May 25, 1937. J. W. PEARL 2,081,280

FEEDING DEVICE FOR SHINGLE CUTTERS

Filed June 2, 1934

Fig. 1.

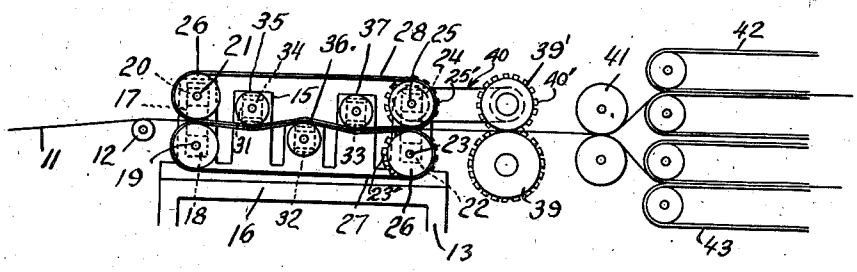
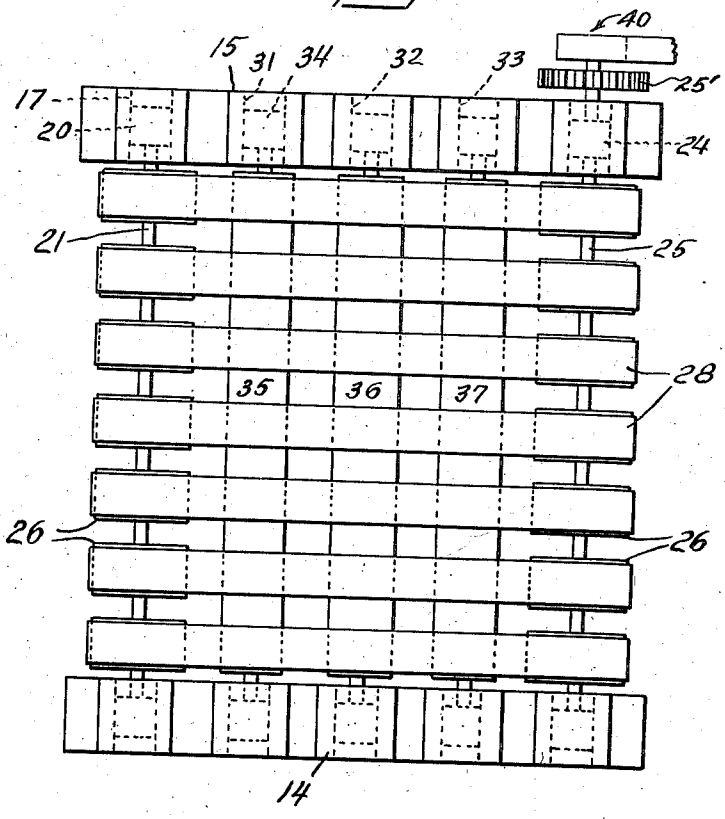


Fig. 2.



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Patented May 25, 1937 2,081,280

UNITED STATES PATENT OFFICE

2,081,280

FEEDING DEVICE FOR SHINGLE CUTTERS

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Application June 2, 1934, Serial No. 728,637

6 Claims. (Cl. 164—68)

This invention relates to feeding mechanism for advancing a flexible sheet of roofing material to cutting mechanism, preferably of the revolving cylinder type, to produce individual shingle elements or strip shingle elements therefrom.

The machine of the present invention is designed to feed the flexible roofing material without slippage to the cutters, thereby accurately controlling the length of material fed to the cutters, and the length cut. Hence, this machine results in the production of flexible shingle elements and strip shingles of uniform size and shape.

An important object of this invention is to provide a feeding mechanism for a shingle cutter, preferably a revolving cylinder cutting machine of the universal type, the feeding mechanism being designed to accurately feed controlled lengths of flexible roofing material to the cutting cylinders and hence produce shingle elements of uniform length. Other objects and advantages of this invention will appear from the following detailed description.

In the preferred embodiment illustrated on the drawing, the invention is shown incorporated in a shingle cutter of the revolving cylinder type designed to cut the strip of flexible roofing material into a plurality of strips of uniform length and the present description will be confined to the present illustrated embodiment of the invention. It will be understood, however, that the novel features and improvements are susceptible to other applications; for example, to cutting flexible sheet material other than roofing into predetermined lengths. Hence, the scope of this invention is not confined to the embodiment herein described.

In the accompanying drawing, illustrating one embodiment of this invention, in which like reference characters refer to like parts—

Fig. 1 is a vertical section, partly in elevation, through the feeding mechanism for the flexible roofing material, the support for the feeding mechanism and the mechanism for separating the cut strips, which is of a conventional type, being fragmentarily shown, and the cutting cylinders being shown somewhat diagrammatically; and

Fig. 2 is a plan view of the feeding mechanism shown in Fig. 1.

In the drawing, reference numeral 11 indicates a flexible sheet of roofing material which may be the usual asphalt or other bituminous material saturated felt base roofing coated on both sides with asphalt or other bituminous material and surfaced on one side with mineral grit and having mica dust, talc or other non-cementitious material applied to the other side. The roofing material 11 passes over a guide roll 12 and thence into the feeding mechanism of this invention. This feeding mechanism is mounted on a suitable support 13 having standards 14, 15 extending upwardly from the opposite sides of base plate 16. The extremities of each of the standards 14, 15 are formed with slideways 17 in which are disposed bearing blocks. One pair of bearing blocks 18 is provided in the slideways 17 at the left (viewing Fig. 1) of the base plate 16. This pair of bearing blocks has rotatably mounted therein a shaft 19. A second pair of bearing blocks 20 is disposed directly above the blocks 18. Blocks 20 have rotatably mounted therein a shaft 21. On the right hand end of the base plate 16 a pair of bearing blocks 22 having rotatably mounted therein a shaft 23 is disposed in the slideway 17. Directly above the bearing blocks 22 a second pair of bearing blocks 24 having rotatably mounted therein a shaft 25 is provided.

Each of the shafts 19, 21, 23, and 25 has keyed thereon a series of pulleys 26. In the embodiment of the invention shown on Fig. 2 of the drawing, seven pulleys are depicted disposed in equi-spaced relation on each shaft. Pulleys on the lower shafts 19 and 23 are positioned directly beneath the pulleys on the upper shafts 21 and 25, respectively. One set of traction belts, identified by the reference numeral 27 passes over the opposite pairs of pulleys on shafts 19 and 23 and a second set of traction belts 28 passes over the opposite pairs of pulleys on shafts 21 and 25. Thus, there is provided two sets of traction belts, each set constituted of seven belts disposed in equi-spaced relationship with the belts of the upper set in contact with those of the lower set and positioned directly thereabove, as clearly appears from Figs. 1 and 2 of the drawing. The belts are preferably faced with soft rubber. In practice it has been found that such soft rubber faced belts are wear-resistant and give good traction.

The slideways 17 permit movement of the bearing blocks 20 and 24, carrying the shafts 21 and 25 respectively, with the pulleys keyed thereon and belts travelling over the pulleys into a position away from the lower set of belts 27 so that the sheet 11 may be readily threaded through the feeding mechanism. After the sheet is threaded through the feeding mechanism, the upper set of belts 28 is lowered into engagement with the lower set of belts, the bearing blocks 20,

24 being disposed in desired position with respect to the bearing blocks 18, 22, carrying the shafts 19, 23 on which the pulleys of the lower set of belts are keyed.

The standards 14 and 15 are provided with slideways 31, 32, and 33 for the reception of bearing blocks 34 in which the shafts of the idler rolls 35, 36 and 37 are rotatably mounted. Idler rolls 35 and 37, each extending completely across the upper set of belts 28, are disposed in spaced relation resting on the lower run of belts 28 and exert a downward pressure or tension on these belts. The other idler roll 36 is fixed in its bearing blocks to exert a pressure in a direction opposite to the pressure exerted by the rolls 35 and 37. Idler roll 36, like rolls 35 and 37, extends completely across the set of belts with which it is associated. Roll 36 engages the upper run of belts 27, exerting, as hereinabove indicated, an upward force. Thus, the three idler rolls are arranged so that the belts 27 and 28 are caused to travel upwardly after leaving the first idler roll 35, then downwardly after leaving idler roll 36. Hence, a positive engagement between the roofing or other flexible sheet material and the belts results and slippage between the belts and the sheet material is prevented.

The feeding mechanism may be suitably driven by providing, for example, gears 23', 25' on shafts 23, 25 arranged to mesh, one of the gears being in driving engagement by suitable means such as pulley-belt drive 40 with the gear drive 40' for the cutting rolls so that the feeding and cutting mechanisms are driven in the desired timed relation.

The feeding mechanism hereinabove described feeds the sheet between the rotating cutting cylinder 39 and cooperating platen cylinder 39' which may be of any well-known type. From the cylinders 39 and 39', the cut sheet passes to the pull rolls 41 and thence to the pairs of belts 42, 43, which deliver the cut shingles to stacking mechanism. For a more detailed description of one form of delivery belts and pull rolls, reference may be had to United States Patent No. 1,682,921, of September 4, 1928.

It is to be understood that this invention is not restricted to the present disclosure otherwise than defined by the appended claims.

What is claimed is:

1. Apparatus for cutting flexible roofing material into uniform lengths, comprising, in combination, cutting instrumentalities, and means for feeding said roofing material thereto, said means comprising a lower set of belts, an upper set of belts with the belts of one set disposed above those of the other set, a pair of spaced idler rolls exerting tension on the lower run of the upper set of belts, and an idler roll disposed between said pair of spaced idler rolls and exerting tension on the upper run of the lower set of belts.

2. Apparatus for cutting flexible roofing material into uniform lengths, comprising, in combination, cutting instrumentalities and means for feeding said roofing material thereto, said means comprising a lower set of rubber faced belts, an upper set of rubber faced belts with the rubber faced belts of one set disposed in contact with those of the other set, a pair of spaced idler rolls exerting tension on the lower run of the upper set of rubber faced belts, and an idler roll disposed between said pair of spaced idler rolls and exerting tension on the upper run of the lower set of rubber faced belts.

3. A feeding device for feeding flexible roofing material to a cutter, comprising, a first set of narrow endless belts disposed in closely spaced relation, a second set of narrow endless belts disposed with the lower run thereof directly above and in contact with the upper run of the first-mentioned set of belts, a pair of spaced idler rolls resting on and exerting downward tension on the lower run of the second-mentioned set of belts, and a third idler roll extending between the first-mentioned pair of idler rolls and exerting upward tension on the upper run of the first-mentioned set of belts.

4. A feeding device for feeding flexible roofing material to a cutter, comprising, in combination, a lower set of narrow endless rubber faced belts disposed in closely spaced relation, an upper set of narrow endless rubber faced belts disposed with the lower run of each belt in contact with the upper run of the lower set of belts, a pair of spaced idler rolls resting and exerting a downward tension on the lower run of the upper set of belts, and a third idler roll extending across the lower set of belts and exerting upward tension thereon, said third idler roll being disposed between the first-mentioned pair of idler rolls.

5. Apparatus for cutting flexible sheet material into uniform lengths comprising in combination, cutting instrumentalities and means located in advance of said instrumentalities for feeding the flexible sheet material therethrough comprising two sets of belts with the belts of one set arranged directly above the belts of the other set, said belts being designed to engage a sheet therebetween, and means for urging said belts toward each other to grip said sheet, said urging means comprising a yieldingly mounted idler roll pressing against one of said belts.

6. Apparatus for cutting flexible roofing sheet material into uniform lengths comprising in combination a rotary cutter, two sets of belts located wholly in advance of said cutter, the belts being designed to engage a roofing sheet between the lower runs of the upper set and the upper runs of the lower set, means for urging said belts toward each other to grip said roofing sheet therebetween, said urging means comprising a yieldingly mounted idler roll pressing against one of said belts, and means for driving said rotary cutter and said belts in synchronism.

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