Abstract: The invention relates to a frame for a device and/or a part in a fibre web manufacturing line, such as a paper or board web manufacturing line, which frame is an element frame comprising at least two prefabricated element frame parts (10A, 10B), which can be moved as a whole and mounted in place at a fibre web mill.
Frame structure for a device and/or a part in a fibre web manufacturing line

The invention relates to a frame structure for a device and/or a part in a fibre web manufacturing line, such as a paper or board web manufacturing line, according to claim 1.

As known in the state of the art, fibre web manufacturing lines use different devices and/or parts mounted in place in a manufacturing line by means of a frame. Although in this description the invention is mainly described using reels employed in fibre web manufacturing lines as an example, the invention also relates to other devices and/or parts used in fibre web manufacturing lines, such as, for example, calenders and size presses.

As known in the state of the art, fibre web manufacturing lines use different reels and winders. Reel-ups are used for reeling a full-width web coming from a fibre web machine, such as a paper or board machine, to form machine rolls. As known in the state of the art, reel-ups of a paper or board machine are generally located at the downstream end of the paper or board web manufacturing line and they are used for reeling the completed paper web about a reel spool, i.e. a so-called reeling drum, to form a machine roll. After that there are often finishing devices, which are used for making customer rolls out of the paper or board web according to the customer's requirement. The machine rolls wound by means of reel-ups are unwound using unwinds for finishing the web, the fibre web unwound by means of an unwind being passed to a finishing device, for example, a slitter-winder, by which the web is slit into component webs and wound onto customer rolls using a winder following after the slitting operation. Rereelers are additionally used in the manufacture of the paper web.
As known in the state of the art, the frame of the devices / parts used in fibre web manufacturing lines has typically been a welded steel structure in order to make the load carrying capacity of the frame sufficient with respect to the space requirement and functionality of the structure. However, the time of mounting a frame made of a welded steel structure is rather long, when foundation work is also taken into account, and therefore a frame made of a welded steel structure has proved problematic because, in connection with the installation of both new fibre web machines and those to be modernized, one of the aims of today is to achieve as short an installation time as possible in order that the fibre web machine might be placed into production use as quickly as possible, thereby making the payback period of investment short. Today, in addition to a short installation time, low costs without sacrificing performance are also considered important, which has also proved problematic in connection with frames manufactured of a welded steel structure because the world market price trend for steel is expected to remain upward because of increasing demand. Further, the current trend in connection with fibre web reels is to increase both the mass and the diameter of machine rolls, which means that the significance of the matters described above will increase further with increasing size of the necessary frame structures.

From the state of the art is also known a frame structure arrangement in which the transfer rails of machine rolls located in connection with reels are made on top of concrete foundations cast in situ (in the fibre web mill). However, this arrangement has required a rather long mounting/downtime period because the hardening time of concrete is long even when rapid-hardening concrete is used.

From the state of the art it is also known to use steel foundations/frames when a short mounting/downtime period has been of decisive importance, but in that case the costs will be high.

An object of the invention is to provide a frame for a device and/or a part in a fibre web manufacturing line, such as a paper or board web manufacturing line, in
which the problems and drawbacks described above as well as those coming out later are eliminated or at least minimized.

A particular object of the invention is to create a frame for a device and/or a part in a fibre web manufacturing line whose installation is fast and inexpensive.

An object of the invention is also to provide new versatile arrangements in connection with frames of devices and parts of fibre web manufacturing lines.

With a view to achieving the objectives described above as well as the ones coming out later, the frame according to the invention is mainly characterized in what is stated in the characterizing part of claim 1.

In accordance with the invention, the frame of a device and/or a part of a fibre web manufacturing line is a prefabricated element frame, which is advantageously made of concrete or another similar construction material that is readily available and has a favourable price. The element frame comprises at least two element frame parts both a drive side frame part and a tending side frame part, which are formed of a prefabricated element.

In accordance with an advantageous embodiment of the invention, when a steel sheet frame of prior art frame structures is replaced with concrete, in particular in the vertical direction of the frame structure, the stiffness of the frame structure can be maintained with increasing mass and diameter of the machine roll.

In accordance with one advantageous additional feature of the invention, suitable equipment is arranged in connection with the element frame of the invention, thus allowing the amount of installation work to be reduced in the fibre web mill and, at the same time, allowing the number of lifting operations to be reduced. For example, a HEP (hydraulic-electric-pneumatic) module and/or an automation module can be integrated in connection with the element frame. In connection with the
provision of equipment, the necessary tubular bridges, attachment devices, ducts and the like can also be arranged in connection with the element frame, so that the operations associated with installation can be performed quickly and simply. In addition, plate surfaces can be integrated in the frame in accordance with the invention, for example, for guides or the like, to which plate surfaces the guides or the like can be readily attached, so that parts movable in the guides, for example, a rider roll in winders, can be easily mounted in the guides.

In accordance with one advantageous additional feature of the invention, the element frame also serves as a bed for a drive, whereby the drive is well supported and can be readily mounted in place, and a separate frame/bed is not needed for it.

The element frame in accordance with the invention is advantageously manufactured in a prefabricated element factory or close to the site of installation at a fibre web mill, whereby downtime can be minimized. In addition, when needed, the element frame can be used in testing and/or for provision of equipment already before it is installed in place at the fibre web mill.

An advantage attained by the invention with respect to a frame cast on site is also the fact that the element frame in accordance with the invention can be mounted quickly in place and, for example, it is not necessary to await the hardening of a concrete casting, and the fact that the element frame can be readily moved, for example, in connection with later modernizations, so that the existing device/part can also be made use of in another site of use.

At its most advantageous, the invention makes it possible to manufacture the frame in advance, for example, already at the fibre web machine factory, so that a device/part of a fibre web manufacturing line with its frame can be moved as a single whole to a fibre web mill.
In accordance with an advantageous embodiment of the invention, the element frame is made of concrete, which is an inexpensive construction material and, in addition, it is readily available all over the world.

The invention also makes it possible to easily arrange the frame height at the floor level of the fibre web mill, in which case the floor is provided with the necessary foundation on which the frame is mounted such that its lower surface will be at the level of the floor, so that, for example, in reels and winders the machine roll can be placed such that it is partly below the floor level, thus allowing the centre height of the machine roll to be lower.

In the following, the invention will be described in greater detail with reference to the figures of the appended drawing, but the invention is by no means meant to be narrowly limited to the details of the drawing.

Figures 1A-1B schematically show one embodiment of the invention.

Figs. 1A-1B schematically show element frame parts 1OA, 1OB of both sides of a device, in the figures a reel, in a fibre web manufacturing line. The frame in accordance with the invention comprises at least two element frame parts 1OA, 1OB, i.e. a frame part 1OB placed on the tending side, Fig. 1B, and a frame part 1OA placed on the drive side, Fig. 1A. In accordance with the invention, the element frame parts 1OA, 1OB are made of concrete or an equivalent readily available construction material and it forms a movable whole that is prefabricated and can be mounted in place as one module at a fibre web mill. Both element frame parts 1OA, 1OB comprise an attachment means HA, HB for attaching the end of a reel spool. A drive 12 and its bed 15 are arranged in connection with the attachment means HA of the drive side, by means of which drive 12 the reel spool and the fibre web roll being formed about it during reeling are moved, in different stages of reeling with the progress of the reeling process, on guides 13 attached to a plate surface 14 arranged in connection with the provision of equipment. A HEP (hy-
A hydraulic-electric-pneumatic module and/or an automation module can be integrated in connection with the element frame of the reel. In connection with the provision of equipment, the necessary tubular bridges, attachment means, ducts and the like can also be arranged in connection with the element frame.

Above, the invention has been described only with reference to one of its advantageous exemplifying embodiments, to the details of which the invention is, however, not by any means meant to be narrowly limited.
Claims

1. A frame for a device and/or a part in a fibre web manufacturing line, such as a paper or board web manufacturing line, **characterized** in that the frame is an element frame comprising at least two prefabricated element frame parts (1OA, 10B), which can be moved as a whole and mounted in place at a fibre web mill.

2. A frame as claimed in claim 1, **characterized** in that the element frame is made of concrete or an equivalent readily available construction material.

3. A frame as claimed in claim 1 or 2, **characterized** in that the element frame comprises one frame part (10A) placed on the drive side (Fig. 1A) and one frame part (10B) placed on the tending side (Fig. 1B).

4. A frame as claimed in any one of claims 1 to 3, **characterized** in that the frame part (10A) of the element frame on the drive side is arranged to serve as a bed (15) for a drive (12).

5. A frame as claimed in any one of claims 1 to 4, **characterized** in that the element frame is a part of a floor structure of a fibre web mill.

6. A frame as claimed in any one of claims 1 to 5, **characterized** in that the element frame is ready-equipped and comprises an integrated HEP (hydraulic-electric-pneumatic) module and/or automation module.

7. A frame as claimed in any one of claims 1 to 6, **characterized** in that the element frame comprises tubular bridges, attachment means, ducts and the like arranged in connection with the provision of equipment and required for the device and/or the part of the fibre web manufacturing line.
8. A frame as claimed in any one of claims 1 to 7, characterized in that the element frame comprises at least one integrated plate surface (14) for guides (13) and equivalent.

9. A frame as claimed in any one of claims 1 to 8, characterized in that the frame is a frame of a reel, such as a frame in a reel-up, an unwind or a re-reeler.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

INV. B65H16/00  B65H18/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

B65H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

7 November 2007

Date of mailing of the international search report

16/11/2007

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Fachin, Fabiano
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