Jan. 3, 1933. E. S. PETERSEN 1,892,680

CUTTING MECHANISM FOR COMPOSITION CONSTRUCTIONAL MATERIAL

Filed June 11, 1931 2 Sheets-Sheet 1

Fig. 1

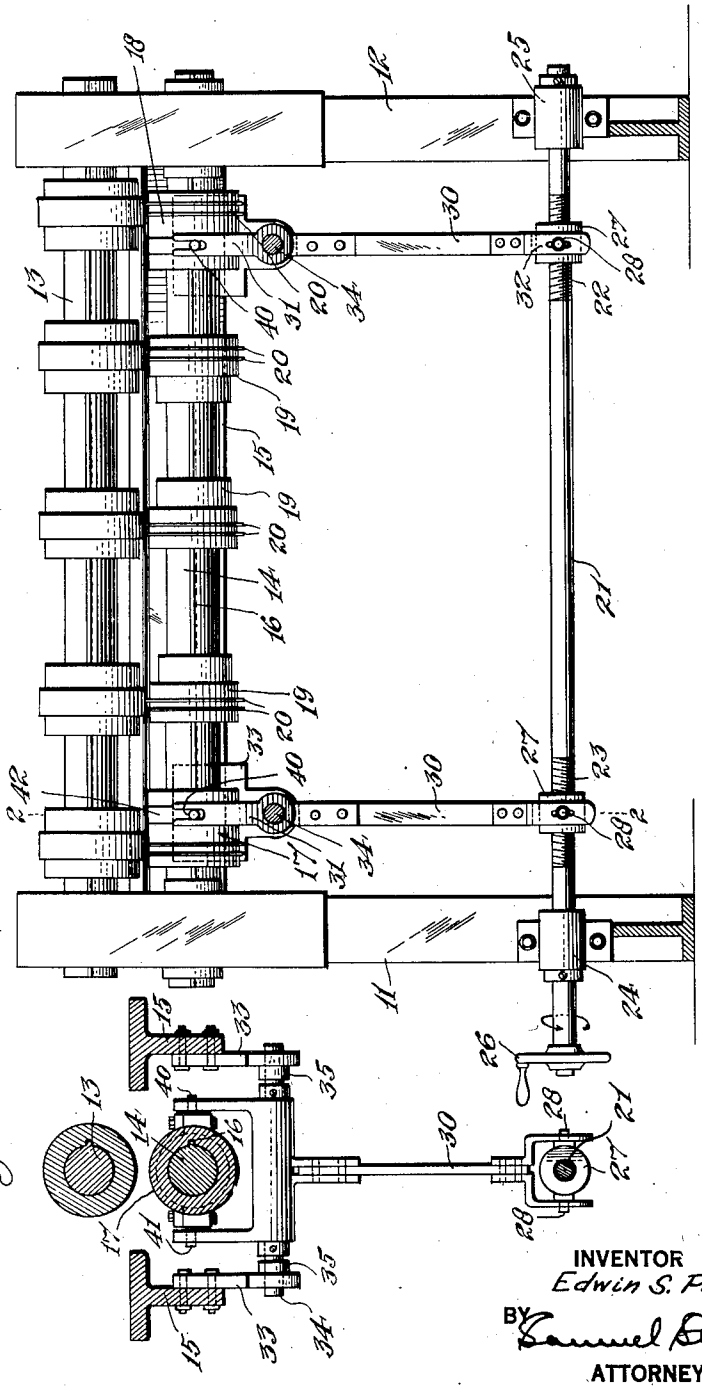


Fig. 2

INVENTOR
Edwin S. Petersen
BY Samuel Stearman
ATTORNEY

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Fig. 3

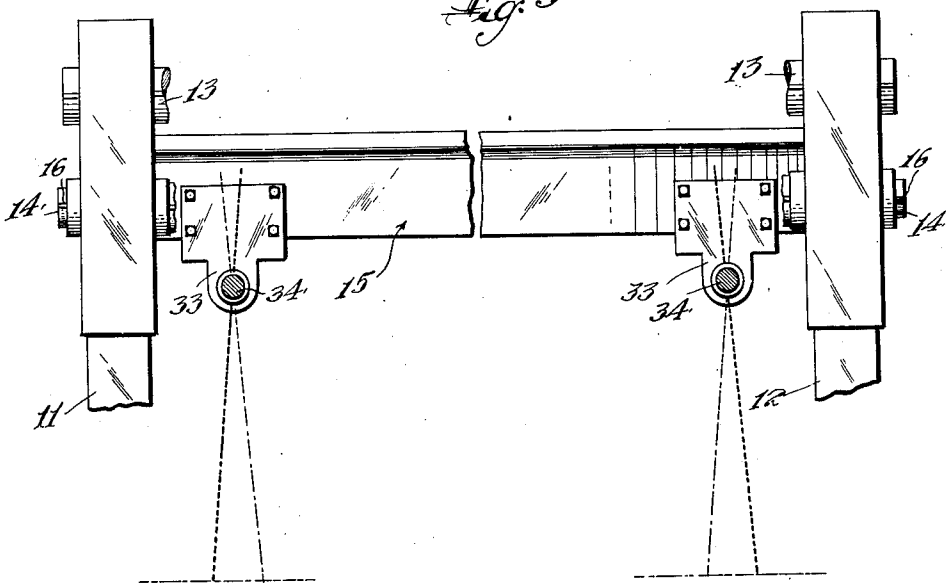


Fig. 4

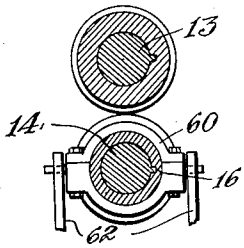
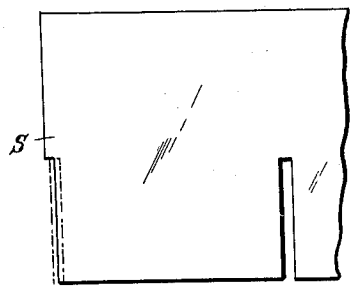


Fig. 6



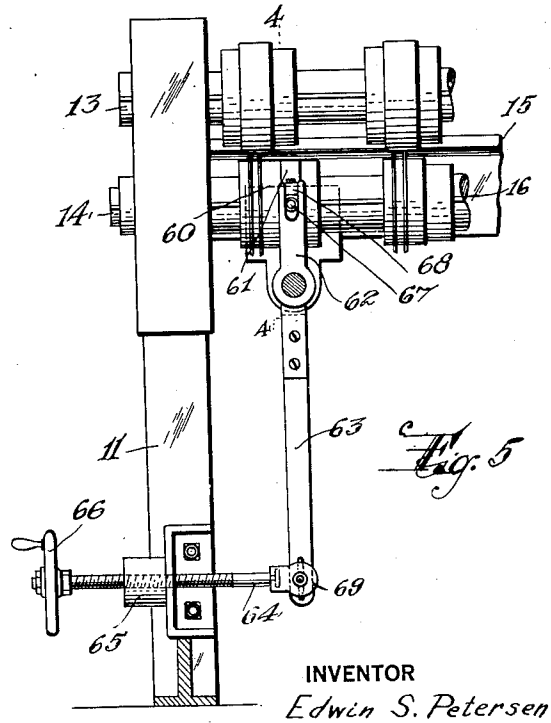


Fig. 5

INVENTOR
Edwin S. Petersen
BY
Samuel Steinmetz
ATTORNEY

Patented Jan. 3, 1933 1,892,680

UNITED STATES PATENT OFFICE

EDWIN S. PETERSEN, OF JAMAICA PLAIN, MASSACHUSETTS, ASSIGNOR TO THE PATENT AND LICENSING CORPORATION, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

CUTTING MECHANISM FOR COMPOSITION CONSTRUCTIONAL MATERIAL

Application filed June 11, 1931. Serial No. 543,552.

This invention relates to a cutting mechanism and is especially directed to adjustable end cutting mechanisms that find a special application in the manufacture of composition building material, employed as a weatherproof artistic covering on the roof and side walls of buildings.

Materials of this nature generally comprise a foundation or base of felted fabric, saturated or impregnated with a waterproofing substance such as asphalt or similar bitumen and coated on one or both faces with a high melt point asphalt or similar bitumen having partially embedded therein a layer of surfacing material such as comminuted slate, slag or the like.

Material of this character is manufactured in strip shingle, shingle unit and roll roofing form and in a plurality of different shapes or designs. An example of one of the known elements, which will be hereinafter employed merely as a convenient illustration so that some of the advantages of my invention may be made clearly apparent, is the common square butt strip shingle.

This strip shingle generally comprises a body of generally rectangular shape having a plurality of spaced tab-defining slots or cut-outs of substantially identical dimensions at the butt end thereof. Also, formed at the lower portion of each of the lateral edges of said strip is an indentation of the same length as and one-half the width of the corresponding dimension of the slots or cut-outs. The purpose of these indentations, and the reason for their being of a particular size is so that when the strips are laid in the customary manner, side by side in any one course, the indentations in the adjacent ends of adjacent strips will together form a slot whose dimensions are substantially the same as those of the slots or cut-outs.

In the practical manufacture of these strips, there are considerable variations in the width of the sheet as it reaches the cutting mechanism, which serves to slot the parent sheet. The widthwise variations may be due to any one of a number of reasons, one of which may be the shrinkage, sometimes caused by the saturating treatment. When the strips are severed cross-wise of the sheet, the varying width of the sheet results in strips of non-uniform or varying lengths. Although the variations in the width of the sheet are only a small percentage of the overall length of the strips severed therefrom, they do frequently represent a high percentage of the width of the indentations or half slots on the lower lateral ends of these strips. When the strips having off-size indentations or half slots are laid, the slots or tab defining recesses thus formed are of a dimension substantially different from those of the full slots or cut-outs in the body of the strips and have a tendency to impair the desired artistic effect, so that the practice in manufacture is to regard these as imperfections and discard the strips as "seconds".

An object of my invention is to provide apparatus adapted to be quickly and easily adjustable whereby to form indentations of a constant width along the marginal edges of a sheet of varying width.

Another object of my invention is to provide apparatus adapted to be expeditiously adjusted to vary the position of a cutting roll in a slot or recess cutting mechanism.

In the accompanying drawings,

Figure 1 is a front elevation of a cutting mechanism with parts omitted embodying my invention;

Figure 2 is a cross-section taken on line 2—2 of Figure 1;

Figure 3 is a front elevation of a portion of the apparatus, and embodies a diagrammatic illustration of the different positions of the actuating means of my invention;

Figure 4 is a cross section taken on line 4—4 of Figure 5;

Figure 5 is a front elevation of a modification of my invention illustrated in Figure 1;

Figure 6 is a plan view of a portion of a square butt shingle strip.

As shown, the cutting mechanism comprises generally a main frame consisting of two vertical standards 11 and 12 having rotatably mounted therein, upper and lower shafts 13 and 14 respectively, and being rigidly spaced from each other by tie plates 15 secured to both sides of the standards.

Mounted on the lower shaft, having a rib 16 extending longitudinally thereof, are a plurality of end rolls 17 and 18 and intermediate rolls 19, having secured thereon appropriate cutting means such as knives 20. In order that the inner periphery of the rolls may fit snugly over the shaft 14 to insure rotation of the rolls with the shaft, the inner periphery of the rolls has a kerf or notch therein of substantially the same cross-sectional dimensions as the corresponding measurements of the rib 16. Similarly mounted on the upper shaft 13 are a plurality of bed rolls 21 located opposite the knife carrying rolls.

In accordance with my invention the end cutting rolls 17 and 18 are mounted on the shaft 14 so as to be freely movable longitudinally thereon. In order that these cutting rolls may be actuated towards or away from each other as shown in Figure 3, I provide an actuating shaft 21 having right and left hand screw threaded sections 22 and 23 adjacent its respective ends. This shaft is mounted in bearing blocks 24 and 25 secured to the lower ends of the standards 11 and 12 respectively, and has one end extending beyond the bearings provided with a hand wheel 26 for turning the shaft. Screwed onto each of the threaded sections 22 and 23 of the shaft is an appropriately threaded block 27, each block having a pair of diametrically opposed pins 28 extending outwardly therefrom.

In order that the horizontal motion of the blocks 27 caused by the rotation of the shaft 21 may be translated to the end rolls 17 and 18, I provide shanks 30 rigidly carrying yokes 31 and 32. The upper yokes 31 are pivotally secured to depending bracket plates 33, fixed to the tie plates 15, by means of pins or bolts 34 passing through openings in the cross bars of the yokes and through bearings 35 on the bracket plates 33. The upper ends of the arms of the yokes 31 are slotted as at 40 to provide openings that are adapted to receive pins 41 integral with a collar 42 loosely mounted in a peripheral opening or slot in each of the rolls 17 and 18. The lower yokes 32 also have the lower ends of their arms slotted to provide means for receiving the pins 28 on the threaded blocks 27.

The practical operation of this device is extremely simple and may be performed with ease and dispatch even by an unskilled workman. When it is found that the portion of the sheet about to feed between the bed and cutting rolls is of a width such that the indentations to be formed at its marginal edges would not be of proper widthwise dimension, all that the operator need do is to rotate the hand wheel the necessary amount in the proper direction to appropriately shift the end cutting rolls. In those cases where it is found that the width of that portion of the sheet about to feed between the bed and cutter rolls is such that the width of the indentations to be formed in its marginal edge would be less than the required dimension, the hand wheel 26 would be rotated the proper amount in the direction of the arrow shown in Figure 1. This rotation of the hand wheel 26 and the shaft 21 causes the threaded blocks 27 to move away from each other longitudinally on the shaft. The movement of these screw blocks 27 causes the rigid structures, consisting of shanks 30 having yokes 31 and 32 secured to their respective ends, to pivot about the pins 34 and move the end cutter rolls 17 and 18 towards each other on the shaft 14. Of course, where the conditions are such that the end cutter rolls are to be moved away from each other, the hand wheel is rotated in the opposite direction.

Where the manufacturing procedure is such that one longitudinal edge of the parent sheet is in a fixed position relative to one end of the shaft as it feeds thereover, a mechanism similar to that shown in Figure 5 may be employed. In accordance with my invention and when operating under this procedure, only one of the end cutter rolls, like rolls 17 and 18, designated by the reference character 60, need be made adjustable. This roll 60 has a collar 61 loosely mounted in a peripheral slot or kerf in said roll. Loosely mounted in said slot or kerf is a collar 61 having two diametrically opposed pins 67 extending outwardly therefrom. The roll 60 is actuated by a pivoted yoke 62, similar to the yoke 31, having the upper ends of its arms slotted as at 68 to receive the pins 67, and its lower end rigidly secured to a shank 63. The lower end of the shank 63 is slotted and the shank is actuated by means of a bar 64 threadedly mounted in an appropriately threaded block 65 secured to one end of the frame standard. The bar 64 has a hand wheel 66 rigidly secured to its free end, to provide means for actuating the pivoted yoke to move the cutter roll towards or away from one end of the carrying shaft. The shank 63 is connected to the bar 64 by means of a swivel knuckle link 69, with the bar 64 swivelly connected to one end of the link and a pin at the other end of the link received by the slot in the shank 63.

In view of the foregoing, it is apparent that my invention eliminates the necessity of unloosening set screws, blocking the rolls to shift them on the shaft and resetting the set screws, these operations being necessary with the apparatus heretofore employed. Moreover because this old means of shifting the cutter rolls is a time consuming and tedious task, the rolls were oftentimes not shifted because the reduction in the number of "seconds" that would be produced would not be sufficient compensation for the time spent in making the proper adjustments. On the other hand, because my invention provides

a means for a rapid and easy adjustment of the cutting knives, it aids in the speed of efficient production and in the reduction of the number of "seconds" produced.

Although my invention has been specifically described in relation to the indentation of a square butt shingle strip, it is in no manner to be limited thereto. The invention has a wide application and is to be limited only by the prior art.

I claim as my invention:

In a mechanism of the class described, the combination of a cutting mechanism comprising a main frame having a shaft mounted therein and a series of cutter heads on said shaft, the terminal cutter heads of the series being arranged to operate upon the work, and means on said frame adapted to shift said cutter heads towards or away from each other on the shaft, said means comprising a yoke associated with each of said cutter heads and a common actuating means associated with the yokes.

Signed at Rutherford, in the county of Bergen and State of New Jersey, this 29th day of May, A. D. 1931.

EDWIN S. PETERSEN.