

No. 653,293.

Patented July 10, 1900.

W. M. & T. M. GILBERT & W. C. NASH.

AUTOMATIC WIRE OR FELT GUIDE FOR PAPER MAKING MACHINES.

(Application filed Jan. 30, 1900.)

(No Model.)

2 Sheets—Sheet 1.

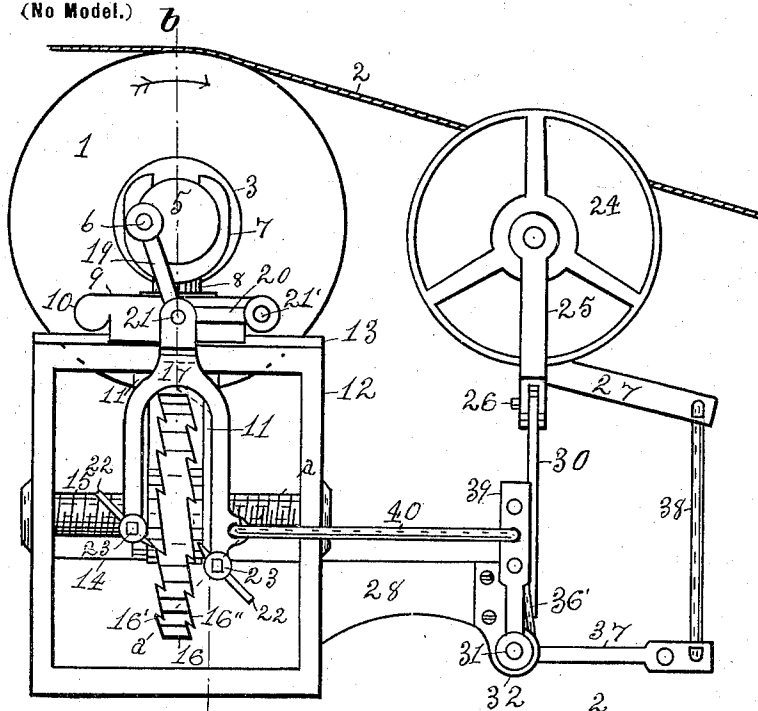


Fig. 1.

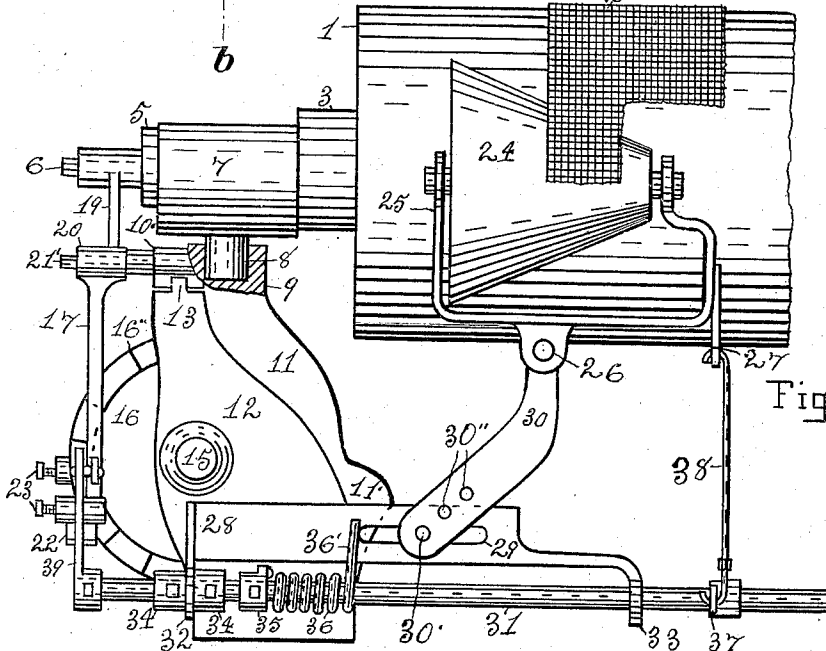


Fig. 2.

Witnesses.

E. H. Albee.
J. A. Jamison.

Inventors.

William M. Gilbert.

Theodore M. Gilbert. William C. Nash.

By their Att. *G. H. Albee.*

No. 653,293.

Patented July 10, 1900.

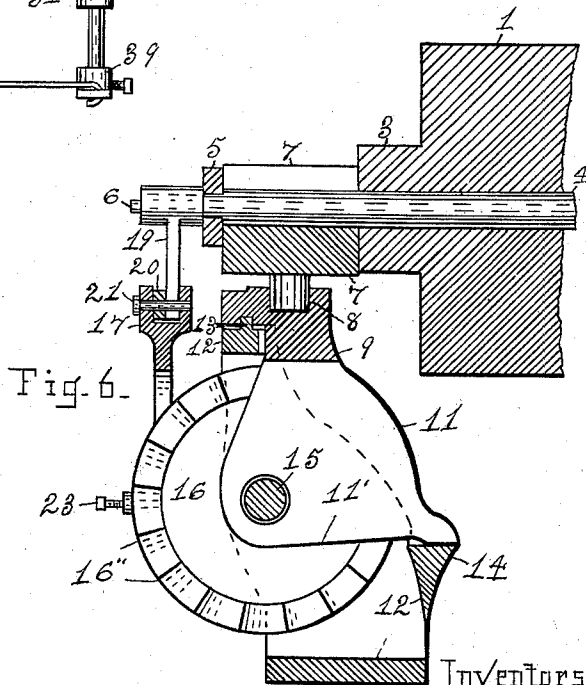
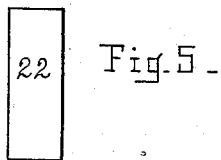
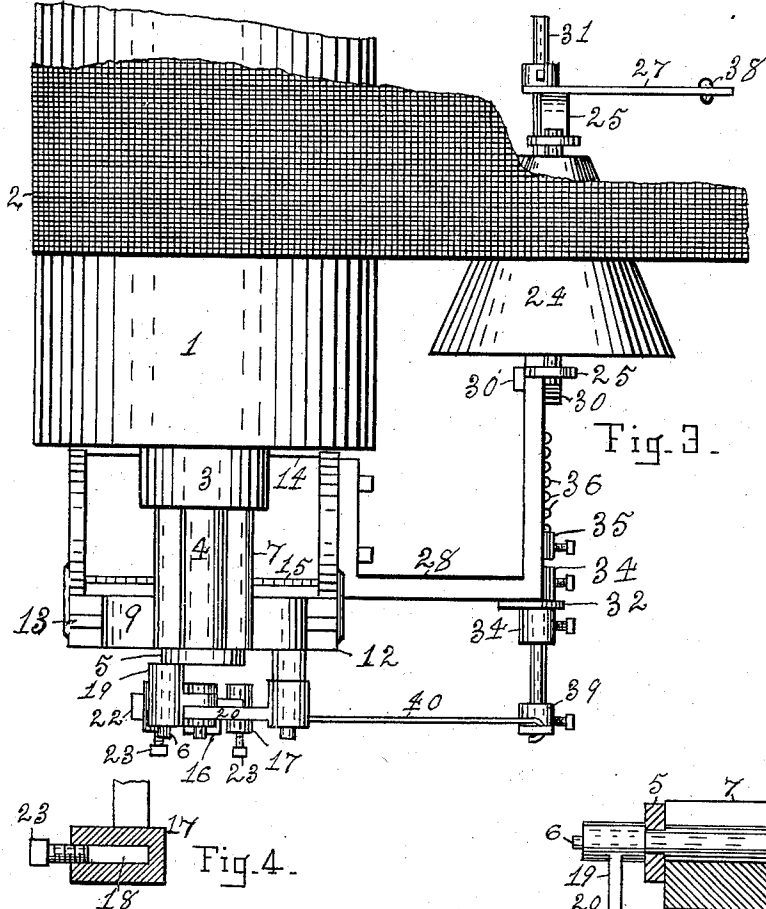
W. M. & T. M. GILBERT & W. C. NASH.

AUTOMATIC WIRE OR FELT GUIDE FOR PAPER MAKING MACHINES.

(Application filed Jan. 30, 1900.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses -
C. M. Albee,
Herman Miller

Inventors.
William M. Gilbert,
Theodore M. Gilbert,
William C. Nash -
By their Att. G. H. Albee

UNITED STATES PATENT OFFICE.

WILLIAM M. GILBERT, THEODORE M. GILBERT, AND WILLIAM C. NASH,
OF NEENAH, WISCONSIN.

AUTOMATIC WIRE OR FELT GUIDE FOR PAPER-MAKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 653,293, dated July 10, 1900.

Application filed January 30, 1900. Serial No. 3,381. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM M. GILBERT, THEODORE M. GILBERT, and WILLIAM C. NASH, citizens of the United States, and residents of Neenah, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Automatic Wire or Felt Guides for Paper-Making Machines or other Like Purposes, of which the following is a specification.

Our invention relates to a device for the automatic guiding of the "making-wire" of a paper-making machine upon the wire-carrying rolls thereof, for which purpose it is particularly adapted and is shown in the accompanying drawings as being applied; but it should be understood that the improvement is adapted for and may be applied for guiding endless belts of leather, rubber, felt, cloth, &c., upon their carrying-pulleys upon paper-making or any other machine with equal success.

It may be noted that our improvements are applied to but one edge of the wire, no part of it extending across the width of the wire. They are applicable to either side of a paper-making machine by means of such slight changes as will be obvious to any paper-maker.

Our improvements are shown in the accompanying drawings, in which—

Figure 1 is an elevation showing the end of the wire-guiding roll of a paper-making machine with our improvements for guiding the wire applied to it. Fig. 2 is an elevation of the same parts transversely of the paper-making machine. Fig. 3 is a top view of said parts. Fig. 4 is a section, upon the line *a a* of Fig. 1, of a leg of the ratchet-bar; and Fig. 5 is a plan of a dog for use in the legs of the ratchet-bar. The last two figures are enlarged. Fig. 6 is a sectional view as seen in looking toward the left and upon the same scale as the first three figures, taken upon the line *b b* of Fig. 1.

Similar numerals indicate like parts in the several views.

1 indicates the wire-guiding roll; 2, the making-wire thereon; 3, the wire-guiding-roll hub; 4, a journal-shaft of said roll; 5, a crank-wheel upon the end of said shaft; 6, a crank-pin therein; 7, the journal-box

for supporting said roll-shaft; 8, a pivotal pin upon which the journal-box can swing horizontally; 9, a holder upon which the journal-box is mounted; 10 10', bosses projecting from said holder; 11, depending ears thereof; 11', the lower end of said ears; 12, a stand upon which the holder is arranged to slide; 13, a way for retaining the holder in position upon the stand; 14, a shelf upon the stand 12 upon which the end 11' is carried; 15, a fixed screw in the stand 12; 16, a two-faced ratchet-wheel mounted upon the screw and having teeth 16' 16"; 17, a ratchet-bar having grooves 18 for receiving dogs, (see Fig. 4;) 19, a link connecting the crank-pin and ratchet-bar; 20, a link pivoted upon the boss 10' and connecting with the ratchet-bar; 21, a pin connecting one end of links 19 and 20 and the ratchet-bar; 21', a pin connecting the link 20 and boss 10'; 22, dogs for engaging the teeth 16' and 16"; 23, set-screws for securing the dogs in position; 24, a short pulley arranged to oscillate vertically under one edge of the wire; 25, its supporting-stand; 26, the pivotal point upon which said pulley oscillates; 27, an arm extending outward from the stand 25; 28, a bracket-arm which is secured to the stand 12 and is provided with a slot 29, the arm 28 being provided with a slot 29 for allowing the bolt 30' to be moved along the slot for adapting the device for wires of different width, and the arm 30 being provided with several bolt-holes 30" for allowing the stand to be elevated more or less for causing the desired pressure of the wire upon the pulley 24; 30, an arm which is adjustably secured to the arm 28 by means of a bolt 30' and carries upon the pivotal point 26 the stand 25; 31, a rod arranged parallel with the axial line of the roll 1 and below the arm 28; 32 and 33, drop-journals in which the rod 31 is arranged to oscillate; 34, set-collars for holding the rod from endwise movement; 35, a set-collar having one end of a spiral spring 36 connected with it, the free end 36' bearing against the arm 28, and by turning the set-collar 35 around upon the rod the tension of the spring can be increased or diminished, as required, for causing a quick oscillating movement of the pulley 24, and thereby making the device exceedingly sensitive to

the action of the wire upon said pulley; 37, an arm extending outward from the rod near its inner end and having a connection 38 for connecting it with the arm 27; 39, an arm extending upward from the outer end of the rod 31 and having a connection 40 for connecting it with the ratchet-bar 17.

The pulley 24 should be of light weight and be arranged to revolve freely within its stand, the pivotal point 26 being arranged in position lengthwise of the stand for balancing both pulley and stand. A cone-pulley is preferable, although not essential, the cone shape allowing its axis to be nearly horizontal, while its upper surface supports the edge of the wire when at an angle with said wire, and a very slight change in the bearing-point of the wire upon the pulley, much less than would be required upon a parallel-faced pulley, will tip the pulley, making it exceedingly sensitive to the movement sidewise of the wire, and thereby throwing the dogs upon one side or the other of the ratchet-wheel into engagement with it and moving the end of the wire guide-roll forward or backward, as the running of the wire to the right or left of its normal line of travel demands. The edge of the wire and the pivotal point of the pulley and stand should be in substantially the same vertical plane, varying from it only as the unequal tension of the wire causes it to run to the right or left of its normal line of travel.

The mechanism for making one end of the guide-roll move forward or backward which we use is the usual ratchet-wheel device, consisting of a stand 12, a fixed screw 15, having a two-faced ratchet-wheel threaded upon the screw; a ratchet-bar 17, which receives a continuous up-and-down movement from the crank-wheel 5, upon the end of the journal of the wire-guiding roll 1, the dogs upon opposite sides of the ratchet-bar being brought into engagement with the teeth of the ratchet-wheel according to whether the edge of the wire runs to the right or left of the central point over the pivotal point 26. If it follows in a line directly over said pivotal point, the dogs upon neither side will be engaged, and the end of the roll will remain unmoved as far as its movement forward or backward is concerned.

The journal-box 7 is fitted for oscillation in a horizontal direction upon the pin 8 within the holder 9, so that the shaft 4 may not bind in its journal-bearing as it is moved forward or backward.

The depending ears 11 are bored larger than the fixed screw 15 where the screw passes through them and are in contact with both sides of the ratchet-wheel, so that whenever the oscillations of the pulley 24 cause the dogs upon either side of the ratchet-wheel to engage its teeth and turn said wheel upon the threads of the fixed screw said wheel will be moved along the screw and will carry the depending ears, the holder 9, with its pivoted journal-box, and the end of the roll forward

and backward, (as regards the wire,) and thereby cause the wire to run to the right or left of its previous line of travel upon the guide-roll. The action of the dogs upon the teeth of the ratchet-wheel will be intermittent. First one side and then the other will be engaged by the dogs as the inner end of the pulley is oscillated up or down. The wire running in its normal line of travel, the dogs upon either side of the ratchet-wheel will be engaged and the end of the roll will remain unmoved until the wire runs to the right or left of its normal line of travel and engages the dog upon one side or the other with the teeth of the ratchet-wheel. The sidewise movement of the wire will continue until the pulley oscillates, so as to cause the dog which is then engaging the teeth of the ratchet-wheel to cease its engagement as the ratchet-bar continues its up-and-down movement.

The improvement in the ratchet-bar consists in forming a slot or groove 18 through each leg of said bar and fitting straight chisel-pointed dogs 22 so as to enter the slots or grooves and be secured with the set-screws 23, with any desired length of said chisel-points projecting inward toward each other, and thereby making said dogs easily sharpened, easily adjustable without stopping the running of the machine, easily made, and adapted for long use.

The action of the wire-guiding device is as follows: The parts being arranged in position and the wire running too much to the left, the outer end of the pulley 24 will be depressed, the inner end and the arms 27 and 37 raised, the rod 31 oscillated, and the dog upon the right-hand side of the wheel 16 (see Fig. 1) engaged with its teeth, turning said wheel backward toward the machine, and the screw 15 having a left-hand thread, as shown, the end of the guide-roll will be moved forward until the line of travel of the wire is changed to the right.

The arrow upon the end of the guide-roll in Fig. 1 indicates the running direction of said roll and the wire.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an apparatus of the character described, the combination of a guide-roll provided with journals, an endless making wire or belt thereon, a bearing for one of the journals of said roll arranged to move parallel with the line of movement of said wire or belt, a pulley under the edge of and in contact with said wire or belt, and in front of the end of said guide-roll which is arranged for said parallel movement, the outer end of said pulley being in a higher plane than its inner end, a pivotally-mounted stand in which said pulley is mounted, said stand being adjustable vertically and transversely, and having its pivotal point in substantially the same vertical plane as the edge of the

aforesaid wire or belt, and mechanism operated by the oscillation of the aforesaid pulley for moving the journal-bearing of the said guide-roll forward and backward in a line parallel with the normal line of travel of said wire or belt, substantially as described.

2. In an apparatus of the character described, the combination of a guide-roll provided with journals, an endless making wire or belt thereon, a bearing for one of the journals of said roll arranged to move parallel with the line of movement of said wire or belt, a pulley under the edge of and in contact with said wire or belt, and in front of the end of said guide-roll which is arranged for said parallel movement, the outer end of said pulley being in a higher plane than its inner end, a pivotally-mounted stand in which said pulley is mounted, said stand being adjustable vertically and transversely, and having its pivotal point in substantially the same vertical plane as the edge of the aforesaid wire or belt, an arm extending outward from said stand, a rod arranged for an oscillating movement in suitable bearings below said stand and being in a position substantially parallel with the axis of said guide-roll, means for holding said rod from end-wise movement, a spring having tension-regulating means arranged for acting upon the oscillations of said rod, an arm near the inner end of said rod adjustable in position thereon, a connection from said arm to the outward-extending arm of the pivotally-mounted stand aforesaid, an arm extending upward from the outer end of said rod, and a connection therefrom to mechanism consisting of a ratchet-bar having dogs and a ratchet-wheel having teeth for being engaged by said dogs, said ratchet-bar being arranged for a

continual up-and-down movement from the revolutions of said guide-roll and to be brought into operative action intermittently upon the ratchet-wheel for turning it in one direction or the other, by the oscillations of the aforesaid pulley, for moving the journal-bearing of said guide-roll forward or backward in a line parallel with the normal line of travel of said wire or belt, substantially as described.

3. In an apparatus of the character described, in combination with its guiding-roll 1, the wire 2, journal-shaft 4, crank-wheel 5, crank-pin 6, journal-box 7 having a pivot 8 pivoted in the holder 9, the boss 10' on said holder, the depending ears 11 of said holder, the stand 12 having ways 13 and shelf 14 for supporting said holder, the fixed screw 15, the ratchet-wheel 16 mounted upon the screw 15 between the ears 11' and having the teeth 16' and 16'', the ratchet-bar 17 having grooves 18 therethrough, the links 19 and 20, the pins 21 and 21', the dogs 22, the set-screws 23, the pulley 24, the stand 25 having the pivotal point 26, and the arm 27, the arm 28 secured upon the stand 12, it having a slot 29, the arm 30 having the pivotal bolt 30', the rod 31, the drop-journals 32 and 33, the set-collars 34, the set-collar 35, the spring 36 its free end bearing against a fixed part, the arm 37, the connection 38, the arm 39 and the connection 40, said parts being arranged and operating substantially as shown and set forth.

WILLIAM M. GILBERT.
THEODORE M. GILBERT.
WILLIAM C. NASH.

Witnesses:

W. W. REED,
W. P. ROUND.