

Fig. 1.

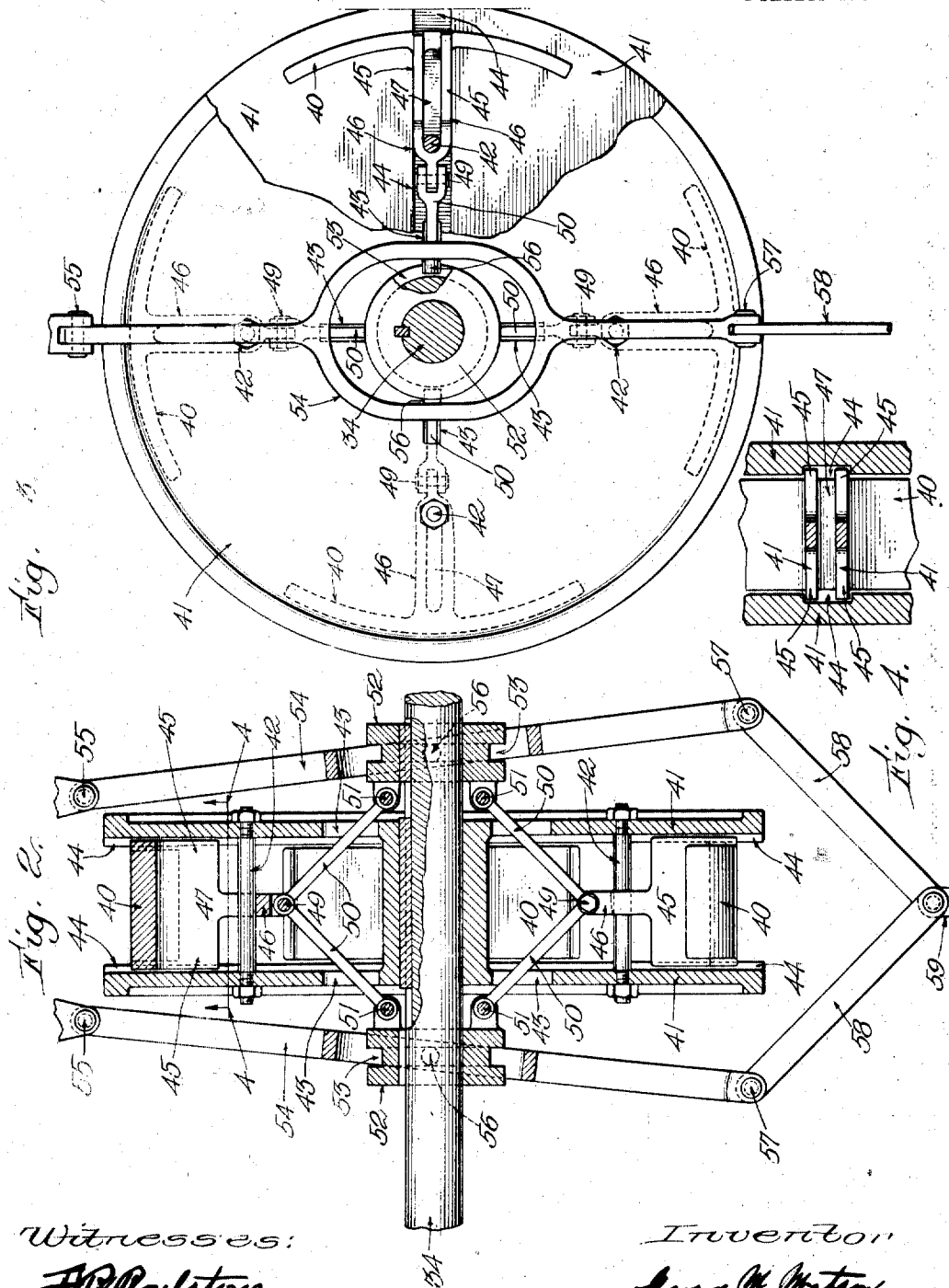
Witnesses:
F. C. Roulton
E. Batchelder

Inventor:
George W. Watson
By Wright, Gunn, Conroy & Day
Attys.

1,001,912.

Patented Aug. 29, 1911.

2 SHEETS—SHEET 2.



Witnesses:
 F. P. Boulton
 E. Batchelder

Inventor:
 George W. Watson
 By Wright, Brown, Condit & Hoop
 Attorneys

UNITED STATES PATENT OFFICE.

GEORGE W. WATSON, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR TO NASHUA CARD GUMMED & COATED PAPER COMPANY, OF NASHUA, NEW HAMPSHIRE, A CORPORATION OF MASSACHUSETT.

MACHINE FOR CUTTING PAPER.

1,001,912.

Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed December 23, 1909. Serial No. 534,725.

To all whom it may concern:

Be it known that I, GEORGE W. WATSON, of Nashua, in the county of Hillsboro and State of New Hampshire, have invented certain new and useful Improvements in Machines for Cutting Paper, of which the following is a specification.

This invention relates to machines for severing a web or strip of paper into cut sheets of uniform area, and has especial reference to machines of this type which employ coöperating cutting devices one of which is stationary and the other comprises a single cutter which rotates and cuts a sheet from the web at each rotation, the web or strip being advanced at a uniform rate of speed.

Certain treatments of paper, such as the application of paraffin thereto, frequently result in an unequal stretching of the material so that, if the web or strip has been provided with printed matter, or bears any kind of symbols at regular intervals, the lines of cut are not always equi-distant between the impressions made on the paper. When such cut sheets are intended to form wrapping sheets for articles, which wrapping sheets are applied by machinery to the articles inclosed thereby, it is of course desirable that any printed matter or equivalent thereof borne by the sheets shall have a certain definite location or locations relatively to the cut edges of the sheets, since otherwise the packages would not properly display the printed matter.

The object of this invention is to provide a web-cutting machine with means whereby the size of the sheets as they are cut from the web may be controlled so that the cuts will be uniformly spaced relatively to the printed matter or other symbols borne by the web or strip. This object is attained by varying the speed of movement of the cutter relatively to that of the web being cut during the operation of the machine, so that the operator can render it certain that the cuts may be made according to certain indications borne by the web, such indications usually consisting of slight marks near the edges of the web, which marks are applied to the web when it is printed.

To these ends the invention consists in

the construction and combination of parts substantially as hereinafter described and claimed.

Figure 1 is a side elevation, partly in section, of a machine containing an embodiment of my invention. Fig. 2 represents a section through the speed-changing mechanism which, in this embodiment of the invention, comprises essentially an expansion pulley. Fig. 3 is a side elevation of the same, partly broken out. Fig. 4 represents a detail section on line 4—4 of Fig. 2.

Similar reference characters indicate the same or similar parts in all of the views.

The frame 10 of the machine is provided with suitable bearings for the main shaft 11 on which is secured a driving pulley 12 adapted to be actuated by a belt 13 from any suitable source of power, not shown. On the shaft 11 is secured a pinion 14 which meshes with a gear 15 secured on a shaft 16, said shaft having keyed thereon a drum 17. Suitably mounted above the drum is a pressure roll 18 between which and said drum the web of paper *a* is passed from a suitable reel 19. The web, after passing between the drum 17 and roll 18, passes over a table 20 and over the edge of a fixed knife 21 at the lower edge of said table, the paper then passing to a delivery belt 22 which passes around rolls 23 and 24. The delivery belt is driven by means of a crossed belt 25 connecting a pulley on the shaft of the upper roll 23 with a pulley on the main shaft 11. A pressure roll 26 bearing upon the upper stretch of the delivery belt holds the paper in contact with said belt so that each sheet, as it is severed, will be carried downward and forward and delivered by the belt 22 onto a suitable receiving table 27.

Mounted in bearings carried by the frame of the machine is a shaft 28 having a drum 29 to which is secured the cutter or knife 30, said cutter 30 being so positioned that once during each rotation of the shaft 28, it will engage the paper which is being fed over the table 20 and fixed knife 21 so as to sever the paper at that point, the sheet cut off being then carried down by the coöperation of the belt 22 and roll 26 and delivered onto the table 27.

The knife or cutter is actuated by the fol-

lowing mechanism:—Secured on the shaft 28 is a gear 31 which meshes with an idle gear 32, said gear 32 meshing with a gear 33 fixed on the shaft 34 of the speed changer which I will presently describe. A pulley 35 fixed on the main shaft 11 is connected by means of a belt 36 with the speed changer, said belt being held at proper tension by a tightener roll 37.

In this embodiment of the invention, the speed changer comprises an expansion pulley which consists of a plurality of segments 40 (see Figs. 2, 3 and 4). Said segments are radially movable between side webs 41 which are connected by a hub fixed on shaft 34, said side webs having also tie bolts 42. The said webs are also provided with slots 43 and with radial ways 44 in their inner faces. The segments 40 are provided with ribs 45 which enter the ways 44, and have stems 46 which are slotted at 47, the tie bolts 42 passing through said slots. By means of the slotted stems riding on the tie bolts, and the ribs 45 engaging the radial ways 44, the segments are guided properly inward and outward. Pivotally connected at 49 to the inner ends of the stems 46, are links 50 which extend outward through the slots 43 in the side webs 41, and are pivoted at 51 to hubs 52 which are splined on the shaft 34, said hubs having annular grooves 53. To actuate these hubs toward and from each other so that the links 50 will act as toggles to adjust the segments 40 outward or inward, I provide levers 54 which are pivoted at 55 to any suitable fixed supports, said levers having pins or rolls 56 entering the annular grooves 53 of said hubs. The lower or free ends of the levers 57 have pivoted thereto a pair of links 58, the two links 58 being pivotally connected with an arm 59 (see Fig. 1) of an elbow lever, the other arm 60 of said elbow lever having a spring 61 connected to it to normally hold the parts with the levers 54 spread. A link 62 is connected to said arm 60 and to an arm 63 of a foot-treadle 64. The belt 36 passes over the expansion pulley described, and when the foot-treadle is actuated so as to vary the diameter of the said pulley, the tightener 37 holds the belt at proper tension.

When the machine is in use, the operator by keeping one foot upon the treadle 64 and watching the relationship of the lines of severance of the paper to the usual marginal indications borne by the web at certain points between the printed matter thereon, can instantly vary the speed of rotation of the cutter 30 so that it will sever the paper at exactly the point which bears the indications made for that purpose. This instant variation of speed of rotation of the cutter occurs during, or simultaneously with the act or movement of the attendant who operates the treadle 64, and therefore if the pa-

per is not coming through the machine so that the markings register with the point of operation of the cutter, the attendant can immediately rectify the operation. As a matter of fact, by keeping the foot upon the treadle 64, variations are constantly under the control of the attendant, and such variations as need to be effected occur practically instantaneously with the act of shifting the treadle, and without waiting for the machine itself to complete the operation of changing the speed, as is necessary when cone pulleys and a belt shifter are employed.

It will now be understood that the machine is entirely under the control of the operator to cause the cutting to occur at distances to accord with the spacing of the printed matter borne by the web or strip. And owing to the fact that but a single knife is employed, by varying the speed of operation of that knife relatively to the speed of the web or strip-forwarding devices, the operator can exercise a perfect control over the size of the cut sheets.

Having thus described the nature of my said invention and illustrated a way of making and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what I claim is:

1. A machine for cutting sheets from a web, comprising web-feeding mechanism, a continuously operating cutter, and manually controlled means for instantly varying the speed of action of the cutter in unison with the controlling act of the attendant, said speed controlling means being operable from a position to enable the attendant to watch the sheets being cut, whereby the cuttings may be made according to markings upon the material being cut.

2. A machine for cutting sheets from a web, comprising means for continuously feeding a web at a substantially uniform speed, a single rotary cutter, and manually controlled means for instantly varying the speed of action of the cutter in unison with the controlling act of the attendant, said speed controlling means being operable from a position to enable the attendant to watch the sheets being cut, whereby the cuttings may be made according to markings upon the material being cut.

3. A machine for cutting sheets from a web, including in its construction a fixed cutter, means for continuously feeding a web across said fixed cutter, a single rotary cutter to co-act with said fixed cutter, and manually controlled means for instantly varying the speed of action of the cutter in unison with the controlling act of the attendant, said speed controlling means being operable from a position to enable the attendant to watch the sheets being cut,

whereby the cuttings may be made according to markings upon the material being cut.

4. A machine for cutting sheets from a roll, including in its construction a fixed cutter, means for continuously feeding a sheet across said fixed cutter, a single rotary cutter to co-act with said fixed cutter, and means for instantly varying the speed of movement of said rotary cutter, said means including an expansion pulley, gearing between said expansion pulley and rotary cutter; and means for varying the size of said

pulley during operation thereof, said speed controlling means being operable from a position to enable the attendant to watch the sheets being cut, whereby the cuttings may be made according to markings upon the material being cut.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE W. WATSON.

Witnesses:

J. B. TILLOTSON,
C. M. CROSS.