J. N. MOULTON.
MACHINE FOR CUTTING SHEETS INTO STRIPS.
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2 SHEETS-SHEET 1

Fig. 1.

Fig. 2.

WITNESSES:

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MACHINE FOR CUTTING SHEETS INTO STRIPS.

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To all whom it may concern:

Be it known that I, JAMES N. MOULTON, a citizen of the United States, residing in Haverhill, in the county of Essex and State of Massachusetts, have invented an Improvement in Machines for Cutting Sheets into Strips, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a machine for cutting sheets of material into strips having curved edges, and is herein shown as embodied in a machine which is especially designed and adapted for cutting sheets of duck or other cloth into strips comprising: a series of blanks for use in the manufacture of the well known Gem inner soles.

The invention has for its object to provide a machine in which a web or sheet of duck or other material may be cut into a maximum number of such strips in a continuous manner and at a minimum expense as will be described. Provision is also made for winding the cut strips upon suitable rollers, so that the right and left strips may be wound upon separate rollers as fast as they are cut.

In accordance with this invention, I employ a plurality of rotary disk cutters or knives, each having an annular cutting edge which is irregular or cam shaped so as to make a cut of the desired or required curvature to form a blank at each revolution of the cutter or knife, which blank substantially conforms to the shape of the inner sole or to that part of the inner sole to which the blank is applied.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of a machine embodying this invention. Fig. 2, a plan of the machine shown in Fig. 1. Fig. 3, a detail showing a pair of cutters, and Fig. 4, a detail in plan of a portion of a cut sheet or web.

Referring to the drawings, a represents upright sides of a framework for supporting the operative parts of the machine. The sides a have erected upon them uprights b in which are journeled a shaft or arbor c, upon which is wound a roll d of sheet material such as duck, the sheet or web e of which is led from said roll and passed between a bed roll f and a plurality of rotatable disk cutters or knives g, which are mounted on a shaft h to rotate therewith.

The bed roll f may be made of steel or other suitable material and has its shaft j journeled in uprights k erected upon the side frames of the machine, and the shaft k which carries the disk cutters g is journeled in boxes l adjustable in the uprights m above the bed roll.

The disk cutters g are made irregular or cam shaped so as to make a cut of the proper or desired curvature, to conform or substantially conform to the shape of the fore part of the inner sole (not shown), and each disk cutter is provided as shown with a hub n, which is removably mounted on the shaft k and is secured thereto to rotate therewith by a key o or in any other suitable manner.

The disk cutters g are arranged on the shaft k, so that the web or sheet e is cut into a plurality of strips p, each comprising a series of connected blanks, the length of each of which is indicated by the dotted lines q in Fig. 4, the blanks in one strip r having their widest parts opposite to and contacting with the narrowest parts of the adjacent strips, whereby the web or sheet may be cut up into a maximum number of blank strips with the least possible waste s of material.

The cam shaped disk cutters form right and left strips t, and provision is made for separating these strips and assembling all rights together and all lefts together. To this end the machine k provided with two receiving or winding rolls v, which rest upon feed rolls w, journeled in uprights x, erected upon the side frames of the machine, and upon one roller as v all r the right strips are wound, and upon the roller w all the left strips are wound.

The cutter shaft h and the bed roll f are positively driven, for which purpose the bed roll shaft is provided as shown with 100 tight and loose pulleys y, z, and with a gear b, which meshes with and drives a pinion d on the cutter shaft h. The feed rolls v, w may and preferably will be driven from the bed roll shaft e, and as shown, the bed roll shaft has a sprocket wheel f, which is connected by a link chain g with a like wheel h on the shaft i of the roller v, which latter shaft has a second sprocket wheel j, connected by a link k.
chain 40 with a sprocket wheel 41 fast on the shaft 42 of the roller 26. The shafts 37, 42 of the rollers 25, 26 are journaled in the uprights 27, 28, and said uprights are provided with slots 43, 44, into which extend the shafts 45, 46 of the rollers 23, 24. Normally the rollers 23, 24 rest upon the rollers 25, 26, and the ends of the right and left strips are cemented or otherwise fastened to the rollers 23, 24 which are rotated by the lower rollers 25, 26.

In the present instance the strips 20 after leaving the bed roll 6 are passed under an idler roll 50 to give the sheet or web the desired tension upon the bed roll. The roll \( d \) of cloth has cooperating with it a weight in the form of a roller 51, whose journals 52 are extended into a vertical slot 63 in the uprights 6 to permit the roller 51 to descend and remain in contact with the web roll 15 as the latter is unwound.

The disk cutters may be adjusted with relation to the bed roll to properly position them, so as to insure proper cutting of the web into strips, and this may be accomplished as herein shown by means of screws 56, carried by the boxes for the bed roll and cooperating with the boxes for the cutter shaft 5, and the latter boxes may then be secured in fixed position by screws 57.

From the above description, it will be seen, that the sheet or web \( e \) of duck or other cloth is cut up into strips of right and left blanks in a continuous and therefore rapid manner, and that the web or sheet which is usually of thirty inches in width can be cut into eight strips of blanks having a width across the ball of four and one quarter inches.

The edges of the cutters may and preferably will be slightly dulled, so that they may contact with the bed roll without harm and yet effectively sever the sheet into strips, as the said sheet is firmly supported by the bed roll, which has a solid portion of its periphery cooperating with the cutters.

Claims.

1. In a machine of the character described, in combination, a bed roll, a plurality of disk cutters mounted upon a shaft and each provided with an irregular or cam-shaped cutting edge capable of forming a blank having a curved edge at each revolution of the said cutter, a plurality of pairs of feed rolls between which some of the strips formed by the cutters are passed to be wound upon one of the rolls of each pair, means to rotate said bed roll and cutters, and means to rotate said pairs of feed rolls, substantially as described.

2. In a machine of the character described, in combination, a bed roll, a plurality of disk cutters mounted upon a shaft and each provided with an irregular or cam-shaped cutting edge capable of forming a blank having a curved edge at each revolution of the said cutter, a pair of feed rolls between which said strips are passed, means to rotate said bed roll and cutters, and means to rotate said feed rolls, substantially as described.

3. In a machine of the character described, in combination, a plurality of rotary disk cutters having cam-shaped cutting edges, a shaft upon which said cutters are mounted, a bed roll cooperating with said cutting edges and having a solid portion of its periphery in the path of rotation thereof, and means to rotate said shaft and bed roll, substantially as described.

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

JAMES N. MOULTON.

Witnesses:


Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."