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3,176,894

TAPE VELOCITY-FLUCTUATION DAMPER

Filed Aug. 20, 1962

Fig. 1.

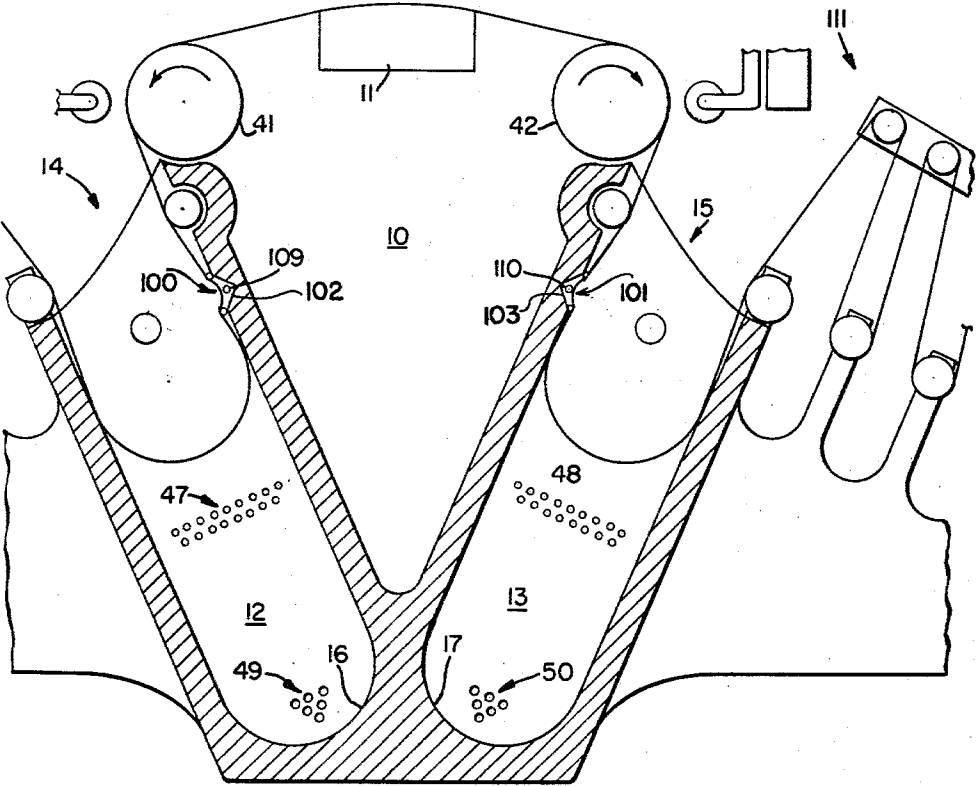
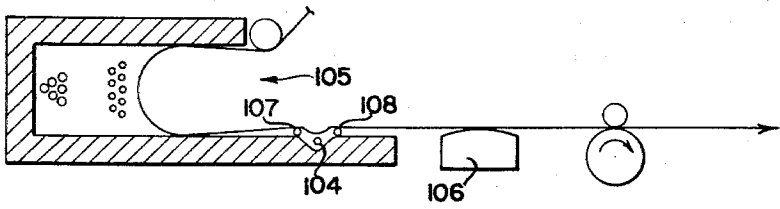


Fig. 2.



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TAPE VELOCITY-FLUCTUATION DAMPER
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3 Claims. (Cl. 226-118)

This invention, generally, relates to information processing apparatus and, more particularly, to a damper means for improving velocity fluctuation performance in such apparatus.

A principal object of this invention is to reduce the momentary fluctuations in velocity that occur immediately following a start in movement of a web, such as magnetic tape, on which information is processed.

Briefly, the invention contemplates the provision of means to develop a slight depression, or indentation, or pucker in a web to function as a damper for small variations in velocity due, primarily, to variations in web tension which are created during a rapid start in web motion.

The invention will be understood more fully from the following description, referring to the accompanying drawings, in which:

FIG. 1 is a partial view in cross section showing a structural arrangement in accordance with the invention; and

FIG. 2 is a diagrammatic view to illustrate the principle of the invention.

A description of the structure shown in FIG. 1 is given in detail in an application by the present applicant entitled "Vacumm Buffer Tank," executed concurrently herewith, filed on even date herewith under Serial No. 220,915, and assigned to the same assignee as the present invention.

In the above-referred to application, the normal 10 identifies, generally, a panel for an electronic data processing tape handler, a suitable data processing work station being indicated by the numeral 11. Two vacuum chambers 12 and 13 are positioned on the panel 10 slightly below the working station 11 with their receptacle tape loop receiving openings 14 and 15 at a flared angle relative to the opposite ends 16 and 17.

A driving capstan 41 is supported adjacent the upper end of the vacuum tank 12 intermediate the tank 12 and the working station 11, and a similar driving capstan 42 is located between the tank 13 and the working station 11.

The invention in the above-referred to application relates to a plurality of openings 47 arranged to provide, collectively, a vacuum port at a point intermediate the extremes of the vacuum buffer tank 12, and a plurality of openings 48 are positioned similarly within the tank 13. A second plurality of openings 49 is formed in a predetermined pattern in a substantially central position adjacent the lowermost end 16 of the vacumm buffer tank 12, and another plurality of openings 15 is formed in a similar manner adjacent the lowermost end 17 of the tank 13.

Referring now to the improvement provided by this invention, a pucker as indicated by the numbers 100 and 101 is developed in a magnetic tape. While any suitable means may be used to develop the pucker, said as a soft ball of cotton, foam rubber, plastic or some flexure mechanism, the preferred form of the invention contemplates the provision of a small vacuum recess, such as V-shaped recesses 102 and 103.

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Each recess is fitted with a suitable means to connect with a vacuum pump. For example, a port 109 in the recess 102 and a port 110 in the recess 103 may be connected to a separate vacuum pump or to the same pump (not shown) as the openings 47, 48, 49 and 50. It will be understood readily that information processing apparatus with which the present invention is used may have a first web storage means, illustrated by a multiple loop tension arm 111 and a second web storage means, illustrated by the vacuum buffer tank 13, and it is well known that a larger vacuum column may be substituted, if desired, for the multiple loop tension arm 111.

As better seen in FIG. 2, a recess 104 is located between the vacuum buffer chamber 105 and an information processing station 106. If desired, the recess 104 may have raised edges 107 and 108 to keep the tape out of continuous contact with the sides of the buffer 105.

The damper is effective only when it is "up-stream" from the working station, and the damper improves tape-to-head contact during a start cycle.

The scope of the invention is set forth in the following claims.

What is claimed is:

1. In an information processing apparatus, the combination comprising,
 - a working station positioned to permit an elongated moving web to pass in juxtaposition thereto,
 - driving means to move said web at least in one direction relative to the working station,
 - a first web storage means on one side of the working station to absorb a predetermined web length during a start-stop programming operation,
 - a second web storage means adjacent the first storage means including a vacuum buffer chamber to provide web storage having inertia less than the first storage means,
 - a V-shaped vacuum recess substantially smaller than the vacuum buffer chamber positioned within the vacuum buffer chamber to develop a low inertia pucker in said web,
 - said V-shaped recess being located adjacent the path of the web as it exits from the second storage means, and whereby a tendency in the web to develop a velocity fluctuations is damped.
2. In an information processing apparatus, the combination comprising,
 - a working station positioned to permit an elongated moving web to pass in juxtaposition thereto,
 - driving means to move said web relative to the working station,
 - a vacuum chamber adjacent the working station and the driving means to form a low inertia loop in said web for controlling tension in said web during a start-stop programming operation, and
 - means positioned within the vacuum chamber to develop a resilient pucker in said web, whereby a tendency in the web to develop velocity fluctuations is damped.
3. In an information processing apparatus of the class described, the combination comprising,
 - a working station positioned to permit an elongated moving web to pass in juxtaposition thereto,
 - driving means to move said web relative to the working station,
 - a web storage means on one side of the working station,

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a web storage means on one side of the working station to store a predetermined quantity of said web, and
means located within the boundaries of the storage means to develop a relatively small, resilient deflection in said web, 5
whereby a tendency in the web to develop velocity oscillations is damped.

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Examiners.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,176,894

April 6, 1965

Robert E. Schoeneman

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, lines 65 and 66, strike out "a web storage means on one side of the working station,".

Signed and sealed this 14th day of September 1965.

(SEAL)

Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents