April 3, 1962 J. S. FLEMING 3,028,061

MACHINE FOR TEARING PAPER

Filed July 1, 1959 2 Sheets-Sheet 1

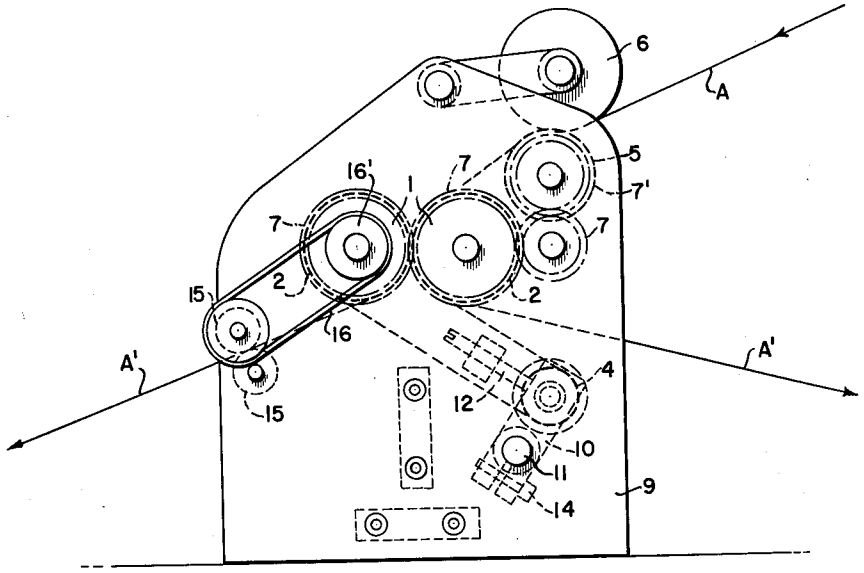


FIG. 1.

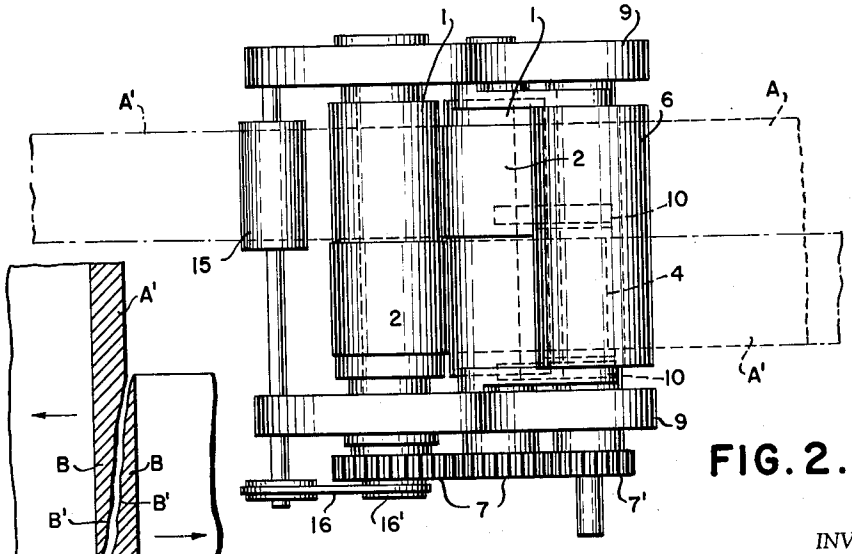


FIG. 2.

FIG. 5.

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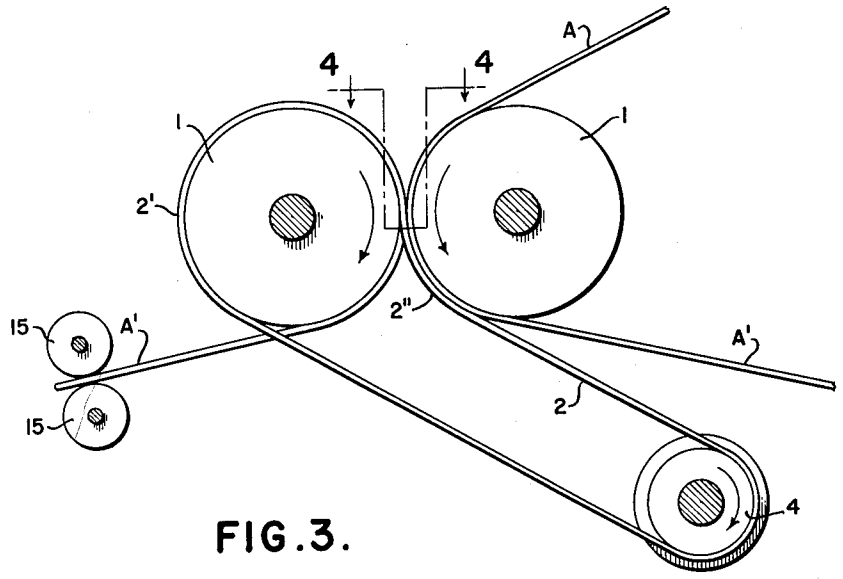


FIG. 3.

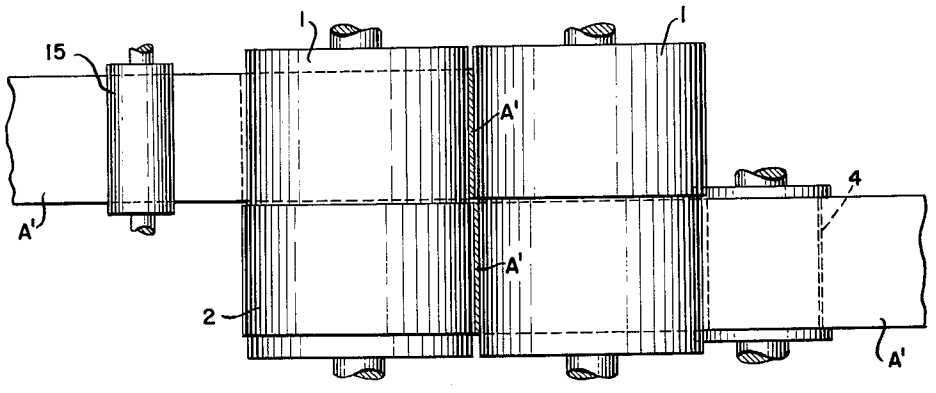


FIG. 4.

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MACHINE FOR TEARING PAPER

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1 Claim. (Cl. 225—99)

The invention relates to a machine for tearing a work sheet into parallel strips, this application being related to that filed March 11, 1957, Serial Number 645,211, by John Stuart Fleming, entitled Machine for Tearing Paper, now Patent No. 2,913,160, dated November 17, 1959. An object of the invention is to provide such a machine capable of providing said strips with the soft cushioned bordering edges of the Fleming Patents Nos. 2,856,938 and 2,856,939, dated October 21, 1958, for Dental Cleaners. Other objects and advantages will appear hereinafter or will be obvious.

The invention consists in the novel construction and combinations of parts hereinafter set forth in the claim.

In the accompanying drawings,

FIGURE 1 is a side view of the machine, with parts in dotted lines, showing the work sheet and said strips.

FIGURE 2 is a plan view of the same, showing the work sheet and said strips in dotted lines.

FIGURE 3 is a side view on a larger scale of the two cylinders, the roll, the endless belt, the work sheet, the strips and the strip pulling rollers.

FIGURE 4 is a plan view of the same, showing by a section taken on the line 4—4, FIGURE 3, said strips exaggerated as to their thicknesses.

FIGURE 5 is a detail fragmentary transverse section of the strips, on a much enlarged scale, showing the soft cushioned edges of the strips resulting from the tearing.

Referring to the drawings, the machine for tearing a paper work sheet A into parallel strips A', comprises two parallel longitudinal approximated cylinders **1** slightly spaced apart from each other, a cylindrical roll **4** parallel to said cylinders, said cylinders and said roll being located in different horizontal planes, said roll being of less diameter than that of said cylinders, an endless belt **2** having an arcuate bend **2'** passing around and over the cylinder farthest from said roll for more than 180 degrees along an arcuate path and having an arcuate reverse bend **2''** passing around and under the other cylinder for less than 180 degrees along an arcuate path and thence around said roll. Said cylinders are each longer than the width of said belt. Rotatable means to be described are provided for dragging one of said strips along an arcuate path around and under said farthest cylinder. Said cylinders and said roll and said strip dragging means are rotatably mounted in a fixed frame **9**, gears **7** being provided for rotating said cylinders in opposite directions, said belt being driven by said farthest cylinder. The above described machine provides means for continuously and simultaneously gripping the work sheet A fed between said belt and said other cylinder in the plane passing through the axes of said cylinders, dragging one of said strips along an arcuate path around and under said farthest cylinder, dragging the other strip between said belt and said other cylinder along an arcuate path and tearing the work sheet along an unweakened line of straight direction into said strips.

Any suitable means may be provided for dragging one of said strips around and under said farthest cylinder, such for example as rollers **15** closely approximated and between which said strip is pulled or dragged, said rollers being driven by a belt **16** passing around a pulley **16'** fixed to one of said gears **7**.

The soft cushioned torn edges B of said strips A' resulting from said tearing are beveled at B' upon one side thereof, as shown in FIGURE 5, and may be provided

with the thin superficial reinforcing coating of water repellant material upon their non-beveled sides shown in said Fleming patents but not shown herein.

Obviously there may be more than one of said endless belts **2** and means may be provided for dragging or pulling more than one of said strips A' around and under said farthest cylinder, for the purpose of tearing a sufficiently wide work sheet A into more than two of said strips A', in which case said cylinders will be longer than shown herein.

Means are provided for taking up slack in the endless belt **2**, comprising an arm **10**, mounted upon the transverse shaft **11** of the fixed frame and in the upper end of which said roll **4** is rotatably mounted, a screw **12** having threaded engagement with a lug of the fixed frame bearing against the upper end of said arm to adjust it pivotally upon said shaft, said arm having a lower bifurcated end **13** with the bifurcations of which a screw **14** has threaded engagement to tighten said arm upon said shaft. Said roll **4**, shown as indirectly mounted upon the fixed frame may obviously be directly mounted upon the fixed frame, in which case said means for taking up slack in said belt **2** by pivotal arm **10** would be omitted.

Means are provided for taking up slack in the work sheet A as it is fed between said belt and said farthest cylinder, comprising upper and lower rollers **6** and **5** between which the work sheet is fed, and arms **8** pivoted at **8'** upon the fixed frame and in the outer ends of which said upper roller is mounted, said upper roller resting by gravity upon the lower roller, the gears **7** for rotating said cylinders in opposite directions having driving connection with said lower roller by gears **7'**, whereby said cylinders are rotated at a speed faster than that of said lower roller. The right is reserved to modifications coming within the scope of the claim.

I claim:

A machine for tearing a paper work sheet into parallel strips, comprising two parallel longitudinally approximated cylinders slightly spaced apart from each other, a cylindrical roll parallel to said cylinders, said cylinders and said roll being located in different horizontal planes, said roll being of less diameter than that of said cylinders, an endless belt passing around and over the cylinder farthest from said roll for more than 180 degrees along an arcuate path and having an arcuate reverse bend passing around and under the other cylinder along an arcuate path for less than 180 degrees and thence around said roll, said cylinders being each longer than the width of said belt, rotatable means for dragging one of said strips around and under said farthest cylinder along an arcuate path, and means for rotating said cylinders in opposite directions and for rotating said strip dragging means, said belt being driven by said farthest cylinder, thereby providing means for continuously and simultaneously gripping the work sheet fed between said belt and said other cylinder in the plane passing through the axes of said cylinders, dragging one of said strips around and under said farthest cylinder, dragging the other strip along an arcuate path between said belt and said other cylinder and tearing the work sheet along an unweakened line of straight direction into said strips.

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