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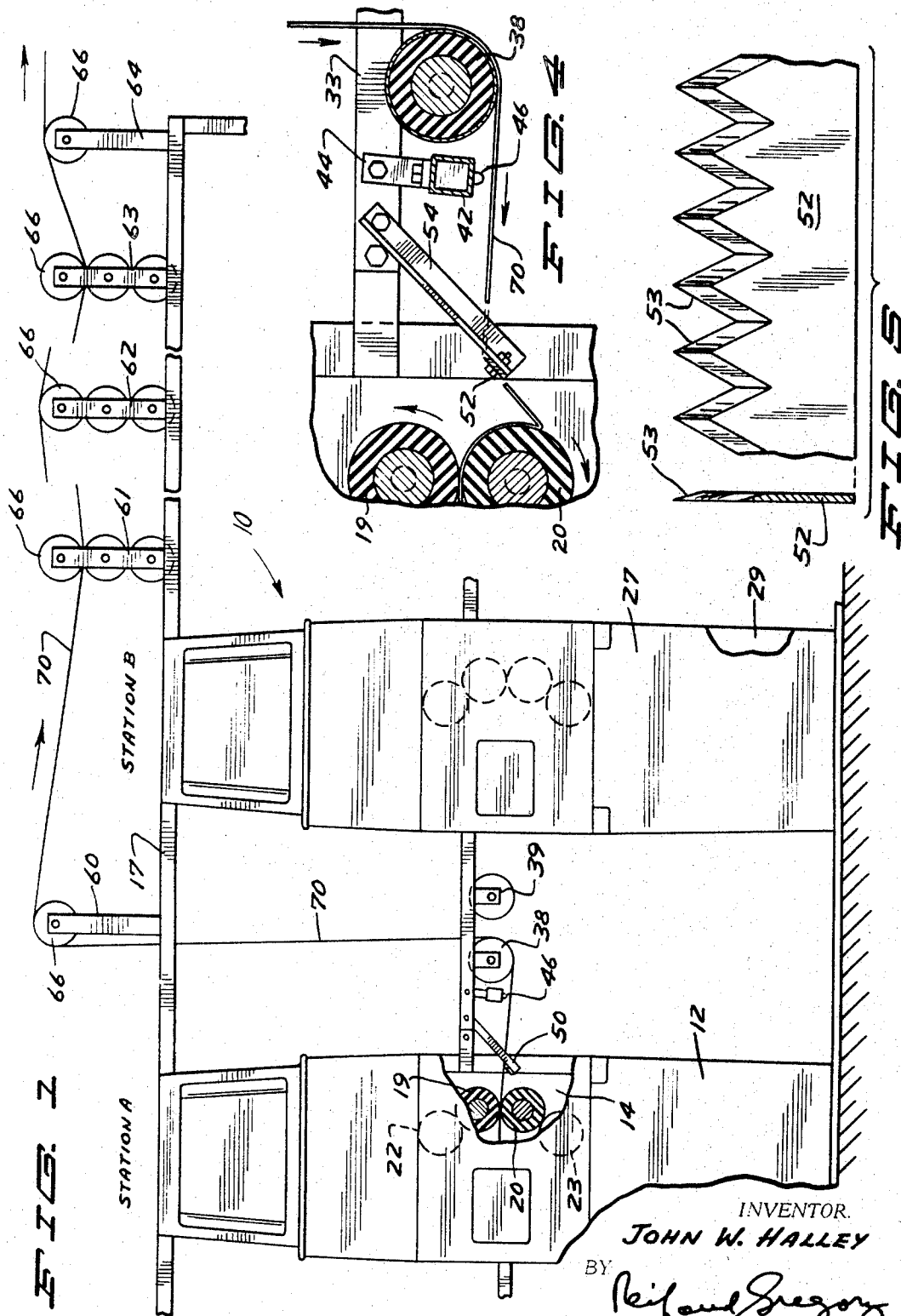
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WEB SEVERING DEVICE FOR OFFSET PRINTING PRESS

Filed Jan. 19, 1967

2 Sheets-Sheet 1



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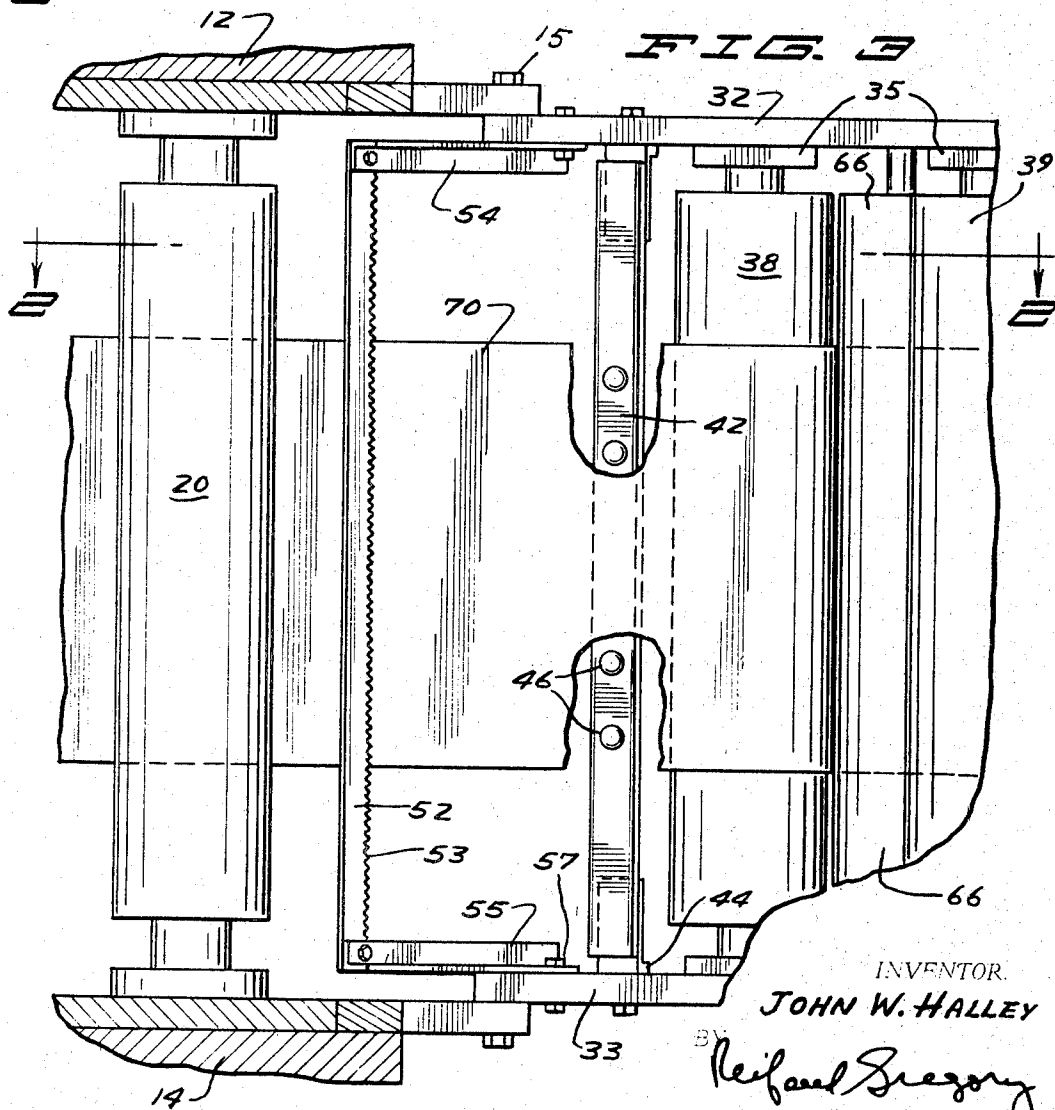
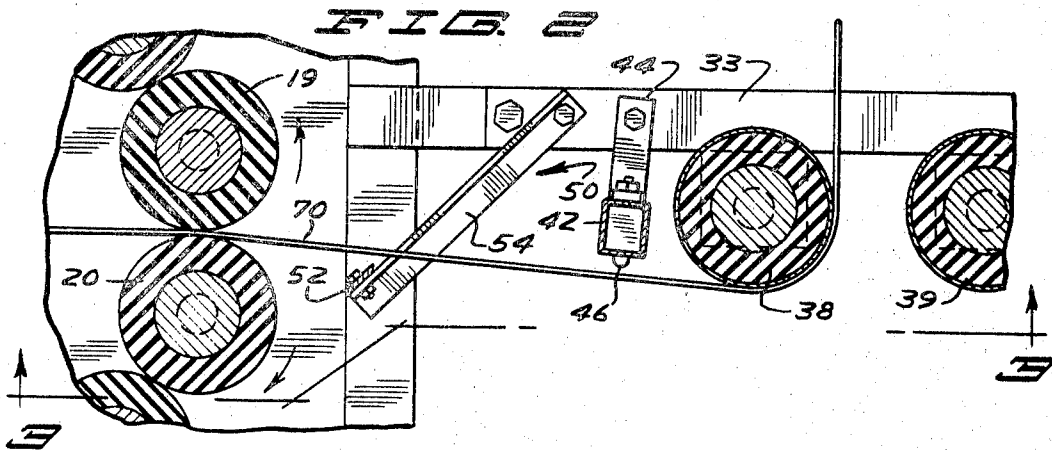
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ABSTRACT OF THE DISCLOSURE

A stationary cutting device for severing the broken end portion of a web in connection with a web offset printing press to actuate a press stopping mechanism sooner than otherwise.

Background and summary of the invention

In the operation of a web offset printing press, a web is drawn through the press by rollers remote from the printing and blanket cylinders. The web travels a lengthy and circuitous route which to some extent is determined by the printing job being done. From time to time a web breaks.

The rollers drawing or pulling the web and thus placing and keeping it under tension are located at the forward end of the press. When the web breaks at a point rearwardly of the pulling rollers, tension upon the web is gone back to the point of the first pair of blanket cylinders prior to the point of breaking.

Sensing means such as a photoelectric cell is commonly used to stop the press upon the breaking of the web. Such means are generally placed adjacent to and forwardly of the various blanket cylinders in the press. The broken end of the web must be pulled free from an underlying position with respect to an electric eye for said eye to actuate mechanism to shut down the press. In the meantime, the first pair of blanket cylinders prior to the break being coated with ink will tend to cause the web to adhere thereto and thus the web will become wound about the lower of the blanket cylinders. As the web is pulled forwardly to be wrapped about said blanket cylinder, the end portion broken away from the pulling rollers is retracted by said blanket cylinder which results in a double layer of web becoming wrapped about said blanket cylinder and the web tends to crush the blanket about said cylinder and it must then be replaced. There may be considerable double wrap about said blanket cylinder before the broken free end of the web is withdrawn from a position underlying said cell whereby said cell is actuated to cause the press to be stopped. A major loss suffered here is the loss of the time during which the press is stopped while the blanket is being replaced and the web corrected.

It is an object of this invention therefore with respect to a web offset printing press to provide means for severing the broken end of a web prior to the time that it becomes wrapped about a blanket cylinder.

It is another object of this invention to provide a device mounted adjacent a blanket cylinder arranged and constructed to sever said web by the action of a blanket cylinder commencing to retract the broken end portion of a web free of tension.

More specifically it is an object of this invention to provide a saw tooth blade adjacent a blanket cylinder arranged to engage and sever a web being retracted by said blanket cylinder and means for closing down the press being actuated by said web upon its being severed whereby the blanket cylinder avoids having the free broken end portion of the web from becoming wrapped thereabout.

These and other objects and advantages of the invention will be set forth in the following description made in connection with the accompanying drawings in which like

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reference characters refer to similar parts throughout the several views and in which:

FIG. 1 is a broken view in side elevation showing the subject matter of the invention herein in operating position;

FIG. 2 is a fragmentary view in vertical section on an enlarged scale;

FIG. 3 is a fragmentary bottom plan view on an enlarged scale taken on line 3—3 of FIG. 2 as indicated;

FIG. 4 is a fragmentary view in vertical section showing a detail of operation; and

FIG. 5 is a composite view in cross section and plan of a detail of structure herein.

Description of a preferred embodiment

Referring to the drawings, a sufficient portion of a web offset printing press 10 is shown to support the subject matter of the invention herein.

The structure shown comprises a pair of transversely spaced upstanding frame members 12 and 14 supporting a pair of transversely spaced overhead rails 17 of which only one rail is shown. Said frame members are shown having journaled therebetween a pair of blanket cylinders 19 and 20 in superposed relation, and adjacent said respective blanket cylinders are printing cylinders 22 and 23. Said frame members and the cylinders journaled therebetween will be designated as Station A.

Spaced longitudinally of said upstanding frame members 12 and 14 are a similar pair of upstanding frame members 27 and 29 having like cylinders journaled therebetween indicated in dotted line but not designated by numerals. Said frame members 27 and 29 comprise Station B.

A pair of longitudinal transversely spaced horizontal rails 32 and 33 are secured as by bolts 15 to said upstanding frame members substantially midway their height.

Spaced between Stations A and B and journaled in bearing brackets 35 depending from said rails 32 and 33 are a pair of longitudinally spaced idler or grating rollers 38 and 39.

Carried between the frame members 32 and 33 adjacent the roller 38 is a tubular member 42 secured by angled brackets 44. Carried by said member 42 and projecting therebeneath are sensing means 46 shown as photoelectric cells and sometimes referred to as electric eyes. The cells used here are in circuit with a mechanism to stop the operation of the press and said mechanism is held non-active so long as a web underlies the cells. The circuitry involved is not essential to a disclosure of the invention herein and is not shown.

Positioned between said member 42 and said blanket cylinder 20 is a web severing device indicated generally by the numeral 50. This device comprises the subject matter of the invention herein.

Said device 50 comprises a cutting blade 52 having a cutting edge comprising relatively coarse sharply pointed and preferably beveled teeth 53 on the order of saw teeth and shown on an enlarged scale in FIG. 5. Teeth of a coarseness that would run from 6—8 to the inch are quite suitable. A pair of angle brackets 54 and 55 have said blade secured at its ends thereto as by suitable bolts and said brackets are respectively secured to said frame members 32 and 33 by bolts 57. Said brackets are shown suitably angled downwardly at approximately 45° and the plane of said blade is preferably so disposed with respect to the horizontal.

The device 50 is here shown adjacent one printing station or one set of blanket rollers. Like devices may be positioned adjacent each of the pairs of blanket cylinders present in the press.

The overhead rails 17 comprise spaced parallel members which extend substantially the length of the press

and are here shown in broken segments. Said rails support overhead rollers which serve as web guides. Indicated here are upstanding supports 60-64 respectively. These supports are to be regarded as pairs of transversely spaced members having journaled therebetween one or more rollers 66 as indicated.

Shown being drawn through the portion of the press indicated is a web 70. The direction of forward normal travel of said web is indicated by arrows.

Operation

The web is drawn through the press by pulling rollers stationed at the forward end portion of the press and not here shown. Hence there is tension on the web its full length of travel.

The blanket cylinders 19 and 20 are representative of a number of such pairs of rollers stationed in various portions of the press. The blanket cylinders have inked impressions applied thereto by the adjacent printing cylinders and in turn make impressions or prints on either side of the web drawn therebetween.

A representative path of the web is indicated. The web angles downwardly from the blanket cylinder 20 to travel around the underside and upwardly of the roller 38. The web is angled downwardly sufficiently to bear firmly against the blanket cylinder 20. The cutting device 50 is positioned to have the web pass over the blade 52 close thereto but having preferably a small clearance therebetween. The photoelectric cell 46 is positioned between the cutting device 50 and the roller 38.

From time to time the web breaks at some point along its path of travel. Tension or weakness may develop at some point in the web causing it to break. With the web broken at some point beyond Station A, the tension upon the web will be gone and the web portion from Station A forwardly will be in a slack condition. The cell 46 is intended to shut down the press when a break occurs in the web. However, before said cell can be triggered to actuate the mechanism to shut down the press, the broken end of the web must pass or be moved away from under the cell. The cell is in a non-actuating condition with respect to the press stopping mechanism so long as a portion of a web is thereunder providing a reflective surface for the beam projected by the cell.

With reference to FIG. 4, when a break occurs in the web and the broken end portion is slack, the blanket cylinder 20 will cause the web to adhere thereto due to the presence of ink thereon. In the absence of tension on the web, the ink on the blanket cylinder will cause the web to adhere thereto. Hence the cylinder 20 will tend to pull and wrap about itself the portion of the web passing thereover, and at the same time it retracts or draws back the broken or slack portion of the web. Thus as indicated, if this condition were permitted to continue, the blanket cylinder 20 would have a double wrap of web wound thereabout until the broken end of the web was pulled free from under the cell 46. By this time there may be several layers of web material wrapped about the cylinder 20 and the tension and weight of the web thereabout damages the blanket about the cylinder. This is a condition which occurs and is the condition which is corrected by the invention herein.

There is not only damage to the blanket about the blanket cylinder whereby it must be replaced, but there is a loss of time in unwinding the web from the blanket cylinder and replacing the blanket on the cylinder. On a large press there may be involved operating time which may cost as much as \$500 to \$600 per hour. Thus the stoppage of the press in the middle of a run means a substantial loss to the operator even with the stoppage representing something less than an hour of loss time.

With the installation of the device 50 herein, when the web is broken, the blanket cylinder 20 will commence to retract the broken or slack portion of the web as indicated in FIG. 4. However, the instant that the broken

portion of the web is retracted, due to its slack condition, it is drawn about the blanket cylinder at a downward angle and is pulled into engagement with the cutting blade 52 and upon this engagement the teeth 53 penetrate the web. Thus as the blanket cylinder 20 puts pressure upon this portion of the web in retracting it, the web is readily and quickly severed by said blade 52. Thus the severed ends of the web will fall free and away from under the cell 46 and the mechanism to shut down the press will be actuated and the press will be stopped before the blanket cylinder 20 completes a wrap of web thereabout. Here damage to the blanket about the blanket cylinder is avoided. The broken end portions of the web may be spliced together or other corrective action may be taken to repair the web without the need of replacement of the blanket about the blanket cylinder. This type of corrective action requires but a few moments of time.

Thus it is seen that I have provided a very simple and yet effective cutting device which in effect is self operative to prevent any damage to a press through the presence of a broken web.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention which, generally stated, consists in a device capable of carrying out the objects above set forth, of the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. In connection with a web offsetting printing press having a blanket cylinder, a press stopping means in closely spaced relation to said blanket cylinder and a web passing over said blanket cylinder in operative relationship with said stopping means, a web severing device comprising

an elongated cutting blade extending transversely of said press and of said web under the run of said web,

means carried by said press rigidly supporting said blade and positioning the same adjacent the side of said blanket cylinder beyond which said web passes and having said stopping means in close proximity thereto, said blade being at a height to have said web under normal operating tension pass thereover with just sufficient clearance to avoid engagement therewith,

said blade having a saw toothed leading edge portion being sufficiently coarse and sharp to holdingly engage and sever said web and being disposed in a sufficiently upwardly angled position in the direction of the normal travel of said web to engage and hold said web against retraction thereof upon the release of tension therefrom and the consequent sagging of said web upon said saw toothed portion,

said blanket cylinder upon said release of tension from said web urging the retraction of said web against its hold by said saw toothed portion for severance of said web, and

said stopping means being actuated by said severance of said web.

2. The structure set forth in claim 1, wherein a pair of transversely spaced frame held arms rigidly hold said blade in said position.

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