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(54) **A cutting device for on a roll winded web**

(57) A cutting device of on a roll winded web, as paper web, which device has frame (3) on which roll (8) can be placed horizontally, the frame includes support reels (4) of roll (8), which can be reeled in order to unwind the roll, and further a cutter assembly, as disc (11), by means of which it is possible to make in the side of the roll at least a horizontal incision. Frame (3) includes receiving means of roll (8), as plate 10 and as its extension a plane (9), by means of which roll (8), after been conveyed onto said plate 10, can be lifted onto support reels (4) regardless of roll length and diameter, and the device has a control system by means of which the rotation of roll can be stopped by cutting edge (11) for making the incision and for further for reeling in order to remove from around roll (8) the layer (13) that has got loose by means of the incision.

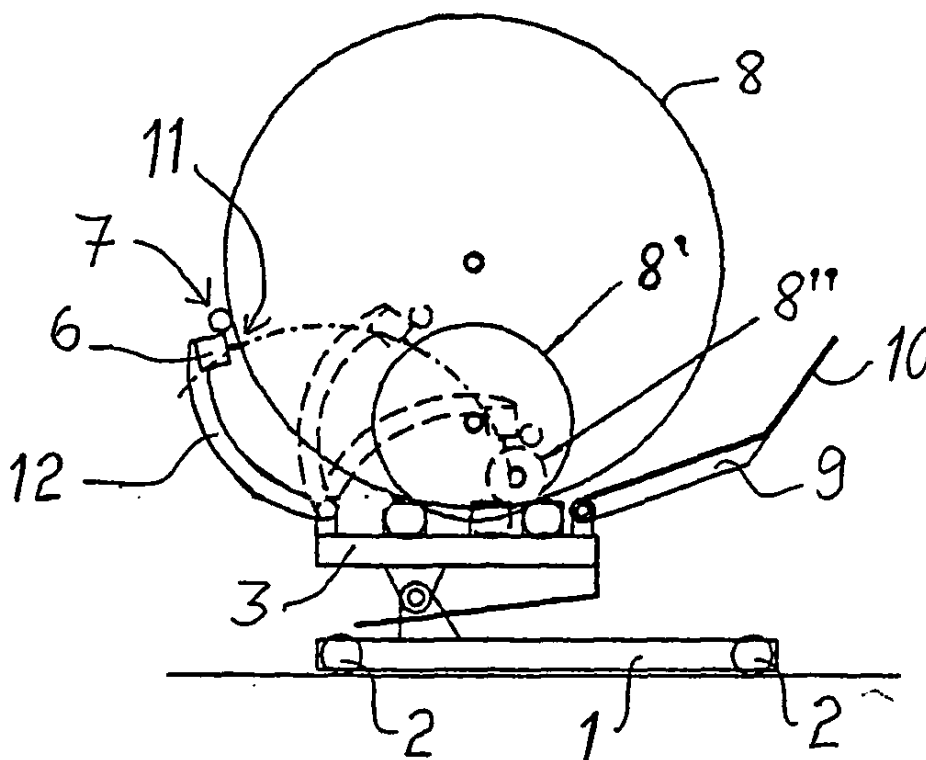


Fig. 2

Description

[0001] The invention relates to a cutting device of on a roll winded web, as a paper web, which device has a frame on which the roll can be placed horizontally, the frame comprising the support reels of the roll, which can be reeled in order to unwind the roll, and further a cutter assembly, as a disc, by means of which it is possible to make in the side of the roll at least an incision in horizontal direction. The cutting device is, for instance, used to break up a per roll, which has been noted to be scrap, whereby the paper material has been return to the pulp process of paper manufacture.

[0002] Previously known, as devices intended for destroying of a paper roll, are cutting and unrolling tables, onto to which the paper roll is lifted by means of a separate crane. In known solutions space is needed above the table if an overhead crane is used and on the sides of the device, if loading by forklift truck is used for lifting the roll to the device. In known solutions the framework of the device needs space even in all lateral directions. In these as cutting device in the direction of the roll axle a guillotine type cutter, a movable knife or disk cutter is used. Usually in these only an one roll destroying at a time is possible. When the roll is in its ends supported from the axle centre so that it can be reeled, then it is possible to take only one roll to be handled in the device. A Guillotine type cutting flattens the roll by each cutting stroke and the inside bushing of roll also gets damaged unfit for use,

[0003] In order to eliminate the above presented disadvantages a new cutting device of a reeled up web is developed, by means of which the loading of rolls and simultaneous loading of several rolls into the device and also simultaneous destroying of several rolls are substantially improved. The cutting device according to the invention is characterized in that the frame comprises receiving equipment, as a plate and as its extension a plane, by means of which the roll, after having been conveyed onto said plate, can be, lifted onto supporting rollers on the frame regardless of roll length and diameter and the device includes a control system, by means of which it is possible to stop the rolling of the roll in order to make the incision by the cutter edge, and reel it further in order to remove the layer that has got loose by means of the incision from around the roll.

[0004] The advantage of the cutting device according to the invention is the small space requirement, since the device itself comprises equipment means for lifting the roll from a wanted direction onto the delivery reels. By means of the loading equipment many rolls one after another can be simultaneously loaded on the reels from a wanted direction. By means of the loading equipment several rolls in a row can be loaded simultaneously onto the reels even if they among themselves would have a different diameter. By means of the tilting joint in the device, the delivery of the bushing left over by roll destroying is done easily. If the frame of the device is furnished with a rotary table the delivery directions of the bushings and the loading directions of the rolls can be selected. Thanks to the rotary function of the cutting device it is also possible to cut off the rolls.

[0005] In the following the invention is closer described with reference to the enclosed drawing, where

Figure 1 shows loading of a roll to the device.

Figure 2 shows different roll diameters and the rotary function of the cutting device.

Figure 3 shows the tilting of the device.

figure 4 shows the tilting of the device in cutting and loading direction,

Figure 5 shows the device from above.

Figure 6 shows the cutting device.

Figure 7 shows conveying of the layer removed by the device into the refuse chute.

Figure 8 shows the rotary table included in the frame.

[0006] Figure 1 shows frame 1 furnished with wheels 2, resting on which there is the device body 3, which can be tilted and to which, by means of a tilting joint, as supporting elements reels of roll 8 are fixed. By means of the joint as loading equipment plane 9 is fixed to frame 3 and as its extension a plate 10. Plane 9 is turned round for instance by means of a cylinder (not shown), in the same way body 3 around the tilting joint in order to carry out loading. In the frame also a cutting device is fixed by means of arms 12. In the end s of arms 12 there is a cross beam 6, where cutting edge 11 is movable. In connection with edge 11 there is a pusher 7, which pusher presses rolls of small diameters, which stay put when they are being cut.

[0007] Figure 2 shows the roll diameter being reduced to size 8' and 8". Arms 12 turn, controlled by the control system, for instance correspondingly by means of hydraulic cylinders. The cutting edge remains in proper position regardless of the roll diameter.

Figures 3 and 4 show tilts of frame 4 and the refuse chute 14, into which the paper removed from the roll is conveyed. Figure 3 shows the third support reel 4, which is moved between two outermost solid reels 4, when the roll diameter was reduced under a certain limit. Figure 4 shows a solution, where there are two reels 4, the position of which is changed closer to one another, while the roll diameter is reducing.

[0008] Figure 5 shows the cutting device from above and refuse chute 14 in front of it. Then it is possible to load in the device even several rolls one after another by means of plane 9 and plate 10, when plate 10 is letdown to the floor.

There are two support reels and in the end of arms 12 a cross beam 6 is fixed, to which the cutting device is attached.

[0009] Figure 6 shows rotating disc cutter 11, where the fastening of disc is made into piece 15 by means of turning gear 16. Thus by means of the device it is possible to make the needed horizontal incision, for instance 20 mm deep in the roll surface by transporting the cutting device controlled by beam 6. When the cutting device is turned 90° upward, it is possible by means of it to cut, for instance correspondingly, a deep cutting off incision in the roll surface, while reeling the roll. By means of cutting off the roll it is possible to remove by each horizontal incision narrower parallel strips to be conveyed into the refuse chute. At first, the cutting off must always be carried out before each horizontal cutting. The roll is thus destroyed as 20 mm thick layers from the surface of one roll cycle.

[0010] Figure 7 is a closer presentation of destroying by cutting off the roll surface in layers. Each layer 13 is conveyed to refuse chute 14 in reeling the roll clockwise by means of reels 4, when the horizontal cutting has been carried out. Rolling of roll 8 is always stopped for horizontal cutting. If there are several rolls with different diameters on the reels, the device cuts at first the biggest ones and when their diameter corresponds to the diameter of smaller ones, destroying them continues simultaneously.

[0011] If inside the roll there is a bushing, as most often is the case, horizontal cutting must be stopped so that the bushing does not get damaged. The last layers remaining on the bushing are conveyed into refuse chute in unwinding the tail-end of the roll. For this there is in the rotary gear of reels 4 a quick-rolling speed in order to convey the tail end of roll quickly into refuse chute 14.

[0012] Figure 8 shows a frame solution, which is attached to the floor by bolts. The frame has a rotary table 7, thanks to which the loading direction of rolls can be selected and correspondingly also the delivery direction of the bushings. The bushings are most suitably delivered in different directions from where the loading takes place.

[0013] The device can be automated in furnishing it with a control system, which on arrival of the roll to plate 10 begins automatically by means of loading equipment to convey the roll onto reels 4 and then to destroy the roll in the above described manner. In order to accomplish automated operation, the device measures the diameter, so that the device is able to determine the need of motion of arms 12.

Claims

1. A cutting device of on a roll winded web, as of a paper web, which device has a frame (3) on which roll (8) can be placed horizontally, the frame comprising support reels (4) of roll (8), which can be reeled in order to unwind the roll, and further a cutter assembly, as a disc (11), by means of which it is possible to make in the side of the roll at least an incision in horizontal direction, **characterized in that** frame (3) includes receiving means of roll (8), as plate 10 and as its extension a plane (9), by means of which roll (8), after been conveyed onto said plate 10, can be lifted onto support reels (4) regardless of roll length and diameter, and the device has a control system by means of which the rolling of roll can be stopped by cutting edge (11) for making the, incision and for further reeling in order to remove from around roll (8) the layer (13) that has got loose by means of the incision.
2. A cutting device according to claim 1, **characterized in that** cutter disc (11) is fixed to get moved and turned in beam (6), which is in the roll direction, and to get turned from the horizontal cut in the cutting off direction for gradual cutting off of the roll.
3. A cutting device according to claim 1, **characterized in that** it is possible to make support reels (4) to draw closer or away from each other according to the sizes of the roll diameters.
4. A cutting device according to claim 1, **characterized in that** there is between two reels (4) a movable third reel when the roll size gets smaller.
5. A cutting device according to claim 1, **characterized in that** the fastening beam (6) of cutter (11) can due to its articulation (5, 12) be turned, while the roll (8) diameter is changing and the position of roll shifting in order to retain suitable position of cutter (11).
6. A cutting device according to claim 1, **characterized in that** in connection to cutter beam (6) there is a pusher (7) to support roll (8) when it gets lighter.
7. A cutting device according to claim 1, **characterized in that** support reels (4) can be rotated at increased speed for unrolling the paper the roll.
8. A cutting device according to claim 1, **characterized in that** frame (3) has a base furnished with wheels (2) for

moving the disc cutter.

9. A cutting device according to claim 1, **characterized in that** there is in the base a rotary table (17) for turning the cutting device into different reception/delivery directions.

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10. A cutting device according to claim 1, **characterized in that** the device includes a control system, by means of which the loading of roll from the wanted direction and from wanted height, reeling of roll, function of the cutting device (11) and delivery of a possible bushing, which has belonged to the roll, are automated.

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