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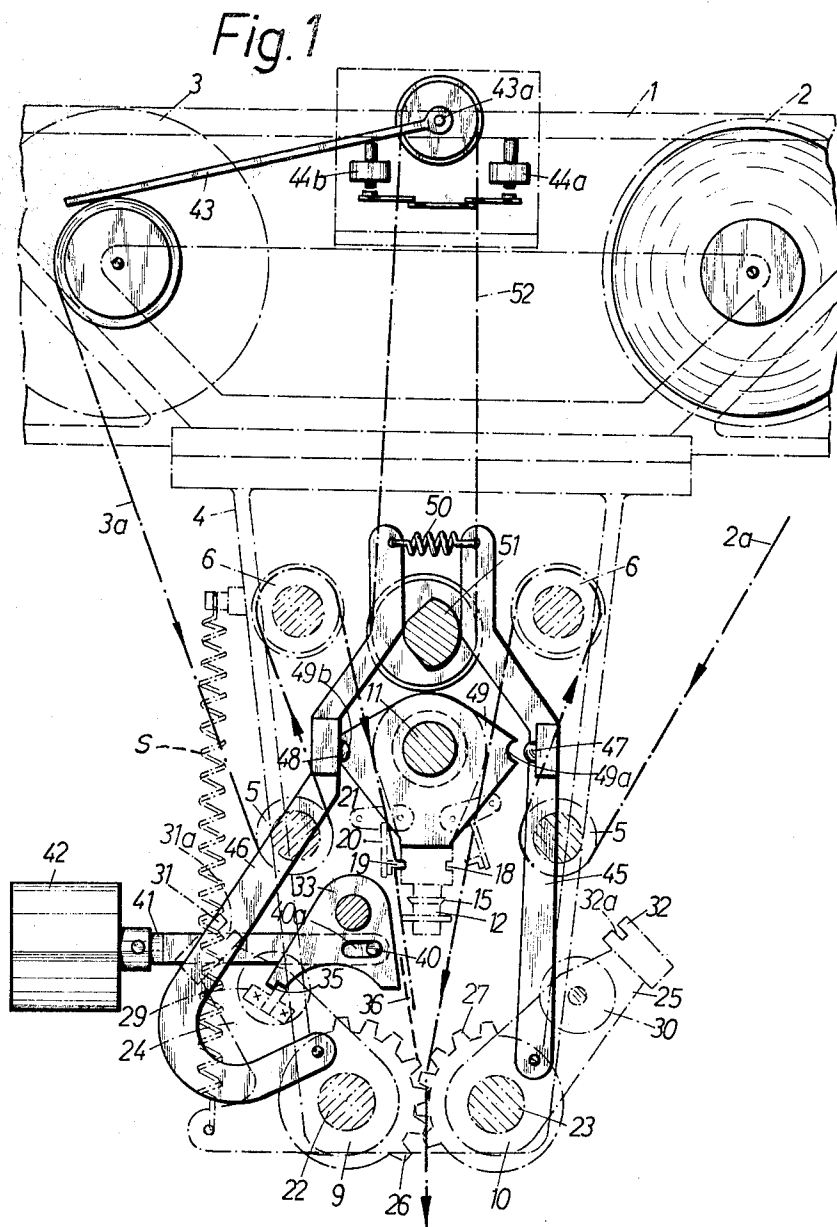
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WEB SPLICING APPARATUS

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The present invention relates to a device for connecting the rear end portion of a first or unwinding web of material by a gluing operation to the front end portion of a second web of material which succeeds said first web. With devices of this type, the webs are at the joint pressed against each other by pressing rollers journaled on tiltable levers while cutting means are provided for cutting off the nearly unwound web past the joint.

A device for connecting the rear portion of an unwinding web of material with the front end of a new web of material has become known in which a turnable cutting head and levers are provided which are arranged laterally of said cutting head and are adjustable in conformity with the position of the latter. The said levers are provided with strips having cutting grooves and are also provided with rollers for pressing the overlapping web sections against each other, one cutting groove of each lever cooperating with a knife of the cutter head. With this heretofore known device, it is necessary for the operator of the machine to observe precisely when one web has become unwound in order then to actuate the device.

It is, therefore, an object of the present invention to provide a device for connecting the rear end portion of a first web of material to the front end portion of a second web of material, which will overcome the above-mentioned drawback.

It is another object of the present invention to provide a device as set forth in the preceding paragraph, in which, after a corresponding preparation of the second web to be glued onto the first web, the gluing operation is controlled automatically by the machine.

It is a still further object of the present invention to provide a machine as set forth above which will make it unnecessary for the operator to observe precisely when the first web has unwound.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawings, in which:

FIGURE 1 is a front view of a device according to this invention in its normal working position for connecting the rear end portion of a first web of material to the front end portion of a second web of material, while the front end portion of a second web of foil has been inserted in the device;

FIGURE 2 shows the device of FIGURE 1 during a cutting operation;

FIGURE 3 is a schematic diagram of the circuitry for actuating magnet 42.

The device according to the present invention is characterized primarily in that a feeler lever tiltable in opposite directions is arranged between the rolls of material, for instance rolls of foil for wrapping purposes, and in that said tiltable lever cooperates with switch means for controlling a magnet adapted to actuate locking means for the levers carrying rollers adapted to press against each other overlapping foil portions to be glued together. After the operator has provided the newly inserted web of material with an adhesive strip and has passed the front end portion of this roll of web material through the device, a further observation of the machine becomes unnecessary inasmuch as the front end portion of the new

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web of material with the adhesive strip is automatically connected to the rear end portion of the nearly unwound web of material, and inasmuch as the remainder of the nearly unwound web of material is automatically cut off by a cutting device.

According to a highly advantageous embodiment of the present invention, the tiltable cutter head is provided with a follower disc having two recesses adapted respectively to be engaged by protrusions on two bars journaled on the levers of the pressing rollers. Through the intervention of these bars, the cutting means are actuated. Between the free ends of these bars there is arranged a cam disc for moving one of the bars at a time out of the range of the follower disc so that only one of the bars can actuate the cutting means. Advantageously, this cam disc is operatively connected to the shaft of the feeler lever, so that when the feeler lever is manually flipped over from one side to the other side, also the cam disc is being turned by a corresponding angle.

Referring now to the drawing in detail, the arrangement shown therein comprises a frame 1 preferably located above a packing machine (not shown in the drawing). Two rolls of wrapping foil which are generally designated 2 and 3 respectively are rotatably journaled in frame 1. Webs 2a and 3a of said foil are being withdrawn from said rolls 2 and 3 and pass through an unwinding device arranged in a bearing block at the bottom side of frame 1, while being arranged above said wrapping or packing machine.

Each of the two webs of foil passes over two rollers 5 and 6 and from the roller 6 between two cooperating rollers 9 and 10 which may be driven, if desired. From here, the webs of foil pass into the packing or wrapping machine.

A cutter head 12 tiltable about a shaft 11 is arranged above the rollers 9 and 10. FIG. 1 shows cutter head 12 in its intermediate position. The cutter head is provided with a cutting beam 15 effective toward both sides of the cutter head. On two opposite sides of the cutting head there is respectively provided a clamping groove 18 adapted to be engaged by a clamping beam 19 connected to a tiltable lever 21 through the intervention of an arm 20. Further details of the structure and operation of this cutting arrangement are known and disclosed, for instance, in German Patent No. 1,141,848.

Respectively arranged on shafts 22 and 23 of the rollers 9 and 10 are levers 24 and 25 which are interconnected by intermeshing gear segments 26, 27. A spring S connected to lever 24 tends to turn levers 24, 25 toward each other. Pressing rollers 29, 30 are rotatably journaled on levers 24, 25 which latter have their upper ends respectively provided with strips 31, 32 and cutting grooves 31a, 32a extending over the entire length of the cutting beams 15 and alternately cooperating with the same.

Bearing block 4 carries a rocker 33 which, according to a further feature of the present invention, engages an abutment 35 on lever 24 and is provided with a pin 40 adapted to slide in a slot 40a of a push rod 41 of a magnet 42. In the position shown in FIG. 1, the web of foil 2a can be unwound without interfering with the cutter head. The web of foil 3a has its front end portion provided with an adhesive strip 36 located approximately at the level of the rocker 33.

As will be seen from the drawing, the upper end of the arrangement carries a feeler or lever 43 which is tiltable journaled on a shaft 43a located between the two rolls of foil 2 and 3 and is adapted alternately to close one of the switches 44a and 44b. More specifically, feeler lever 43 is placed on top of the full roll of foil material and as soon as this roll has become empty, the feeler 43 actuates either switch 44a or switch 44b which, in turn, energizes magnet 42. As a result thereof, magnet 42 attracts push-

rod 41 so that the rocker 33 is tilted. In this way, the levers 24 and 25 are freed and, due to the action of a spring S acting upon lever 24, press the adhesive strip 36 against the rear end portion of the unwinding web of foil. Simultaneously, the cutting device is actuated.

Levers 24 and 25 have eccentrically journaled thereon two bars 45 and 46 which are displaced during the tilting movement of the levers 24 and 25. Bars 45 and 46 are provided with protrusions 47 and 48 adapted to engage corresponding recesses 49a and 49b of a follower disc 49 connected to the cutting head 12. The free ends of said bars 45 and 46 are interconnected by means of a spring 50 and are located at opposite sides of a cam disc 51 which is so designed that always one of the protrusions 47, 48 of the two bars 45 and 46 engages one of the recesses 49a, 49b of follower disc 49. Thus, during a tilting movement of the levers 24 and 25, the follower disc 49 is tilted by one of the bars 45 and 46 thereby causing the cutter head to cut off the respective nearly unwound web.

As will be evident from the above, the device according to the present invention permits an operator, at any desired time during the unwinding of the first roller, to provide the second roller with an adhesive strip and to insert the second roller into the machine. Thus, the operator does not have to ascertain when the first roller has become completely empty inasmuch as the connection between the two webs of material is effected automatically. After the first roller has become empty, it is merely necessary to move the feeler lever 43 from one side to the other, to tilt the cam disc 51 by 180° and to move the roller levers 24, 25 into their open position shown in FIG. 1. In order to combine the two first-mentioned operations, the shaft 43a of the feeler lever 43 may be connected to the cam disc 51 by means of a transmission member, for instance a chain 52, or the like.

In order to prevent the section of the web of foil used within the wrapping machine for an individual wrap from being cut at the joint of the two webs, which might result in disturbances, magnet 42 may be actuated by a second switch by means of an eccentric disc driven by the wrapping machine. In this way, it is possible precisely to determine the position of the adhesive strip 36 on a wrap.

It is, of course, to be understood that the present invention is, by no means, limited to the particular construction shown in the drawings, but also comprises any modifications within the scope of the appended claims.

What I claim is:

1. In combination with two supporting means and two supply rollers detachably and rotatably mounted on said supporting means and carrying web material to be withdrawn successively first from one and then from the other of said rollers: means for guiding the front end portion of one web of said supply rollers to the rear end portion of a web withdrawn from the other one of said supply rollers so that said two end portions overlap each other, two pressing rollers arranged in spaced relationship to said supporting means and operable to press the overlapping web end portions to be interconnected against each other, feeler means operable alternately to rest on the web material of that one of said two supply rollers which will be emptied first, and control means operable by said feeler means in response to the supply on that one of said supply rollers which is to be emptied first having been withdrawn therefrom to a predetermined extent to bring about movement of said pressing rollers toward each other for pressing against each other overlapping web end portions to be connected to each other, cutter means for cutting off the end of the web material from the supply roller being exhausted, said cutter means being engageable with the web material ahead of the region of engagement of the pressing rollers with the web material, said control means including tiltable lever means respectively supporting said pressing rollers and also including tiltable follower disc means operatively connected to said cutter

means and provided with two recesses, said control means additionally including bar means pivotally connected to said lever means and provided with protrusions adapted respectively alternately to engage said recesses for tilting said follower disc in respectively opposite directions to cause said cutter means to engage the web material from said supply rollers alternately, said control means also including rotatable cam disc means interposed between said bar means for engagement therewith and so designed as to hold the protrusion of one of said bar means out of engagement with said follower disc means in a first position of the latter and to hold the protrusion of the other one of said bar means out of engagement with said follower disc means in a second position of the latter.

2. An arrangement according to claim 1, which includes means operatively connecting said cam disc means with said feeler means.

3. In a device for adhesively connecting the rear end of a first web of material to the front end of second web of material; frame means having means for supporting first and second supply rolls for respectively supplying said first and second webs of material, means for guiding said webs from said rolls through said frame along separate spaced paths converging to a web exit point, a lever pertaining to each web and tiltable in said frame, pressure rollers on said levers operable when the levers are tilted to engage said first and second webs of material and press them together so that adhesive between the webs will effect interconnection thereof, a cutter head in the frame between said paths on the side of said pressure rollers toward said supply rolls and tiltable in opposite directions from a central idle position into operative cutting relation with either one only of said webs of material, each lever having cutting means thereon and each cutting means cooperating with said cutter head to cut off the web of material toward which said cutter head is tilted when said levers are tilted, a feeler lever pivotally supported in the frame between said supply rolls and tiltable into engagement with one or the other thereof, spring means urging said levers toward tilted position, latch means in the frame holding said levers in retracted position, solenoid means energizable to disengage said latch means, switch means operated by said feeler lever when the supply roll on which it rests is exhausted to a predetermined degree to energize said solenoid means, each lever having actuating means operable to engage said cutter head to tilt the cutter head toward the web of material pertaining to the said lever upon tilting of said levers, and control means for making the said actuating means of one of said levers effective while making the said actuating means of the other of said levers ineffective.

4. An arrangement according to claim 3 in which said control means is operated by said feeler lever and makes the actuating means of the tiltable lever pertaining to the web of material from the supply roll on which the feeler lever is resting effective while making the actuating means of the tiltable lever pertaining to the web of material from the supply roll on which the lever is not resting ineffective.

5. An arrangement according to claim 3 in which said actuating means comprises follower disc means operatively connected to said cutter means and provided with two recesses, and bar means pivotally connected to said lever means and provided with protrusions for alternately engaging said recesses.

6. An arrangement according to claim 5 in which said control means includes cam means provided in operative engagement with said bar means and rotatable for positioning said bar means so that either one only thereof has its protrusion engaging the pertaining recess of said follower disc means, said cam means being connected with said feeler lever to be rotated in response to tilting movement of said feeler lever.

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