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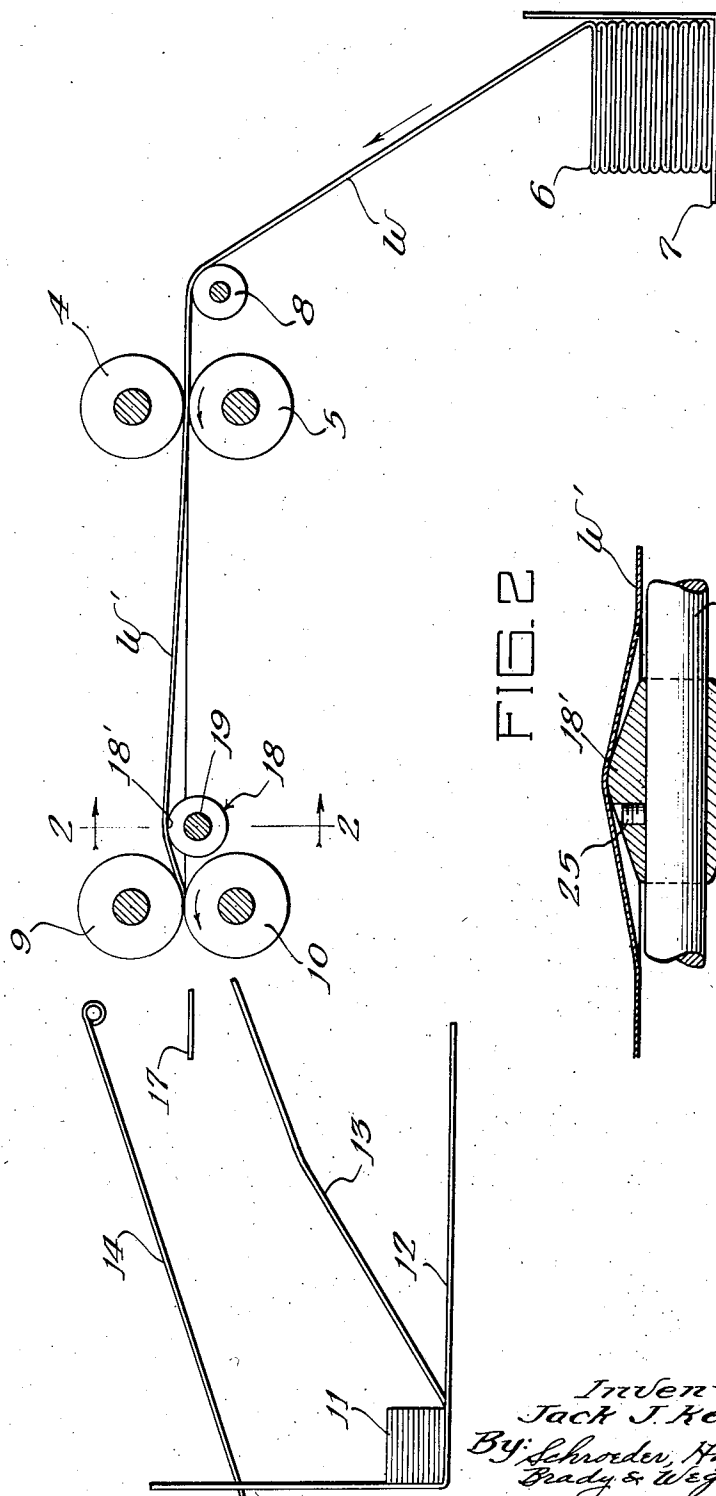
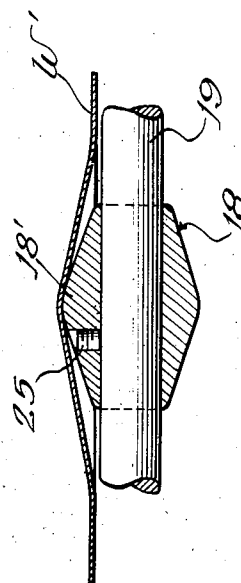
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METHOD OF BURSTING SHORT FORMS FROM CONTINUOUS STATIONERY

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1

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METHOD OF BURSTING SHORT FORMS FROM CONTINUOUS STATIONERY

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This application is concerned with a new method of bursting short forms from continuous stationery.

Many business houses use continuous-form stationery for many of their operations. Invoices, records, carbon copies of letters, sales reports and many other items are now put on continuous-form stationery instead of individual sheets of stationery. The practice has extended to use in many different types of writing machines. Payroll checks and other narrower width records are also made in continuous form.

After the writing operation is completed, the continuous stationery is divided into its individual form lengths. This is accomplished ordinarily on a bursting machine through which the continuous stationery is run and automatically divided into its individual form length. The most usual bursting machine has two pairs of coacting driven rolls spaced apart with one pair driven faster than the other. The spacing of the rollers is such that when the stationery is fed between them, one cross line of weakening will be located between the bights of the two pairs of rolls so that the faster driven pair may pull the form from the web by bursting it along the line of weakening. For example, a 7" length form in continuous form could be run between the bursting rolls set 8½" apart so that the rearward feed rolls would grip the web and the forward draw rollers would pull the front form from the web along the line of weakening.

In the past, the faster driven set of rolls has been made adjustable in position to accommodate different form lengths. The structures of these machines, however, has placed a limit on how close the two sets of rollers could be put together. Ordinarily forms 3" and under in width could not be burst from a continuous web in the usual manner.

The present invention provides a new method for operating the standard type of bursting machine described above so that it may be used to burst short forms under 3" from a continuous web as well as the longer length forms.

It is, therefore, the primary object of this invention to provide a new and improved method of bursting short forms from a continuous web of stationery.

A further object is to provide a new method of operating a bursting machine intended for use with relatively long forms in a manner to burst short forms from a web.

A further object is to provide a new method of bursting short forms from a continuous web by the use of bursting rolls spaced apart further than the width of a plurality of forms taken together.

Other features, objects and advantages of the present invention will be apparent from the following description of the method as related to a diagrammatically illustrated bursting machine modified for use in the method and shown in the accompanying drawings, in which:

Figure 1 is a diagrammatic side elevational view of the pertinent parts of the bursting machine chosen for illustration of the present method invention;

Figure 2 is a fragmentary sectional view through one

2

of the breaker rolls utilized in the bursting machine and in the method; and

Figure 3 is a diagrammatic plan view of a portion of the bursting machine illustrated in Figure 1.

Referring particularly to Figures 1 and 3, the bursting machine has a pair of driven feed rollers 4 and 5 intended to receive the web W of continuous-form stationery from a supply pack 6 suitably supported on a platform 7. The web is drawn from the supply pack over an idler roll 8 into the bight of the coacting feed rollers 4 and 5. The bursting machine is also equipped with a pair of coacting draw rollers 9 and 10 spaced from the feed rollers and having their bight in substantially horizontal line with the bight of the feed rollers. The draw rollers 9 and 10 are driven at a surface speed slightly in excess of the surface speed of the feed rollers. The web of stationery W has a portion W' extending between the bights of the two pairs of coacting rollers. As illustrated in Figure 1, a stack 11 of separated forms are collected on a suitable tray 12 by being discharged from the draw rollers in between a shelf guide 13 and an overhead wire guide 14.

As best seen in Figure 3, the web of stationery is quite wide in relation to the width of a separated short form. The width of the form extends, for example, between cross lines of weakening 15 and 16. Each short form is of generally the same width and extends over the entire width of the stationery web. As also seen in Figure 3, one severed short form 17 is shown as being discharged from the draw rollers and is quite long in comparison to its width but its length was previously the width of the stationery web.

In the present method of operating the bursting machines, the short forms are burst from the web while a plurality of cross lines of weakening repose between the bights of the two pairs of rollers. This is contrary to the ordinarily accepted mode of procedure in that it would seem possible for the web to part on any one of the lines of weakening between the rollers indiscriminately. In the present method of operation, however, breaking cones or rolls are used to induce the breaking of the web only at a predetermined line of weakening. Thus, in Figure 1, it will be noted that a breaking roll 18 is mounted upon a shaft 19 so that the top portion 18' of the roll is above the plane extending through the bights of the two pairs of rollers. The breaking roll thus deflects the web of stationery laterally from its normal path of movement. This action causes the web to part on the line of weakening over the breaking rolls.

The positioning of the pertinent structures is important in the method of operating the bursting machine. The breaking rolls 18 may be used in multiple number as illustrated in Figure 3 and should be placed from the bight of the draw rollers a distance equal to the width of a short form. Thus, as the leading edge of the web enters the draw rollers, a line of weakening such as 20 in Figure 3 will repose over the crests of the braking rolls. Since the draw rolls are driven faster than the feed rollers, tension will be placing on the web. At this instant, line of weakening 20 is directly over the crests of the breaking rolls and the web will part on the line of weakening 20 rather than on any one of the other lines of weakening 21 to 24 inclusive which also are positioned between the two sets of rollers.

The breaking rolls are much smaller in diameter than either the feed or draw rollers and thus can be maneuvered much closer to the bight of the draw rollers than the minimum distance possible to obtain between the pairs of rollers. A simple shaft 19 may be provided with the breaking rolls 18 fastened thereon by means of a set screw 25, all as shown in Figure 2. As also shown in Figure 2, the breaking roll may most conveniently be made in a conical form so that the web W' is caused to

3

ride up over the crest of the roll. The tension applied to the web portion W' will be greatest directly over the crest of the breaking roll so that the line of weakening will first part of this crest position and proceed readily across the web in both directions from the crest of the breaking roll. The portions of the web between the breaking rolls (Figure 3) may not be particularly raised from the plane passing through the bights of the coating rollers.

Another factor permitting the operation of the standard bursting machine to burst short tickets is that it does not particularly matter how many lines of weakening are positioned between the bights of the feed and draw rollers. In those machines having an adjustable position draw roller carriage, the draw rollers may be placed at a position most convenient to the operator. The important consideration is to place the breaker rolls a form length from the bight of the draw rollers so that they will be properly positioned to induce bursting along the line of weakening next adjacent the draw rollers.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, for some modifications will be obvious to those skilled in the art.

I claim:

1. The method of bursting short forms from a web of continuous stationery having cross lines of weakening between the forms comprising the steps of advancing the web between a pair of driven feed rollers and toward the bight of a pair of driven draw rollers; driving the draw rollers at a speed in excess of the speed of the feed rollers; spacing the feed and draw rollers apart a distance to permit a plurality of short forms and cross lines of weakening in the web between the rollers during bursting; and feeding the leading edge of the web into the bight of the draw rollers while inducing tearing of the web along the next adjacent line of weakening before the draw rollers can tension the web sufficiently to tear along other lines of weakening between the rollers.

4

2. The method of bursting short forms from a web of continuous stationery having cross lines of weakening between the forms comprising the steps of spacing a pair of coating draw rollers from a pair of coating feed rollers a distance in excess of the combined width of a plurality of said short forms; driving both pairs of rollers, the draw rollers faster than the feed rollers; advancing the web between the feed rollers and its leading edge into the bight of the draw rollers to tension the web portion between the pairs of rollers, and laterally deflecting the web locally at one cross line of weakening between the rollers simultaneously with said tensioning to induce bursting of the web only along said one line of weakening.

3. The method of bursting short forms from a web of continuous stationery having cross lines of weakening between the forms comprising the steps of passing the web between a pair of driven coating feed rollers and into the bight of a pair of faster driven coating draw rollers; spacing the pairs of rollers so that the web portion between their bights contains a plurality of cross lines of weakening; and placing a breaker roll in the path of the web between the pairs of rollers to deflect the web laterally at a cross line of weakening next adjacent the draw rollers to start breaking of the web only at said line of weakening when the driven rollers place tension in the web.

4. The method as set forth in claim 3 including the step of deflecting the web along said cross line of weakening at a plurality of local points along the length of said cross line simultaneously with tensioning of the web between said pairs of coating rollers.

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