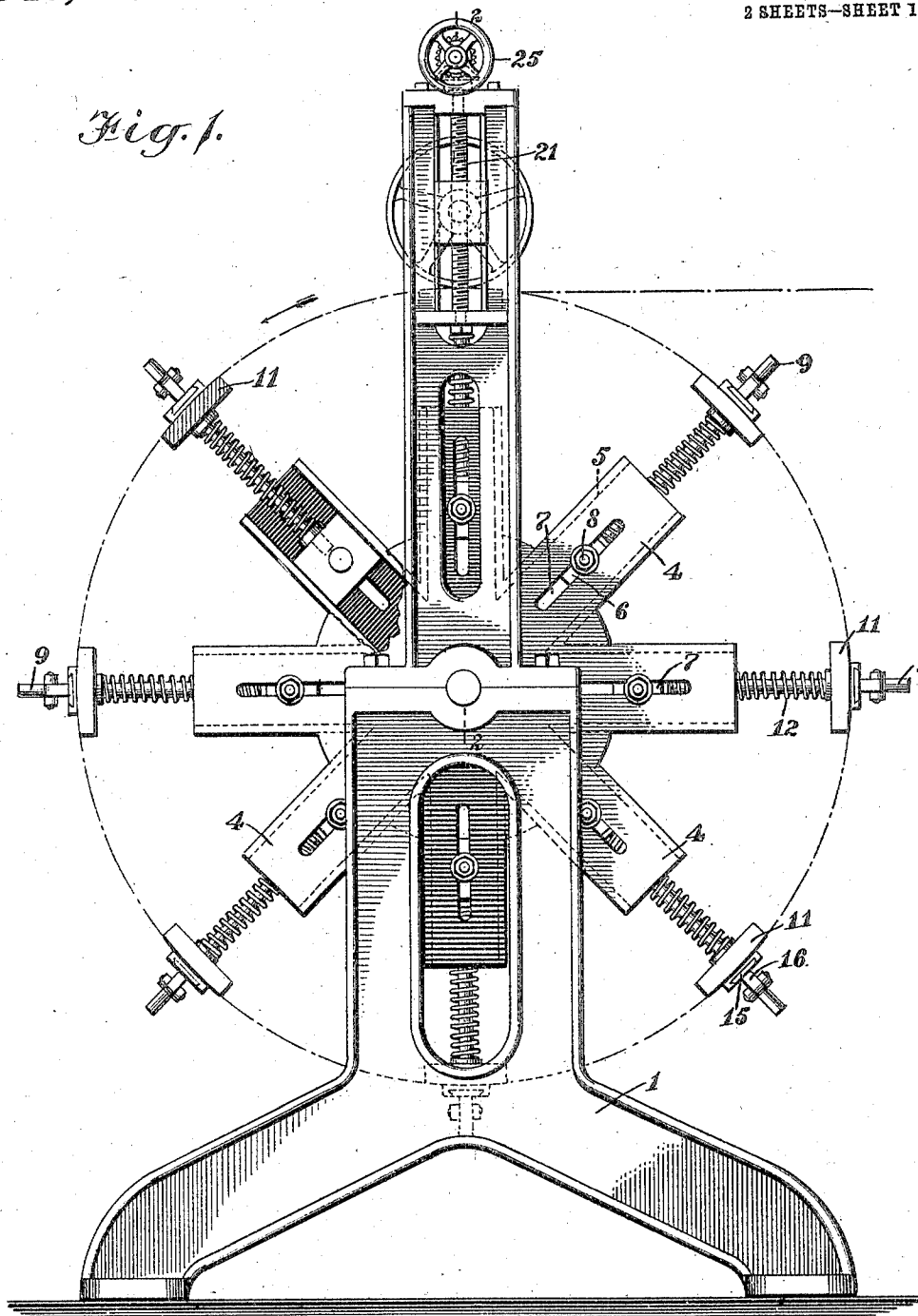


948,207.

C. H. COON.
AUTOMATIC ADJUSTABLE REEL.
APPLICATION FILED JUNE 5, 1909.

Patented Feb. 1, 1910.
2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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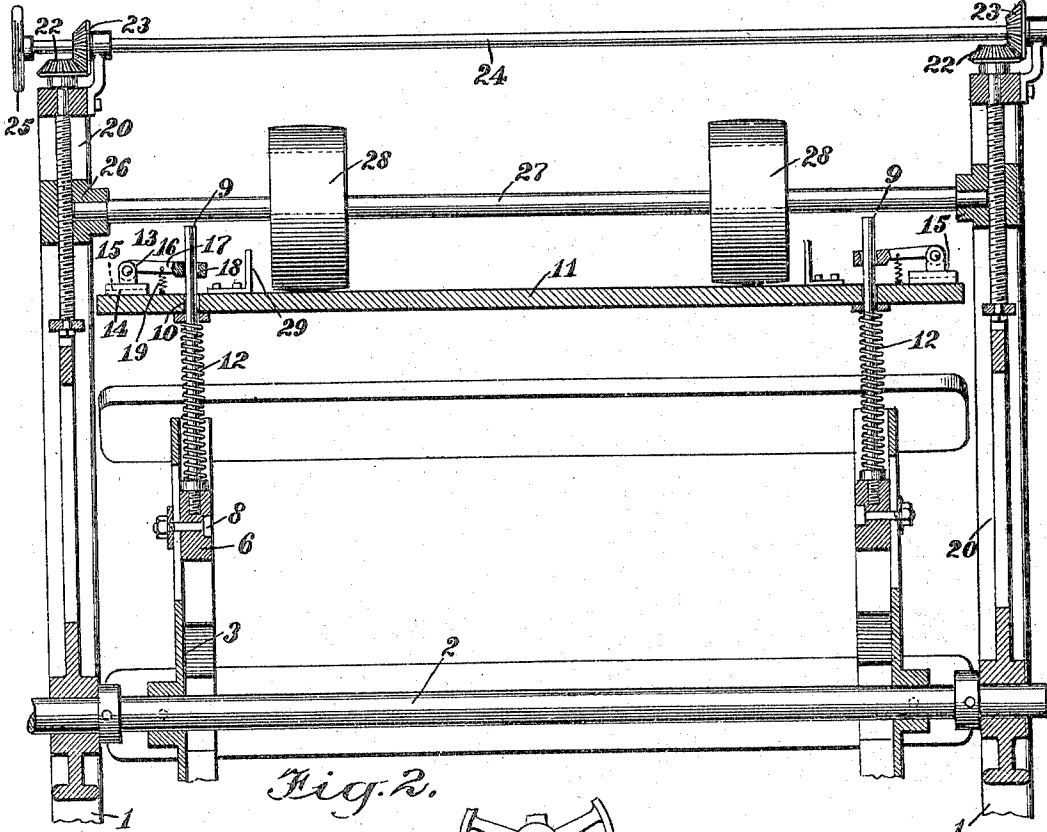


Fig. 2.

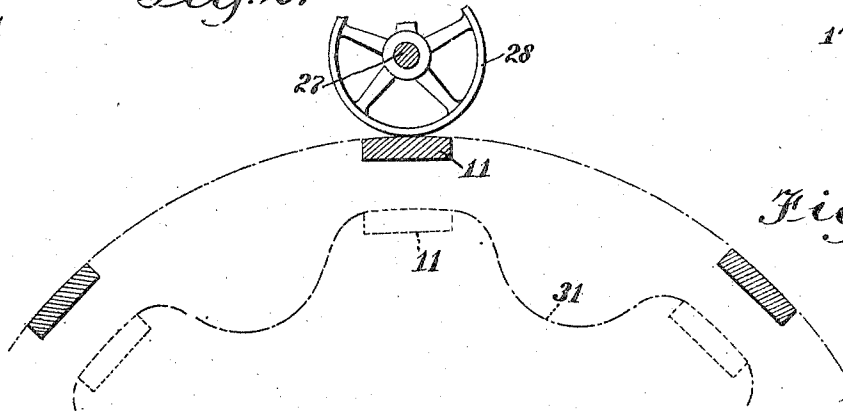


Fig. 3.



Fig. 4.

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AUTOMATIC ADJUSTABLE REEL.

948,207.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed June 5, 1909. Serial No. 500,450.

To all whom it may concern:

Be it known that I, CHARLES H. COON, a citizen of the United States, and a resident of Saugerties, in the county of Ulster and State of New York, have invented a new and Improved Automatic Adjustable Reel, of which the following is a full, clear, and exact description.

This invention relates to the art of paper making, but it is applicable in any industry in which the web, such as paper or similar manufactured product, is wrapped upon the reel. In the manufacture of the paper, where the paper is to be formed into sheets it is rolled upon the reel and the diameter of the reel increases with each layer of paper which is wrapped upon it. When the paper is cut into sheets on the reel, the sheets which are formed by the inner layers are of shorter length than the sheets formed by the outermost layers of the material. The sheets must be afterward trimmed to a uniform dimension so that a loss of material is entailed.

The object of this invention is to produce a reel in which the virtual diameter of the reel remains substantially constant. In other words, the diameter of the reel reduces itself automatically as the web of material wraps upon it. In this way the length of material wrapped upon the reel in one revolution remains constant, and when the material on the full reel is cut, the sheets will all have the same length.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is an end elevation of a reel constructed according to my invention, certain parts being broken away and shown in section; Fig. 2 is a longitudinal vertical section through the upper portion of the reel, further illustrating the details of its construction; Fig. 3 is a detail view of a diagrammatic nature, illustrating the manner in which the reel adjusts itself as the layers of material wrap upon it; and Fig. 4 is an

edge view showing a pad of paper supposed to have been cut and taken from the reel. 55

Referring more particularly to the parts, the frame of the machine comprises two oppositely disposed standards 1, 1, and these standards support a horizontal shaft 2 rotatably. Each end of this shaft is provided with a spider 3 having radially projecting arms 4. These arms are in the form of channels presenting inwardly projecting flanges 5 which operate as guides for blocks 6 which are mounted to slide longitudinally in the channels. The web of each arm is provided with a longitudinal slot 7, and each block is connected to this slot by an adjusting bolt 8. Near the outer face of each block, a guide stem 9 is rigidly attached. These guide stems extend through openings 10 which are formed in the side bars 11 of the reel. On the stems 9, coil springs 12 are placed, and these springs tend to force the bars outwardly on the guide stems if the bars should be displaced inwardly from their normal position. The normal position of the bars is shown in Fig. 2, and it will be noted that the extremities of the stems 9 project well beyond the bars. 80

On the outer sides of the bars 11, clutches 13 are arranged. Each of these clutches comprises a base plate 14 which is mounted on the outer side of the bar, and in this base plate 14 a slide 15 is mounted in a dove-tail groove. The slide 15 is formed with a post 16, and to this post 16 a clutch arm 17 is pivotally attached. The outer end of the clutch arm is formed with an eye 18 through which the projecting extremity of the stem 9 passes. Between the stem and the pivot point 16, a spring 19 is provided, and the lower end of this spring is attached to the bar, the upper end being attached to the clutch arm. The opening 18 is slightly larger than the diameter of the stem, and the arrangement described is such that the clutch will permit an inward movement of the bar, but will lock the bar against returning. 100

Above the standards 1, 1, housings 20 are provided, and in these housings 20, adjusting screws 21 are mounted, as shown. These adjusting screws are provided at their upper ends with bevel gear wheels 22, and these bevel gear wheels 22 mesh with similar 105

bevel gear wheels 23, operated by a shaft 24, said shaft having a hand-wheel 25 for rotating the same. On the screws 21, boxes 26 are arranged, said boxes making a threaded engagement with the screws so that when the screws are rotated, the boxes will be adjusted and maintained in alinement with each other. These boxes 26 form end bearings for a roller shaft 27. This roller shaft is provided at intermediate points on its length with rollers 28, and the lower faces of these rollers determine the position of the bars 11 as they pass the shaft 27. In other words, the diameter of the reel is determined by the position of the shaft 27. If it is desired to reduce the diameter of the reel, it is necessary to lower the shaft 27 and adjust the blocks 6 inwardly to adapt the stems to the smaller diameter. As the bars engage the rollers 28, they are depressed or slid inwardly on their stems and the clutches 13 lock them against sliding outwardly under the force of their springs 12. Near the rollers 28, guide cleats 29 are provided, which are engaged by the edges of the web of paper or other material, so as to guide it into a mid-position on the reel.

The web of paper, or similar material, is wrapped upon the reel in the manner indicated by the dotted lines in Fig. 1. The web passes onto the reel at its upper side and under the rollers 28. It should be distinctly understood that in the wrapping operation, the rollers 28 rotate upon a fixed axis. As the layers of the web accumulate on the reel, the bars 11 become displaced inwardly and are maintained in this inwardly displaced relation by the clutches 18. After a desired amount of the web has been wrapped upon the reel, the reel can be cut along the edge of one of the bars 11, and the material upon the reel can then be removed so as to present a pad 30. The mode of operation of the reel in this connection is clearly shown in Fig. 3, where the bars are represented in dotted lines displaced inwardly, as suggested. The material between the bars on the inner side will tend to bag inwardly, as illustrated by the dotted lines 31. When the pad 30 of paper, or similar material, has been formed as described, the sheets will all have the same length, as indicated in Fig. 4, but if the pad had been formed on a reel of fixed diameter and in which the virtual diameter would increase continuously, the sheets would not have the same length, but one edge of the pad would be tapered, as indicated by the dotted line 32 in Fig. 4, if the opposite edges of the sheets were all alined together, as will be readily understood. This reel evidently prevents a waste of the triangular "block" or wedge of material which would be cut from the edge of the pad at the inner end of the dotted line 32.

Special attention is called to the slide 15

carrying the pivot post for the clutch. This character of mounting seems to be a necessary feature of the clutch mechanism as it enables the clutch arm to adjust itself to the stem and insures efficiency of the clutch.

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

1. A reel of the class described, having spiders with substantially radially disposed guide members, longitudinal bars mounted on said guide members and adapted to slide inwardly thereupon, and means for locking said bars against return when moved inwardly.

2. A reel having a plurality of longitudinally disposed bars, guide rollers cooperating with said bars and affording means for guiding a web of material to wrap upon said reel, said rollers affording means for displacing said bars inwardly as the layers of material accumulate thereupon, and means for locking said bars against a return outward movement when displaced inwardly.

3. A reel having rotatable spiders, bars extending longitudinally, means for guiding said bars on said spiders in a radial direction, resilient means tending to force said bars outwardly, members cooperating with said bars to force the same inwardly as the layers of material accumulate thereupon, and means for locking said bars against an outward movement after being displaced inwardly.

4. A reel having substantially radially projecting guide stems, bars sliding on said guide stems, clutches carried by said bars and adapted to prevent an outward movement thereof, and means for guiding a web of material on said reel.

5. A reel having substantially radial guide stems, bars mounted on said guide stems and adapted to slide inwardly, resilient means tending to force said bars outwardly, clutches carried by said bars locking the same against an outward movement on said stems, and means cooperating with said bars to displace the same inwardly when the layers of the web wrap upon the reel.

6. A reel having substantially radial stems, bars slidably mounted on said stems, springs tending to force said bars outwardly on said stems and resisting their inward movement, clutches mounted on said bars having pivoted clutch arms with eyes through which said stems project, said clutch arms affording means for locking said bars against outward movement and permitting the free inward movement of said bars, and members cooperating with said bars to displace the same inwardly as the web of material wraps upon the reel.

7. A reel having substantially radial

guide stems, bars slidably mounted on said
guide stems and adapted to be displaced in-
wardly, springs tending to force said bars
outwardly, slides mounted on said bars and
5 adapted to slide longitudinally with respect
to the same, clutch arms pivotally mounted
on said slides and having eyes receiving the
extremities of said stems, springs in connec-
tion with said clutch arms and constraining
10 the same to clutch said stems, and members
coöperating with said bars to guide the web

onto said reel and affording means for dis-
placing said bars inwardly as the layers of
material accumulate thereupon.

In testimony whereof I have signed my 15
name to this specification in the presence of
two subscribing witnesses.

CHAS. H. COON.

Witnesses:

B. F. CRUMP,
ELIZABETH GLEASON.