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PAPER TRANSMITTING MECHANISM.

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977,501.

Patented Dec. 6, 1910.

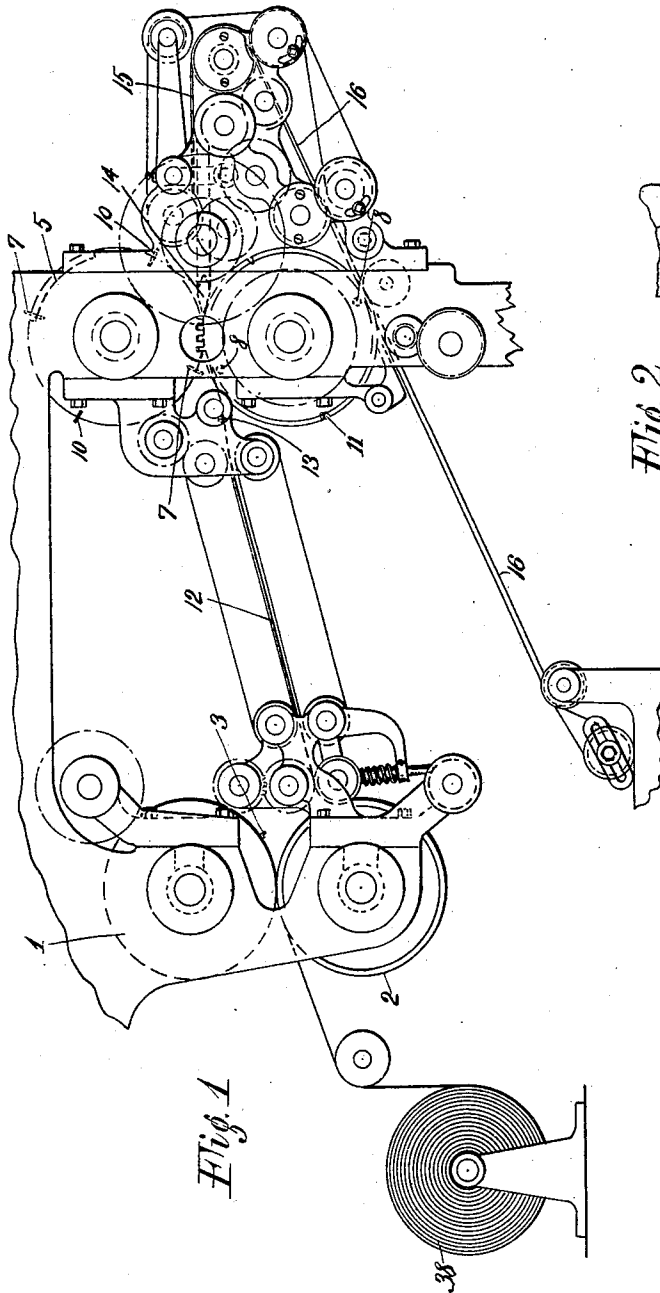


Fig. 1

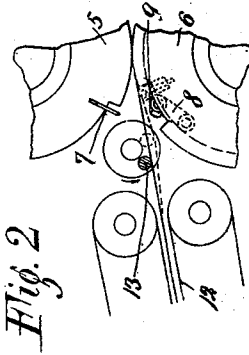


Fig. 2

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PAPER-TRANSMITTING MECHANISM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM T. BAILEY, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Paper-Transmitting Mechanism, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to web-handling machinery and, more particularly, to means for cutting and creasing a web of paper.

One of the objects thereof is to provide simple and efficient means for accurately creasing a web along a predetermined line without bringing an undue stress thereon and evenly folding portions of the same into the desired form.

Another object is to provide practical and compact means for cutting a web into portions of uniform length.

Another object is to provide means adapted efficiently to remove a web after being acted upon by one or both of the above means.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the mechanism hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is shown one of various possible embodiments of several features of my invention, Figure 1 is a side elevation of the same; Fig. 2 is a similar view of parts shown in Fig. 1 upon a larger scale.

Similar reference characters refer to similar parts throughout both views.

As tending to render clearer certain features of my invention, it may here be noted that if it be attempted to crease a web which is being fed under tension, there is a considerable stress brought to bear upon the same during the creasing operation and unless this stress is relieved or provided for there is a possibility of injury to the web. It may also here be noted that if ample slack be provided for the action of the creasing mechanism, there is a marked likelihood of

the web being excessively loose with a consequent absence of uniformity in the folded sheet. The above and other defects are remedied in constructions of the nature of that hereinafter described.

Referring now to Figure 1 of the accompanying drawing, there are shown a pair of cylinders 1 and 2, which may be provided with perforating mechanism 3, if desired. Between these cylinders is led a web, as from a mill roll 38, which passes into a sheet path 12 leading to a second pair of cylinders 5 and 6. Cylinder 5 is provided with creasing blades 7 adapted to coact with gripping mechanism 8 upon the cylinder 6, and there are also mounted upon cylinder 5 a pair of cutter blades 10 operatively related to coacting parts 11 upon the lower cylinder 6. This creasing and cutting mechanism, which is neither shown nor described in detail as its specific form is not involved herein, is intended to act upon the web fed from the sheet path 12, severing the same into sheets and folding each sheet at the center. Stripping mechanism 14 leads the folded sheets by tapes 15 into a sheet path 16 from which any desired disposition may be made of the same.

Mounted adjacent the web at a point before the same enters cylinders 5 and 6 is a bar 13 revoluble about an eccentric axis and so driven as to strike the web and deflect it from a straight path between the tapes 12 and the cylinders, thus retracting a portion of the web. This action is perhaps best shown in Fig. 2 of the drawings, the deflected condition of the web being indicated by dotted lines.

It may here be noted that the term "retract" is used throughout in a broad sense as denoting any action by virtue of which a member is either drawn back relative to stationary parts, or the rate of its travel diminished, and the same thus drawn back relative to the parts fed at the normal rate of travel.

The operation of the above described embodiment of this invention is as follows: The parts are all mounted in suitable supporting frame work and so geared together by any approved mechanical connections as to be driven at the proper rate of speed to accomplish their functions. The web is fed to the cylinders 5 and 6, and assuming that

one of the cutter blades 10 has severed a sheet and permitted the same to pass within the tapes 15, the free severed edge of the web is carried forward, thus bringing the following creasing blade 7 toward its operative position, as best indicated in Fig. 2 of the drawings. As shown in the method of drive indicated in this figure, the bar 13 strikes the web just prior to the action of the creasing blade 7, and starts to deflect the same or gather slack at this point, retracting portions of the web. The action of the creasing blade which takes place substantially at this time is to force the web within the gripper, or its equivalent, upon the cylinders 6, the bar 13 being so disposed and driven as to permit this action and yet maintain the web stretched evenly and tautly in such manner as to prevent lack of uniformity in the point of folding the severed sheets. That is, the bar 13 is so timed and driven with relation to the remaining parts that the creasing blade shall always act at exactly the same distance from the free severed edge of the web, any slackness or unevenness being obviated by the intermittent tautening action of this part. Subsequent to the creasing action, the fold is carried forward and stripped from the cylinders by the part 14 from which it passes to the tapes 15, as above described, the web being severed by the following blade 10. It is to be understood that the web is fed by the tapes 12 to the cylinders at such rate as to provide sufficient slack for the efficient action of the creasing means, as above set forth.

It will thus be seen that I have provided means for accomplishing the objects of my invention which are of simple and inexpensive construction, and, owing to the lack of complicated mechanism, are not likely to become deranged during use. Injury to the web is positively prevented by reason of the slack given the creasing means, which is so arranged as to permit free action thereof and yet obviate any lack of uniformity or certainty in the operation of the machine. By the use of the intermittently active bar in conjunction with the necessarily intermittently acting creasing blades, there is provided a pair of nicely coacting elements, the former of which so manipulates the sheet as to render it in precisely the proper condition through each point of operation of the creasing mechanism. Moreover, as the several parts are entirely automatic in action and excessive tension upon the web is avoided, the degree of supervision is reduced to a minimum and breaking or tearing of the web with a consequent loss of time and material is of rare occurrence.

It may here be noted that the expression "substantially simultaneously" is used throughout the following claims as descrip-

tive of the relative times of action of the creasing means and the eccentrically mounted bar 13 in a broad sense as denoting that these mechanisms are operative at the same time, although in the preferred action of the above described machine the bar 13 first strikes and tautens the web and then gradually releases the same so as to hold the web smoothly over the creasing blade, and yet give up sufficient slack to insure of free action of the latter member.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In mechanism of the class described, in combination, a cylinder provided with web creasing means, and means adapted to feed a web thereto at a rate greater than that of the peripheral speed of said cylinder.

2. In mechanism of the class described, in combination, a pair of cylinders, a creasing blade mounted upon one of said cylinders and co-acting creasing means mounted upon the other thereof, and means adapted to feed a web to said cylinders at a rate of speed greater than that of the peripheral speed of one of said cylinders.

3. In mechanism of the class described, in combination, a pair of cylinders provided with web cutting and web creasing means, means adapted to feed a web to said cylinders at a rate greater than that of the peripheral speed of one of the same, and means adapted to draw said web taut simultaneously with the action of said creasing means.

4. In mechanism of the class described, in combination, a pair of cylinders one of which is provided with alternately disposed cutting and creasing blades and the other of which is provided with co-acting cutting and creasing means, means adapted to feed a web to said cylinders at a rate greater than the peripheral speed of the cylinder upon which said blades are mounted, and intermittently operative means adapted to draw said web taut substantially simultaneously with the action of said creasing means.

5. In mechanism of the class described, in combination, a pair of cylinders one of which is provided with alternately disposed creasing and cutting blades and the other of which is provided with co-acting creasing and cutting means, means adapted to feed the web to said cylinders at a rate greater than the peripheral speed of the cylinder upon which said blades are mounted, and

intermittently operative means adapted to strike and deflect said web and take up excessive slack thereon substantially simultaneously with the action of said creasing means.

6. In mechanism of the class described, in combination, a pair of cylinders, web creasing means mounted thereon, means adapted to feed a web to said cylinders, and means adapted intermittently to strike said web and deflect the same from its normal path of travel.

7. In mechanism of the class described, in combination, web creasing means, means adapted to feed a web thereto, and means adapted intermittently to retract portions of said web.

8. In mechanism of the class described, in combination, web creasing means, means adapted to feed a web thereto, and means adapted to slacken said web prior to the action thereon of said creasing means.

9. In mechanism of the class described, in combination, web creasing means, means adapted to feed a web thereto, means adapted to slacken said web prior to the action thereon of said creasing means, and means adapted to intermittently retract a portion thereof substantially simultaneously with the action of said creasing means.

10. In mechanism of the class described, in combination, web creasing means, means adapted to feed a web thereto, and means adapted intermittently to retract portions of said web substantially simultaneously with the action of said web creasing means.

11. In mechanism of the class described, in combination, means adapted alternately to sever and crease a web, and intermittently acting means adapted to retract portions of said web subsequent to the action of said cutting means and substantially simultaneously with the action of said creasing means.

12. In mechanism of the class described, in combination, means adapted alternately to sever and to crease a web, means adapted to slacken said web prior to the action of said creasing means, and means adapted to tauten the same substantially simultaneously with said action.

13. In mechanism of the class described, in combination, means adapted to feed a web, and means adapted periodically to decrease the rate at which portions of said web is fed.

14. In mechanism of the class described, in combination, web feeding means, means adapted to slacken the tension upon the

web, and means adapted periodically to take up said slack.

15. In mechanism of the class described, in combination, web feeding means, means adapted to slacken the tension on the web, creasing means, and means adapted to take up said slack substantially simultaneously with the action of said creasing means.

16. In mechanism of the class described, in combination, web creasing means, means adapted to feed a web thereto, and an intermittently active member adapted to strike said web and tauten the same substantially simultaneously with the action thereon of said creasing means.

17. In mechanism of the class described, in combination, alternately operative creasing and cutting means, means adapted to feed a web thereto, and an intermittently active member adapted to strike said web and tauten the same substantially simultaneously with the action of said creasing means and subsequent to the action of said cutting means.

18. In mechanism of the class described, in combination, alternately operative web creasing and cutting means, means adapted to feed a web thereto, and an eccentrically mounted member adapted intermittently to strike and tauten said web substantially simultaneously with the action of said creasing means.

19. In mechanism of the class described, in combination, a pair of cylinders provided with alternately operative web cutting and web creasing means, means adapted to feed a web thereto, means adapted to slacken said web, and an eccentrically mounted bar adapted periodically to strike said web and tauten the same substantially simultaneously with the action thereon of said creasing means.

20. In mechanism of the class described, in combination, a pair of cylinders, alternately operative web cutting and web creasing means mounted thereon, means adapted to feed a web thereto, a pair of rotary members, and a bar eccentrically mounted upon said rotary members adapted periodically to strike said web and increase the tension thereon substantially simultaneously with the action of said creasing means.

Signed at Elmira, N. Y., this 19 day of Dec., 1903.

WILLIAM T. BAILEY.

Witnesses:

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ANNA M. FABIAN.