

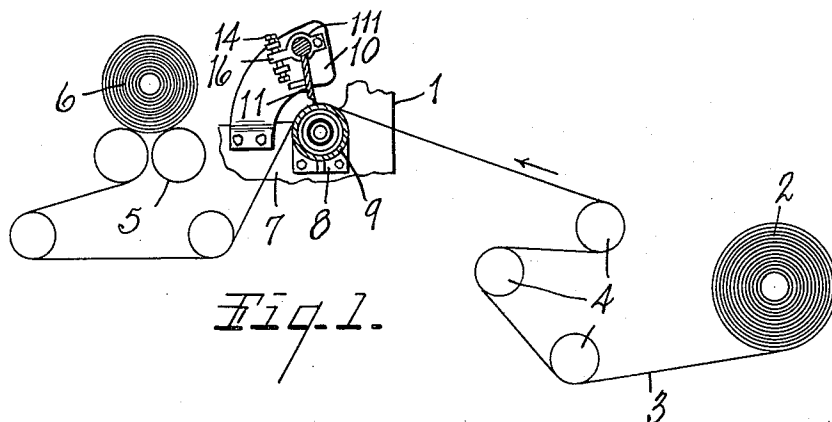
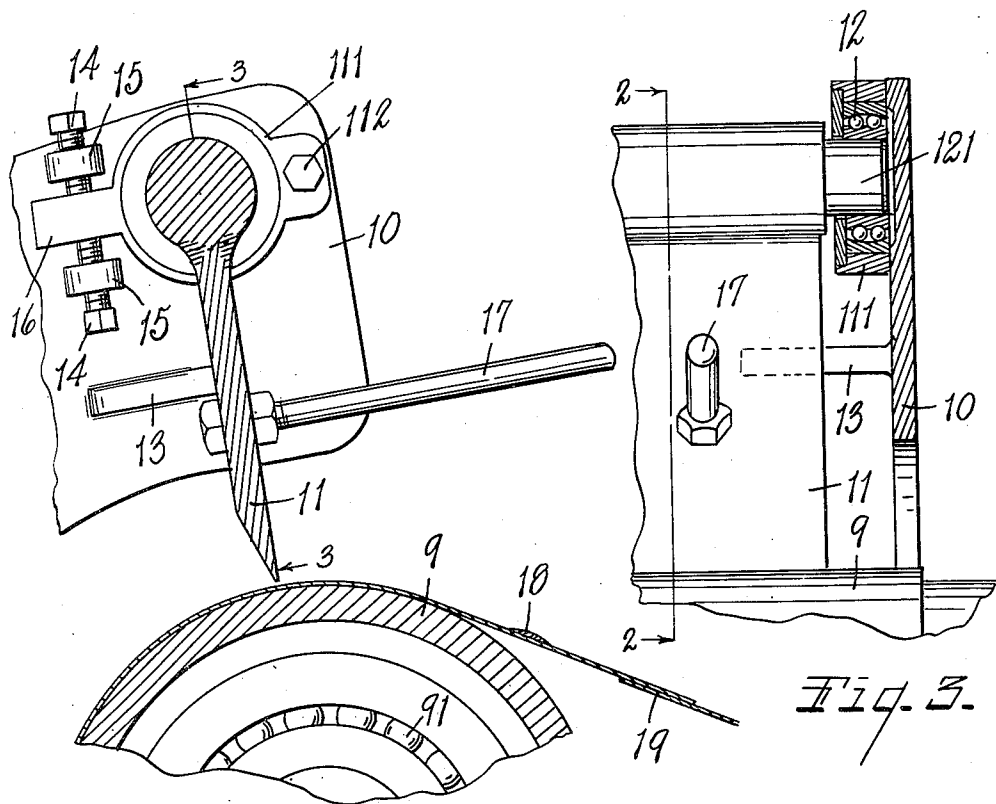
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PAPER TESTING MACHINE

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PAPER TESTING MACHINE

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This invention relates to improvements in paper testing machines.

The main objects of my invention are:

First, to provide a paper inspecting device or machine for detecting imperfections in coated printing papers, which is exceedingly simple and inexpensive in construction though very effective in operation.

Second, to provide a machine of the type described which is entirely mechanical in nature and operation, to inspect a paper web for flaws, to insure that the presence of small lumps, protuberances and the like which sometimes result from the coating operation will be detected and signalled.

Third, to provide a machine or device of the type described adapted to unfailingly detect and insure the removal of lumps, irregular projections and the like on a traveling web of paper such as would, if undetected, constitute a source of danger for presses or other machinery employing the paper in a printing or other operation.

Further objects relating to details and economies of my invention will appear from the description to follow. The invention is defined in the claims.

A structure embodying the features of my invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a view which is largely diagrammatic illustrating the device or machine of my invention in its operative relation to a traveling web of paper, in accordance with my invention.

Fig. 2 is an enlarged fragmentary view in vertical section on line 2—2 of Fig. 3, illustrating details of construction and relation of the parts of the detector device of my invention.

Fig. 3 is a fragmentary view in section on line 3—3 of Fig. 2, further illustrating the relation of the parts.

In the production of coated printing papers, it frequently happens, regardless of the care exercised in the paper making or coating operation, that the paper web leaves the coating or drying machine with certain faults therein, such as lumps of coating composition on its surface or other protuberant imperfections resulting from the coating operation or the previous paper making operation. These irregularities, if undetected prior to use of the paper web in a high speed printing process, are likely to result in great damage or destruction of the expensive copper plates of the presses.

It is therefore the purpose of the present in-

vention to provide a simple inexpensive inspecting device capable of unfailingly detecting such flaws and of insuring that they will not escape unnoticed. In doing this, the device of my invention engages the protuberance on a moving web and causes the web to be torn so as to require repasting.

Referring to Fig. 1, in which I have conventionally illustrated the device or machine of my invention, generally designated 1, in association with diagrammatically illustrated feed and rewind instrumentalities, the reference numeral 2 denotes a supply roll from which the web 3 is fed about suitable guide or other rollers 4 to the device 1 of my invention. This showing is diagrammatical and conventional in all respects. The device 1 of my invention is located intermediate the supply rollers and rewinding structure generally designated 5 to which the web is fed following the passage through my detecting device, prior to being rewound on the roll 6.

The device 1 consists of a suitable machine support 7 which has suitable rigid brackets 8 thereon on which the web supporting roller 9 is rotatably journaled. This rotatable mounting should be an accurate one, preferably employing ball or roller bearings 91. Roller 9 is provided with a suitable hard surface over which web 3 travels.

Brackets 10 are mounted on the machine frame or support 7, being illustrated in Fig. 1 as located to the rear of roll 9, however any other suitable mounting on the frame is satisfactory. These brackets 10 adjustably support an inspecting or detecting striker blade 11 which is coextensive with the width of the paper web, it being understood that there is a mounting bracket at either side of the blade, though only one is shown. This is also true of the other blade supporting structure to be described. Referring to Figs. 2 and 3, each of the brackets has a blade carrier member 111 pivoted thereon at 112. An accurate rotatable mounting for the blade in these carrier members is provided, preferably in the form of the self-aligning roller bearings 12, thereby insuring the accurate positioning of the blade relative to roller 9 which is also accurately positioned in its roller bearings to give the utmost accuracy. In effecting this mounting of the blade the outer race of roller bearing is secured in carrier member 111 and a hub 121 integrally or rigidly connected with the blade is given a driven fit in the inner race. This eliminates any looseness or play at the rotatable

blade mounting such as might affect the spacing of the blade and roller 9.

As illustrated in Figs. 2 and 3, the blade 11 extends radially of the roller and projects downward to close adjacency to the surface thereof, the spacing depending upon the allowable maximum thickness of the coated web to be inspected. In a practical embodiment this is .0022 inch for a web of .0011 inch thickness, having a clearance of .0011 inch above the web, though specifications may vary in this respect. Of course the proportions are exaggerated in the drawing. As illustrated in Fig. 3, the blade 11 at its rear side engages and is restrained by a fixed stop 13 on bracket 10.

The radial positioning of the blade relative to roller 9 is determined by manipulation of opposed set screws 14 which are threaded in bosses 15 on the bracket and engage opposite sides of a rearwardly extending lug or ear 16 on the blade carrier member. In any adjusted position so determined the blade is rotatable on its bearings 12. A suitable rod 17 may be attached to the blade for manipulation in raising and lowering the blade when such is desired.

Referring to Fig. 3, I have illustrated and indicated by the reference numeral 18 a flaw or imperfection on the coated web 3 in the form of a lump of coating material extending in excess of .0011 inch above the web surface allowable limit and hence constituting such an abrupt bump on the web that, if it were fed into a high speed cylinder press, it would be likely to cause damage or destruction to the expensive copper plates thereof. The allowable clearance of .0011 inch above the web surface permits finish pasted joints indicated at 19 to pass. In the operation of my device, the lump 18 strikes blade 11 as the web is fed over the surface of roller 9 and causes the web to be torn in two at this point. When this occurs, the web must of course be repasted, however insurance is had that no such flaws will reach the final rewind roll of paper undetected. As indicated in Fig. 3, striker blade 11 is preferably provided with a semi-sharpened edge of, say, .007 inch thickness, extending along a line parallel to the roller axis at the periphery of the roller.

The foregoing construction is exceedingly effective in its intended functioning and constitutes an inspecting device which is reliable in operation and very inexpensive. It detects flaws which could result in damage to a press cylinder.

The terms and expressions which have been herein employed are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described. It is recognized that various modifications are possible within the scope of the invention claimed.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A paper inspecting device of the type described for detecting flaws in coated paper webs and the like, comprising a frame, a hard surfaced roller accurately journaled in roller bearings on the frame, a bracket on the frame having a blade support pivoted thereon, a blade rotatably mounted on said support in roller bearings, said blade and roller being substantially coextensive in width with the web and the blade being adapted to be positioned with the free edge thereof in close adjacency to the periphery of the

roller whereby to engage protuberant imperfections in the web in excess of a predetermined allowable height, means for feeding the web over the roller, adjustable means engaging said support to pivotally adjust the same and determine the position of the blade relative to the roller, and a stop coacting with said blade to limit the movement thereof in the direction of movement of the web whereby the blade in engaging said imperfections tears the web.

2. A paper inspecting device of the type described for detecting flaws in coated paper webs and the like, comprising a frame, a hard surfaced roller accurately journaled on the frame, a bracket on the frame having a blade rotatably and adjustably mounted thereon, said blade and roller being substantially coextensive in width with the web and the blade being adjustable on the bracket to position the free edge thereof in close adjacency to the periphery of the roller whereby to engage protuberant imperfections in the web in excess of a predetermined allowable height, means for feeding the web over the roller, and stop means coacting with said blade to limit the movement thereof in the direction of movement of the web whereby the blade in engaging said imperfections tears the web.

3. A paper inspecting device of the type described for detecting flaws in coated paper webs and the like, comprising a frame, a roller journaled on the frame, a blade pivotally mounted for adjustment on the frame, said blade and roller being substantially coextensive in width with a web traveling therebetween, the blade being pivotally adjustable to position its edge in close adjacency to the periphery of the roller whereby to engage local protuberant imperfections in the web in predetermined excess of the allowable web thickness, and means to brace the blade in the direction of movement of the web whereby the blade in engaging said imperfections tears the web.

4. A paper inspecting device of the type described for detecting flaws in coated paper webs and the like, comprising a frame, a roller journaled on the frame, a blade adjustably mounted on the frame, said blade and roller being substantially coextensive in width with a web traveling therebetween, the blade being adjustable to position its edge in close adjacency to the periphery of the roller whereby to engage the sides of local protuberant imperfections in the web in predetermined excess of the allowable web thickness and to tear the web in engaging said imperfections and means to brace the blade against movement in the direction of movement of the web whereby the blade engaging the imperfections tears the web.

5. A paper inspecting device of the type described for detecting flaws in coated paper webs and the like, comprising a frame, a support thereon, blade mounting means adjustable on the frame, a blade rotatably carried by said mounting means, said blade being substantially coextensive in width with a web traveling between the same and said support, the blade mounting means being adjustable to position the blade edge in close adjacency to the support and positioned to engage the sides of local protuberant imperfections in the web in predetermined excess of the allowable web thickness and to tear the web in engaging said imperfections and means to brace the blade against movement in the direction of movement of the web whereby the blade engaging the imperfections tears the web.

6. In an inspecting device of the type described, a frame, a rotary support on the frame, means for feeding a web of paper past and in contact with the support, a striker blade positioned with its edge in close adjacency to but out 5 of contact with the support and web traversing the same, and positioned to engage the sides of protuberant imperfections in the web in excess of a predetermined height and to thereby tear the web, means for adjusting the relative position of 10 the blade and support and means to brace the blade against movement in the direction of movement of the web whereby the blade engaging the imperfections tears the web.

7. In an inspecting device of the type described, a frame, a support on the frame, means for feeding a web of paper past and in contact with the support, a striker member positioned in close adjacency to the support and web traversing the same, and positioned to engage the sides of protuberant imperfections in the web in excess of a predetermined height and to thereby tear the web, means for adjusting the relative position of the member and support and means to brace the blade against movement in the direction of movement of the web whereby the blade engaging the imperfections tears the web.

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