C. K. HOSFORD.

MACHINE FOR MAKING TOILET PAPER.

APPLICATION FILED AUG. 13, 1915.

1,174,070.

Patented Mar. 7, 1916.

2 SHEETS—SHEET 1.

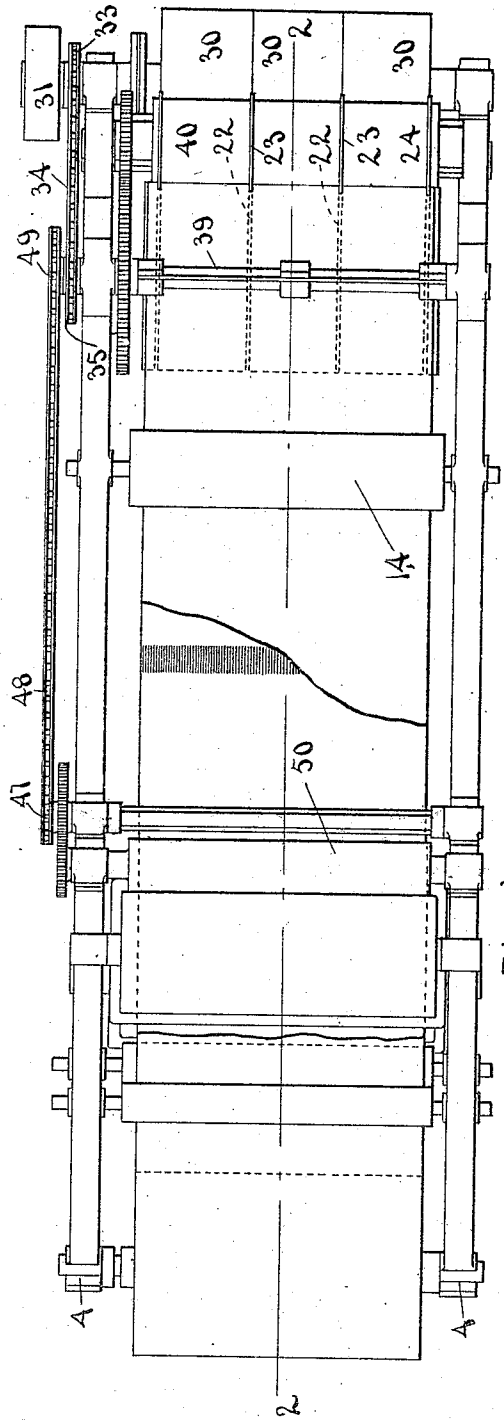


Fig. 1.

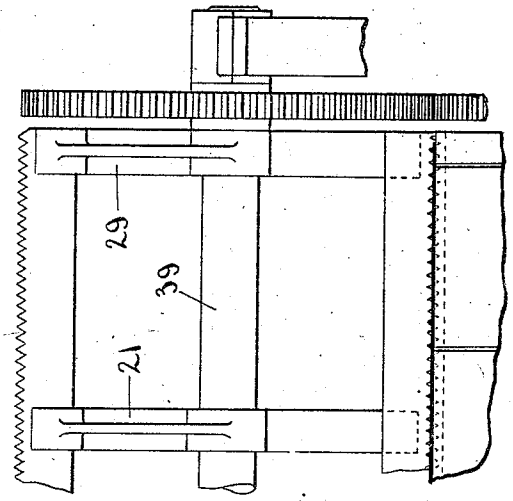


Fig. 4.

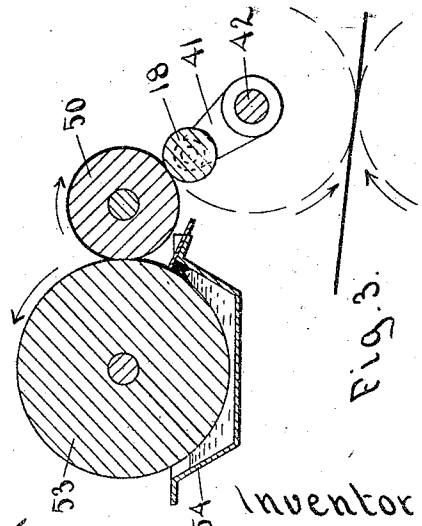


Fig. 3.

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2 SHEETS-SHEET 2.

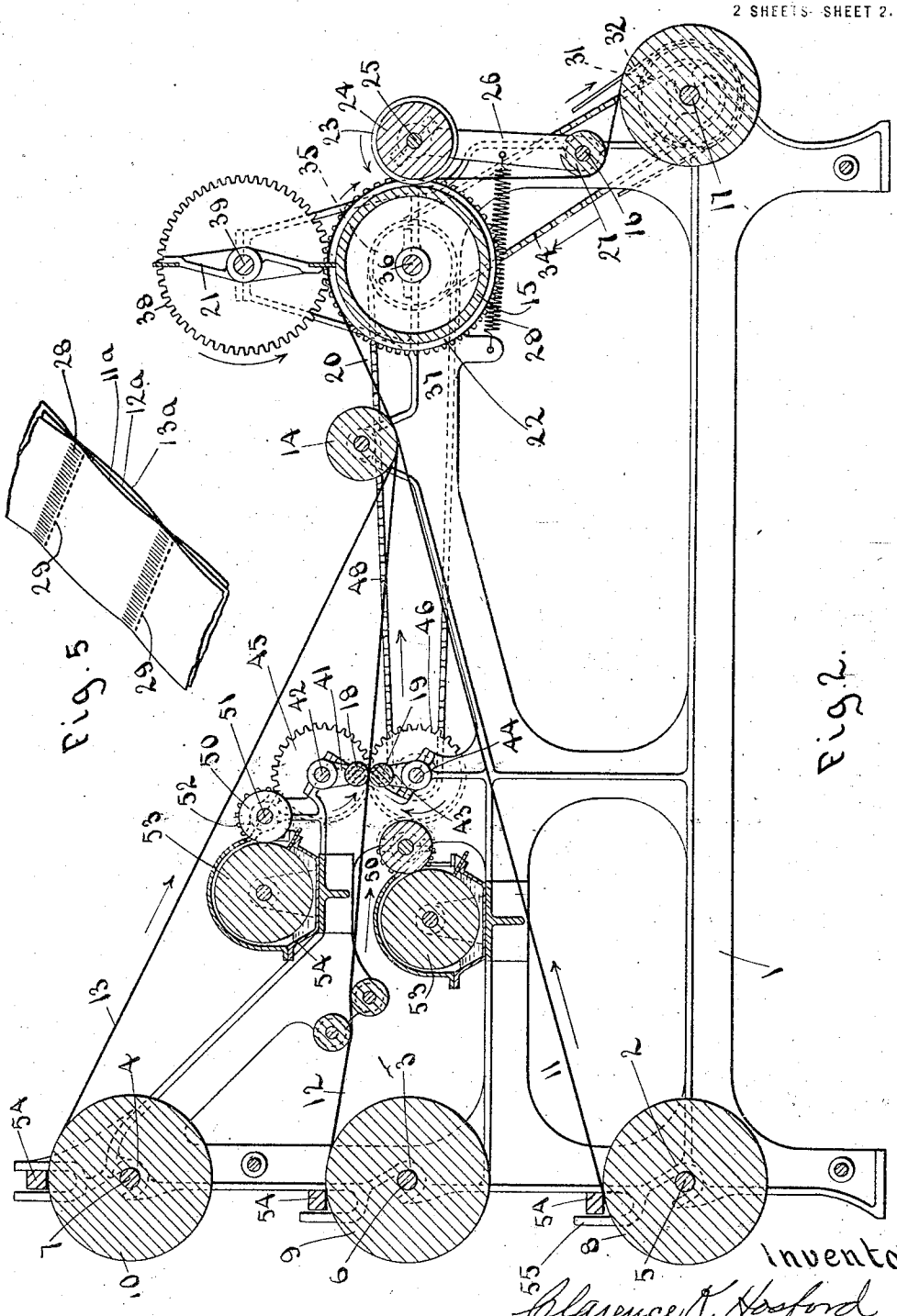


Fig. 2.

Fig. 5.

Inventor

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UNITED STATES PATENT OFFICE.

CLARENCE KENT HOSFORD, OF BAILEYVILLE, MAINE.

MACHINE FOR MAKING TOILET-PAPER.

1,174,070. Specification of Letters Patent. Patented Mar. 7, 1916.

Application filed August 13, 1915. Serial No. 45,396.

To all whom it may concern:

Be it known that I, CLARENCE K. HOSFORD, a citizen of the United States, residing at Baileyville, in the county of Washington and State of Maine, have invented certain new and useful Improvements in Machines for Making Toilet-Paper, of which the following is a specification.

This invention relates to a machine for making toilet paper and it has for its particular object to provide a machine for making the peculiar toilet paper shown and described in my application for U. S. Letters Patent, Serial No. 45,395, filed on the 13th day of August, 1915.

The toilet paper shown and described in the application above referred to comprises a plurality of superimposed strips of tissue paper fastened together at intervals throughout their lengths and having tearing perforations or the like adjacent each point of fastening so that sections may be torn therefrom each comprising a plurality of pieces of paper fastened together at one point or transverse line only and not throughout their whole areas.

The machine herein shown and described is constructed to manufacture this paper by a continuous, rapid and economical mode of operation.

The invention consists of a machine for making toilet paper embodying the peculiar features of construction and mode of operation set forth in the following description and particularly pointed out and defined in the claims at the close thereof.

In the accompanying drawings:—Figure 1 is a plan view, partly broken away, of my new machine. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3 is an enlarged detail of the glue applying mechanism hereinafter described. Fig. 4 is an enlarged detail relating to the perforating mechanism. Fig. 5 is a perspective view of a portion of a toilet paper strip made by my machine.

Having reference to the drawings, 1 represents the frame of the machine which, at one end thereof, is made with open sockets 2, 3 and 4 for supporting the ends of three shafts 5, 6 and 7. The shafts 5, 6 and 7 support supply rolls of paper 8, 9 and 10 made, respectively, from relatively wide webs 11, 12 and 13. From the rolls 8, 9 and 10 the webs are led forward under a guide roll 14 journaled at its ends on frame 1 and thence around a drum 15 and guide roller 16 to a shaft 17. As the relatively wide webs of paper travel from the rolls 8, 9 and 10 the middle web 12 has transverse lines of glue or the like applied to both sides thereof by a pair of rotating rollers 18 and 19, at separated intervals so that when the three webs are brought together at the roll 14 they are fastened together at these separated points or lines so that they leave the roll 14 as integral parts of a single three-ply relatively wide web 20. As the three-ply web 20 passes around the drum 15 a rotating perforator 21 forms or produces a transverse line of holes in said web adjacent each line of glue. The drum 15 is constructed with shearing flanges 22 coöperating with shearing flanges 23 provided on a roll 24 which is located between perforator 21 and shaft 17. The roll 24 is fast on a shaft 25 journaled at its ends on a frame 26 pivotally supported by the shaft 27 which carries guide roller 16. A spring 28 connected at one end with frame 26 and at its opposite end with frame 1 yieldingly holds the roll 24 against drum 15. As the perforated web passes between drum 15 and roll 24 the flanges on said drum and roll divide the web 20 longitudinally into a plurality of relatively narrow strips each made up of three-plies of paper 11^a 12^a and 13^a fastened together at separated intervals throughout their length as indicated at 28 and having a transverse line of perforations 29 adjacent each line by fastening 28. After leaving the drum 15 and passing around the guide roller 16 the several multi-ply strips are wound into separate rolls 30 of the desired size.

The shaft 17 is supported at its ends so that when a set of rolls 30 is completed the machine may be stopped and the shaft 17 taken out for removal of the completed rolls. The shaft 17 is then replaced and the advance ends of the strips attached thereto and when the machine is again started the winding operation at shaft 17 will be resumed.

Shaft 17 carries a pulley 31 connected by a belt 32 with a source of power, and a sprocket 33 connected by a chain 34 with a sprocket 35 fast on the shaft 36 which carries drum 15. Shaft 36 also carries a gear 37 which drives a gear 38 fast on the shaft 39 carrying the rotating perforator 21. This gear 37 also meshes with and drives a pinion 40 fast on the shaft 25.

The glue applying roll 18 is carried by a pair of arms 41 fast on a shaft 42 jour-

naled on the frame, while the glue applying roll 19 is carried by a pair of arms 43 fast on a shaft 44 journaled at its ends on frame 1. The shaft 42 carries a gear 45 that is driven by a gear 46 fast on shaft 44. Shaft 44 carries a sprocket 47 that is driven through a chain 48 by a sprocket 49 fast on shaft 36.

As the glue roll 18 rotates around the shaft 42 it passes and wipes against a glue transferring roll 50 fast on a shaft 51 which also carries a pinion 52 driven by the gear 45. The transfer roll 50 frictionally engages a glue roll 53 whose lower portion is submerged in a quantity of liquid glue or the like held in a pot 54. The rotation of transfer roll 50 acts to rotate glue roll 53 and the latter delivers glue to said roll 50 which in turn delivers glue to the roll 18 as will be clear. The glue applying roll 19 coöperates in the same fashion with a transfer roll 50 and glue roll 53.

In order to maintain the webs 11, 12 and 13 under proper tension while traveling up to the guide roll 14 I provide gravity tension bars 54 loosely supported at their ends in sockets 55 on frame 1 and resting on top of the rolls 8, 9 and 10.

What I claim is:—

1. A machine of the character described comprising means for bringing a plurality of strips of sheet material together into superimposed relation; means for fastening said strips together in superimposed relation so as to leave the major portions of said strips disconnected, and means for transversely perforating said superimposed strips at separated intervals throughout their lengths.

2. A machine of the character described comprising means for bringing a plurality of strips of sheet material together into superimposed relation; means for fastening said strips together in superimposed relation so as to leave the major portions of said strips disconnected; means for transversely perforating said superimposed strips at separated intervals throughout their lengths, and means for winding the united and perforated strips into a roll.

3. A machine of the character described comprising means for bringing a plurality of webs of sheet material together into superimposed relation; means for fastening said webs together in superimposed relation so as to leave the major portions of said webs disconnected; means for dividing the united webs longitudinally to produce a plurality of relatively narrow multi-ply strips and means for transversely perforating said strips at separated intervals throughout their lengths.

4. A machine of the character described comprising means for bringing a plurality of webs of sheet material together into superimposed relation; means for fastening said webs together in superimposed relation so as to leave the major portions of said webs disconnected; means for dividing the united webs longitudinally to produce a plurality of relatively narrow multi-ply strips; means for transversely perforating said strips at separated intervals throughout their lengths, and means for winding each strip into a roll.

5. A machine of the character described comprising means for causing a plurality of webs of sheet material to travel in the direction of their lengths and to be brought together into superimposed relation; means for fastening said webs together in superimposed relation so as to leave the major portions of said webs disconnected; means for dividing the united webs longitudinally to produce a plurality of relatively narrow multi-ply strips, and means for transversely perforating said strips at separated intervals throughout their lengths.

6. A machine of the character described comprising means for bringing a plurality of webs of paper together into superimposed relation; means for fastening said webs together in superimposed relation at separated intervals throughout their lengths so as to leave the major portions of said webs disconnected; means for dividing the united webs longitudinally to produce a plurality of relatively narrow multi-ply strips, and means for transversely perforating said strips adjacent each fastening.

7. A machine of the character described comprising means for bringing a plurality of webs of paper together into superimposed relation; means for cementing said webs together in superimposed relation at separated intervals throughout their lengths so as to leave the major portions of said webs disconnected; means for dividing the webs longitudinally to produce a plurality of relatively narrow multi-ply strips; means for transversely perforating said strips at separated intervals throughout their lengths, and means for winding the strips into rolls.

In testimony whereof I have affixed my signature.

CLARENCE KENT HOSFORD.