Aug. 3, 1937. B. W. BLANCHARD, JR 2,088,686

SHINGLE CUTTING MACHINE

Original Filed July 1, 1933 2 Sheets-Sheet 1

Fig. 1

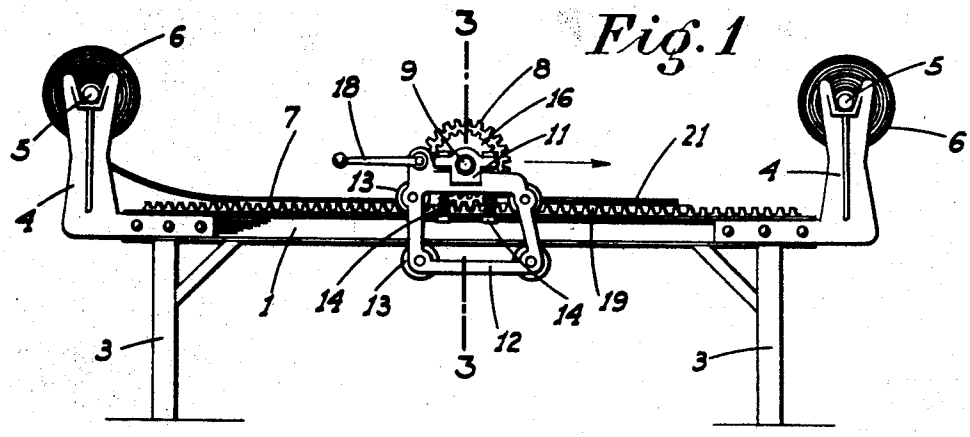


Fig. 2

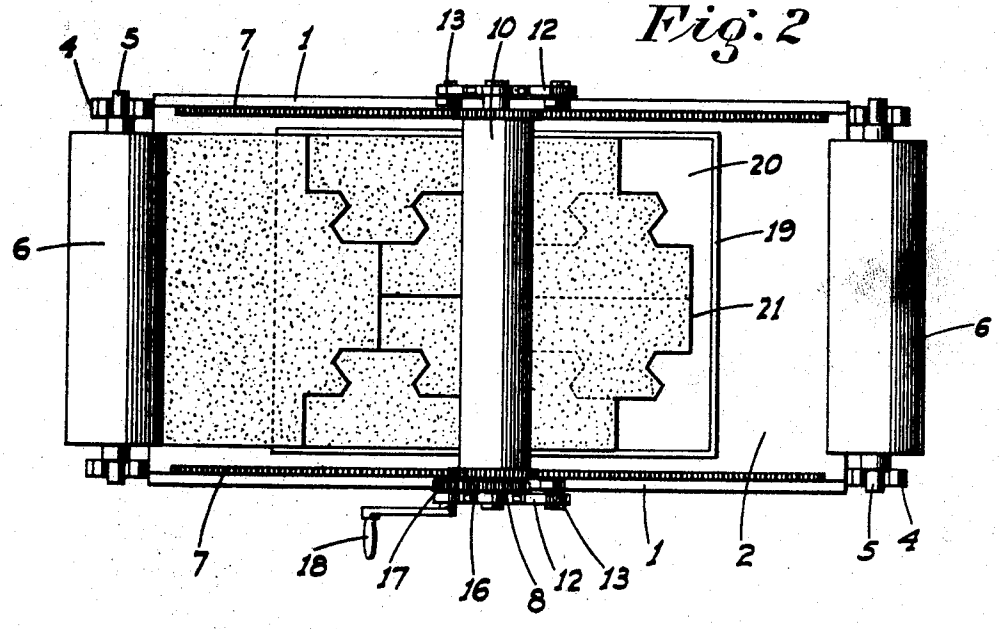
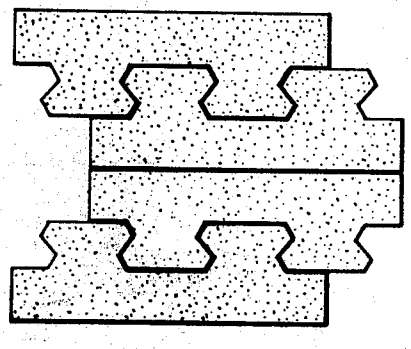


Fig. 4



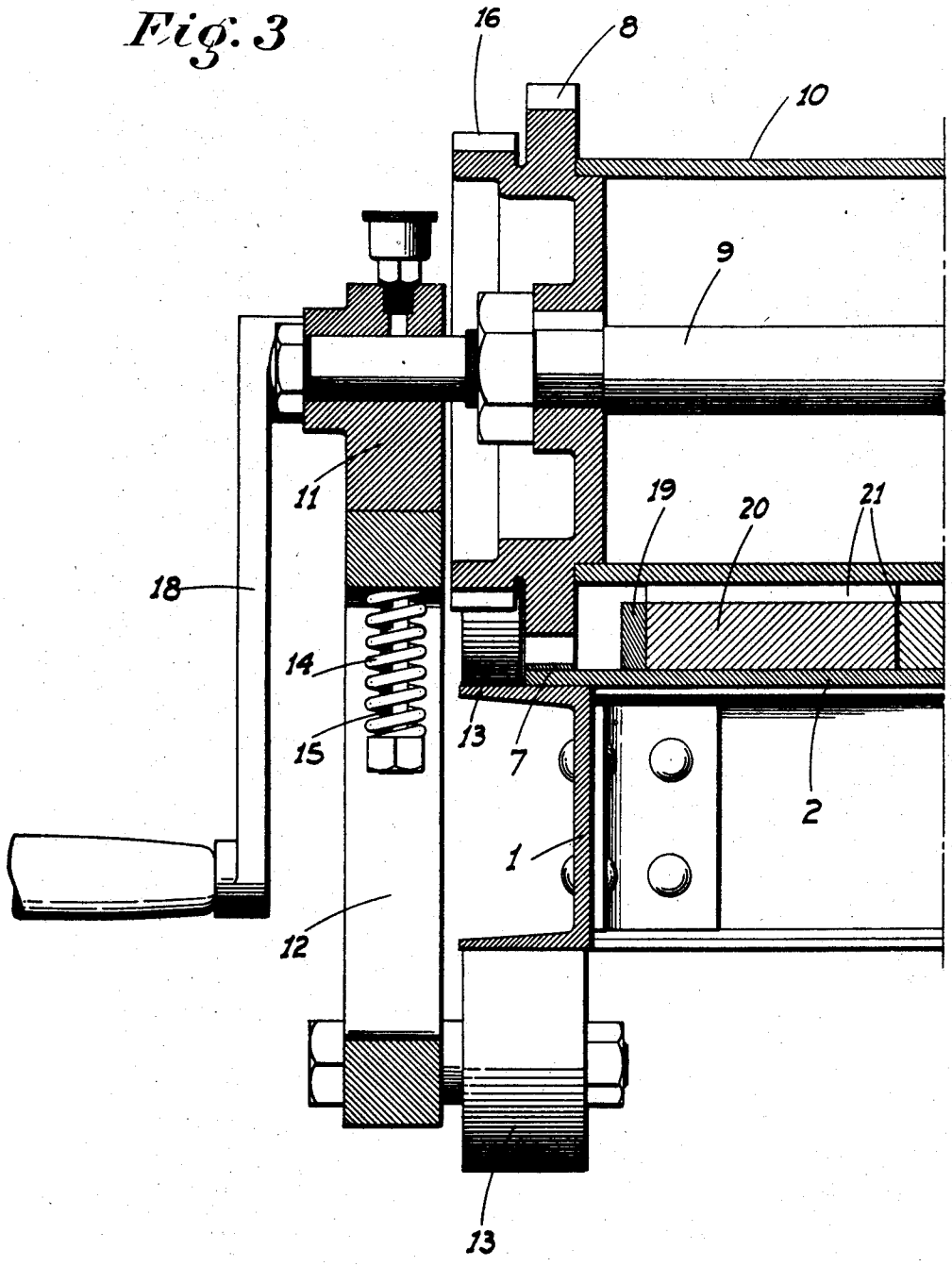
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Fig. 3



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Patented Aug. 3, 1937 2,088,686

UNITED STATES PATENT OFFICE

2,088,686

SHINGLE CUTTING MACHINE

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Refiled for abandoned application Serial No. 678,650, July 1, 1933. This application March 23, 1937, Serial No. 132,501

4 Claims. (Cl. 164—20)

This application comprises the same subject matter as in my former application, Serial No. 678,650, filed July 1, 1933, and allowed October 24, 1934.

This invention relates to the roofing industry and particularly to composition sheet roofing or strip shingles such as are now being extensively used. At present such roofing material is cut to shape and to certain standard sizes and designs in the factory, which necessitates the roofing contractor or retailer carrying a large stock of the different designs and colors to fit all possible requirements and this entails an outlay and tying up of a considerable amount of capital, with the probability of a certain percentage of leftover material and consequent waste.

The principal object of my invention is to avoid considerable of the expense of the present methods of merchandising such roofing by providing a machine to cut the shingle stock to the desired length and design from a plain roll of the material only as it is wanted; and which is of such simple and inexpensive nature that it can be bought by and installed in the shop of a small roofing contractor at a relatively small expense. Another object is to construct the machine so that it may be easily operated by one man and which requires no expense for operation or upkeep.

A further object is to arrange the machine so that the pattern or design cutting die can be easily changed, so that the material may be cut to various designs to suit individual purchasers without laying in a stock of material initially cut to such designs as is now the case. The cost of the plain material in rolls being much less than that of the same area of factory-cut shingles, the contractor may make his customers a more favorable price than is at present possible and still net himself a profit, thereby of course tending to increase both the sale of the material and the volume of his business.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a side elevation of the machine as in operation.

Figure 2 is a top plan view of the same.

Figure 3 is a fragmentary enlarged cross section on the line 3—3 of Fig. 1.

Figure 4 is a plan view of the shingles formed by a single cutting operation of the machine.

Referring now more particularly to the characters of reference on the drawings, the machine comprises side frame beams 1 supporting a bed plate 2 or the like, the beams in turn being supported a convenient height from the floor by legs 3. Cradles 4 for removably supporting the spindles 5 of rolls of shingle material 6 to be cut project forwardly from and are mounted on said frame beams at their ends.

Racks 7 are mounted on and extend along the upper faces of the side beams, said racks being engaged by gears 8 mounted on a common shaft 9 and having a presser roller 10 concentric therewith and extending the full distance between the gears. The shaft is journaled at its ends in bearing blocks 11 mounted for limited vertical movement in carriages 12 depending outside the beams 1. Said carriages have rollers 13 engaging the beams 1 so that said carriages are supported and guided for horizontal movement along the beams. The bearing blocks are yieldably pulled down on the carriages by compression springs 14 disposed about the lower portions of bolts 15 which are connected to said blocks at the sides and slidably depend through the adjacent portions of the carriages.

Another gear 16 is mounted outwardly of and concentric with one gear 8, which gear 16 is engaged by a pinion 17 mounted on the adjacent carriage in horizontal alinement with the gear. The pinion is connected to a crank handle 18 disposed outwardly of said carriage so that upon rotation of the crank the carriages and roller 10 will be moved lengthwise of the racks and at the same time the roller will be turned.

Secured on the plate 2 centrally of its ends is a rectangular die frame 19 in which is mounted a die indicated generally at 20 and which indicates upstanding cutters 21 defining the pattern or design of the shingle to be cut from the sheet material of the rolls. The die parts are removably locked in the frame in a similar or the same manner as is employed in the printing industry in locking the matrices, etc., and the set-ups in their frames. The pattern cut by the die is preferably my own design, being arranged so that four single strips of standard width and length are cut at one time from the roll of material without there being any waste of such material.

The bearing blocks 11 are arranged in supporting relation to the roller 10 and to the level of the cutter so that when the blocks are at their lowermost point of the carriage the bottom of the roller just clears the die cutter, as shown in Fig. 3, so that there is no possibility of said cutter being dulled by contact with the roller.

In operation the material is pulled from either roll a sufficient distance to extend over the die so that it rests on the same as shown in Fig. 2, the roller 10 being initially disposed so that it is beyond the die and adjacent that roll from which the material has been pulled. Upon then rotating the crank shaft 16 in the proper direction the roller is moved over the die, said roller yielding upwardly as it passes over the material on account of the yielding mounting of the roller supporting bearings. With the pressure of the roller on the material due to the springs the cutters press through such material, causing the same to be cut in the desired pattern, as indicated in Fig. 2. The teeth of the racks and cooperating gears 8 are of sufficient depth to allow of the vertical movement of the roller and gears relative to each other without disengaging—a feature which does not interfere with the operation of the structure since accurately fitting teeth are not essential to the proper operation of the machine.

When the roller has reached the opposite end of and is beyond the die, so that the cut is completed, the cut shingles are removed and the material from the adjacent roll may be passed under the roller 10 and engaged with the die, and the movement of the roller is repeated but of course in the opposite direction. In this manner and with the aid of this machine only sufficient shingles necessary for a certain job need be cut at any one time so that no shingles are cut which may be left over and wasted, and the remainder of the roll may be used later in cutting shingles from a possibly different pattern.

The use of a double ended machine, that is, one supporting a pair of rolls which are used alternately and in which the presser roller operates in both directions, not only enables a large quantity of shingles to be cut and with a minimum number of operating movements, but enables rolls of different colored material being mounted and cut alternately at one time if the job calls for a two-color combination.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:

1. A sheet cutting machine comprising a horizontal supporting structure, transverse journal means at both ends of the structure for supporting separate duplicate rolls of sheet material to be cut, a cutting die on the structure between the rolls, the material being adapted to be drawn alternately from the rolls to overlie the die, and movable means to cooperate with the die in cooperating relation mounted on the structure for movement lengthwise thereof between the roll supporting means; said supporting means being spaced apart a distance greater than the length of the die.

2. A sheet cutting machine comprising a horizontal supporting structure, transverse journal means at both ends of the structure for supporting separate duplicate rolls of sheet material to be cut, a fixed cutting die on the structure between the rolls, the material being adapted to be drawn alternately from the rolls to overlie the die, and a roller to cooperate with the die mounted on the structure for movement lengthwise thereof and parallel to the axis of the roll supporting means; the length of the die relative to the distance between the rolls and the diameter of the rollers being such as to enable the roller to occupy positions clear of the die at both ends thereof without interfering with the corresponding rolls.

3. A sheet cutting machine comprising spaced means for supporting separate rolls of sheet material to be cut, a cutting die mounted in a fixed position between the roll supporting means whereby material from the rolls may be drawn alternately therefrom and placed over the die, a roller to cooperate with the die, and means mounting the roller for movement over the die between limits clear of the die at both ends of the travel of said roller and arranged so that no interference with the removal or placing of material over the die is had when the roller is thus clear of the same.

4. The method of die cutting sheet material with the aid of a die and a cooperating roller, comprising drawing a length of material to be cut over the die from one end thereof, moving the roller over the material and die from the other end thereof, to a point beyond the one end of the die, removing the cut material from the die, drawing another length of material over the die from said other end thereof, moving the roller over such material and the die to a point beyond said one end of the latter, and again removing the cut material from the die.

BENJAMIN W. BLANCHARD, JR.