May 8, 1945. J. E. EUTH 2,375,542

BURSTING MACHINE

Filed March 16, 1944

Fig. 1.

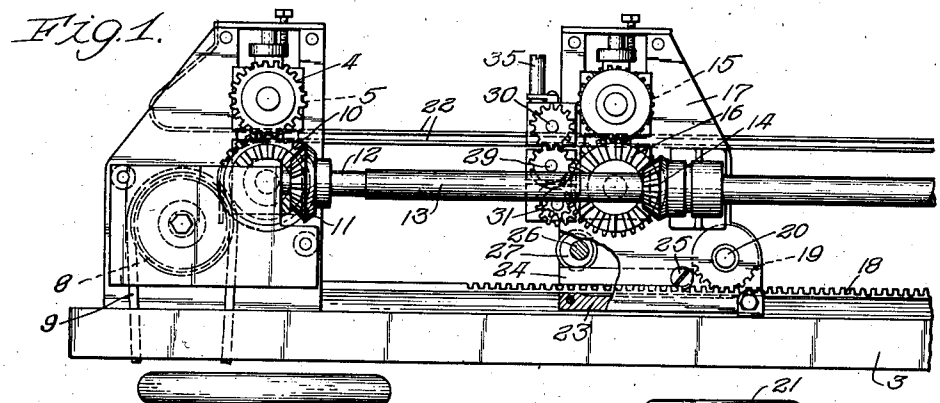
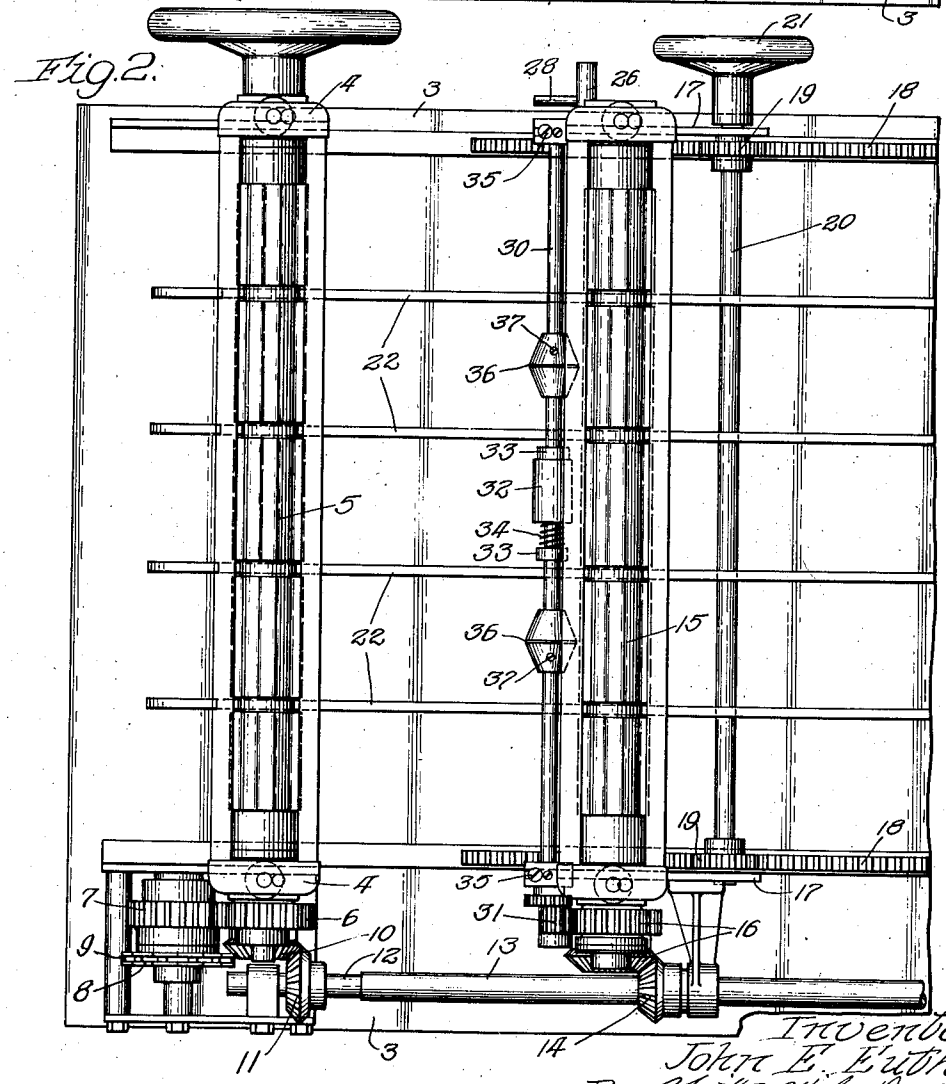


Fig. 2.



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Patented May 8, 1945 2,375,542

UNITED STATES PATENT OFFICE

2,375,542

BURSTING MACHINE

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Application March 16, 1944, Serial No. 526,709

4 Claims. (Cl. 164—84.5)

This invention relates to improvements in a bursting machine which automatically separates a continuous web of stationary into separate form length at lines of weakening provided in the web between forms.

In the machines of this type a strip of stationery is fed between two pairs of gripping rolls wherein the rear set of rolls is operating at a higher rate of speed than the front set of rolls, and the front set of rolls is usually provided with segmental gripping portions so that the web is periodically released and maintained under the control of a positive aligning device at the front of the machine. It will be understood that after a form length has been torn from the advancing web, the web may be under some tension in front of the front feed-rolls, and when the segments release the web it has a tendency to move in the opposite direction to relieve this tension. One of the objects of the present improvement is to provide a friction feed in back of the front feed rollers, so as to restrain reverse movement of the paper and assist in projecting the free end of the web into the bight of the rear feed-rolls.

Another object of the invention is to provide one or more crowned rollers on one of the auxiliary feed-roll shafts, so as to initiate bursting of the web along the line of weakening where it contacts the crowned roller.

A further object of the invention is to provide improved means for facilitating adjustment on the frame of the carriage which carries the front feed-roll, and to facilitate locking the carriage in a desired adjusted position.

The present invention is an improvement on a printing and bursting machine of the type shown in O'Connell Patent No. 2,344,720, issued March 21, 1944.

The invention is illustrated in the preferred embodiment in the accompanying drawing in which —

Figure 1 is a fragmentary elevational view of a machine embodying the invention; and Fig. 2, a plan view of the same.

In the embodiment illustrated, a main frame 3 is provided at its rear end with bearings 4, for a pair of coacting feed-rolls 5, which are geared together as indicated at 6, and driven positively from a gear 7, provided with a sprocket 8 and a driving chain 9. The lower feed-roll shaft is provided with a miter gear 10, which drives a miter gear 11 on a shaft 12, to which is splined a sleeve 13, provided with a miter gear 14, which drives front feed-rolls 15 through gears 16, provided on a shiftable carriage 17.

The top of the frame is provided with a rack gear 18, which is engaged by gears 19 fixed to a shaft 20, which is journalled in the carriage 17, and is provided at one end with a hand wheel 21. Thus it will be understood that the carriage 17 with the front feed-rolls may be moved to or from the rear feed-rolls 5, to accommodate different form lengths of stationery, by turning the hand wheel 21. It will be understood that the rear feed-rolls 5, are driven in timed relation to and slightly faster than the front feed-rolls 15, in order to tension the web between said feed-rolls. Preferably the upper rear feed-roll 4, and the upper front feed-roll 15, are provided with gripping segments so that a web of stationery advancing between the fixed guides 22, will be periodically released. As shown in the O'Connell patent, the machine is provided at its front end with a positive aligning mechanism which is driven in timed relation to the feed-roll, and regulates the rate of advance of the web.

As shown in Fig. 1, the carriage 17 has at each end a projection 23, which extends under the rack 18. An arm 24 is pivoted to the carriage as indicated at 25, and rests on the top of the rack 18. A rock-shaft 26 is journalled in the carriage and provided with a handle 28. Near each end of the rock-shaft is fixed a cam 27, so that by turning the handle 28, the arms 24 will be forced tightly into engagement with the rack 18, and the carriage will be locked in the adjusted position.

In the present embodiment an auxiliary feeding device is provided on the carriage between the main feed-rolls 5 and 15. A lower cross shaft 29 is geared to an upper cross shaft 30, and these shafts are driven from the gearing 16 by means of a pinion 31. The lower cross shaft is provided with a metal roller, and the upper cross shaft is provided with a coacting rubber roller 32, which is journalled on the shaft between the fixed collars 33. A compression spring 34 is provided on the shaft to press the roller against one of the collars 33 and form a light frictional driving clutch. The gearing on the auxiliary feed mechanism is such that the peripheral speed of the roller 32 is slightly greater than that of the roller 15, and accordingly it lightly urges the web forwardly at all times, and particularly when the feed segments on the roll 15 have released the web. The pressure between the auxiliary feeding rolls may be regulated by turning screws 35.

As shown in Fig. 2, the cross shaft 30 is pro-

vided with a pair of crowned rolls 36, which are adjustable along the shaft by means of set screws 37. The crowned rollers project into the direct path of a web tensioned between the front and rear feed-rolls, and as this increases the tension of the web at those points, bursting at the line of weakening is initiated at those points.

The foregoing detailed description is 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. In a machine for automatically bursting a continuous web of stationery, advancing from front to rear, into separate forms at lines of weakening between forms, comprising: a frame; a pair of rear coacting feed-rolls journalled in said frame; a feeding unit on said frame in front of said rear feed-rolls; a pair of front coacting segmented feed-rolls journalled in said feeding unit with their axes disposed parallel to axes of the rear feed-rolls and spaced at least one form-length therefrom; means for driving the rear feed-rolls in timed relation to and slightly faster than the front feed-rolls; an upper and a lower auxiliary cross shaft journalled in the feeding unit in rear of said front feed-rolls; a feed-roll journalled on one of said auxiliary cross shafts and provided with a friction clutch for driving said feed-roll therefrom; a feed-roll mounted on the other auxiliary cross shaft to coact with the clutch driven feed-roll; and means for driving the feed-rolls on the auxiliary cross shafts slightly faster than the front feed-rolls.

2. In a bursting machine: a frame; a pair of rear coacting feed-rolls journalled in said frame; a carriage adjustably mounted on said frame for movement to and from said rear feed-rolls; a pair of front coacting segmented feed-rolls journalled in said carriage with their axes disposed parallel to the axes of the rear feed-rolls and spaced at least one form-length of stationery therefrom; means for driving the rear feed-rolls in timed relation to and slightly faster than the front feed-rolls; manually operable means for adjusting the position of the carriage on the frame; and releasable locking means at each end of the carriage for securing the carriage in an adjusted position on the frame.

3. A machine as specified in claim 2, in which the releasable locking means includes a rock-shaft journalled in the carriage and is provided at each end with a cam adapted to clamp the carriage against said frame.

4. A machine as specified in claim 1, including at least one crowned roller adjustably mounted on one of the auxiliary cross shafts to project through a desired point intermediate of the margins and into the direct path of a tensioned web traveling from the front to the rear feed-rolls and initiate tearing of the web at that point.

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