion 5b.

Connecting rods 8, 8 are joined with pins respectively to the
connecting portions 6a, 6b, and each of the connecting rods 8,
8 stands upright and the bottom end thereof is pivotally
connected to the heald frame 11.

25 Hooks 12, 12 are joined with pins respectively to outer ends
of the arms 7a, 7b, and brackets 14a, 14b are installed below
the arms 7a, 7b in opposing relation thereto.

The brackets 14a, 14b are attached to the side frames 9a, 9b,
and two tension coil springs 13 are stretched between the hooks



(4)

1 12, 13 and the brackets 14a, 14b respectively.

In the negative dobby machine as above constituted, when the shedding lever (not shown) of the negative dobby machine body 2 oscillates and the ropes 3a, 3b are pulled, the left
5 working lever 4a rotates in clockwise direction against torque of the coil spring 13 and the right working lever 4b rotates in counterclockwise direction, thereby the heald frame 11 is moved downwards through the connecting rods 8, 8. When the shedding
10 lever is restored, both working levers 4a, 4b are also restored by means of restoring force of the coil spring 13, thereby the heald frame is moved upwards. Since longitudinal position on upper side of the heald frame 11 is defined by the connecting rods 8, the heald frame 11 is provided with a guide member (not shown) only at lower side thereof. In order to
15 refine clothing fashion in spun yarn fabric, distance from shedding neutral position (i.e position where warp is displaced neither upwards nor downwards by means of the heald) to downward warp position is set larger than that to upward warp position. Accordingly, tension in downward warp is larger than that in
20 upward warp therefore the tension coil spring 13 with less tension may be used there.

As a result, force applied to the rope or the negative dobby machine body 2 in order to drive the heald frame 11 against the spring tension becomes small.

25 Although above mentioned embodiment is described regarding a negative dobby machine, similar function is obtained when the negative dobby machine body 2 is replaced by a negative cam machine body in the above mentioned embodiment.

Moreover, the tension coil spring 13 in the above



(5)

1 mentioned embodiment may be replaced by another tension coil
spring connecting the head frame 11 with the top beam 1.

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(6)

1 CLAIM

Heald frame driving method in negative dobbie machines
or cam machines, wherein resilient transmission member such as ropes
connected to a shedding lever of negative dobbie machines or cam
5 machines is disposed above a heald frame which is driven,
characterized in that the heald frame is connected to the
resilient transmission member through a working lever, a
connecting rod and the like which are arranged at lateral side
or upper side of the heald frame, and driving is effected so that
10 the heald frame is moved downwards by pulling the resilient
transmission member using the shedding lever and it is moved
upwards by a spring arranged at lateral side or upper side
of the heald frame when the shedding lever is restored.

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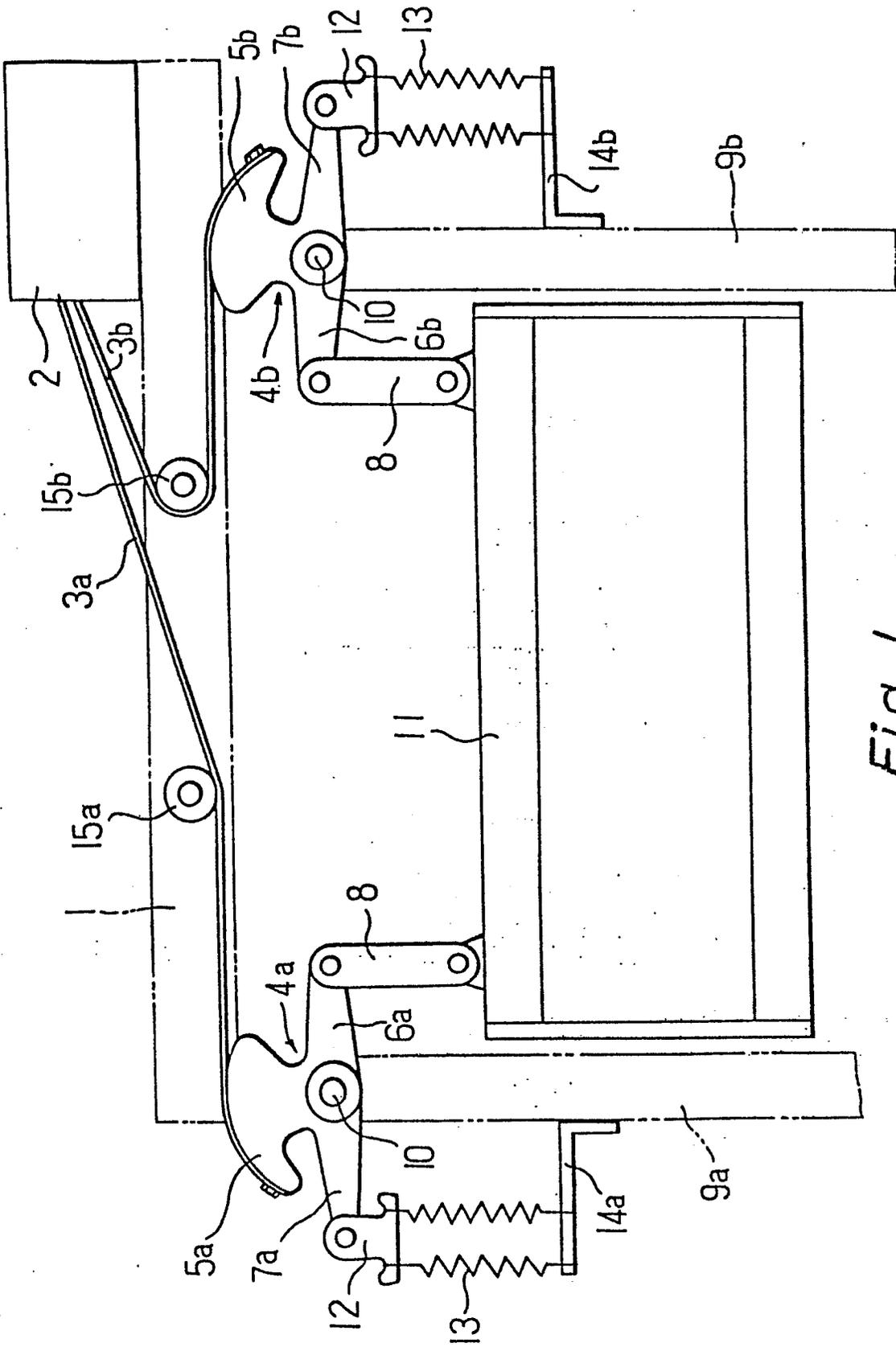


Fig. 1

INTERNATIONAL SEARCH REPORT

0085108

International Application No

PCT/JP 81/00418 1

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ³		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. Cl ³ D03C13/00		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
Int.Cl ³	D03C13/00	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁴		
Jitsuyo Shinan Koho	1926 - 1980	
Kokai Jitsuyo Shinan Koho	1971 - 1980	
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category ⁴	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
A	JP, B1, 47-28430 1972-7-27(Steubrie A.G.) "A" document defining the general state of the art which is not considered to be of particular relevance	1
<p>⁵ Special categories of cited documents: ¹⁵</p> <p>"A" document defining the general state of the art</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document cited for special reason other than those referred to in the other categories</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but on or after the priority date claimed</p> <p>"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ⁹	Date of Mailing of this International Search Report ⁹	
March 25, 1982 (25.03.82)	April 5, 1982 (05.04.82)	
International Searching Authority ¹	Signature of Authorized Officer ²⁰	
Japanese Patent Office		