April 17, 1928. 1,666,203

N. P. HARSHBERGER

SHINGLE MACHINE

Filed June 11 1925 2 Sheets-Sheet 1

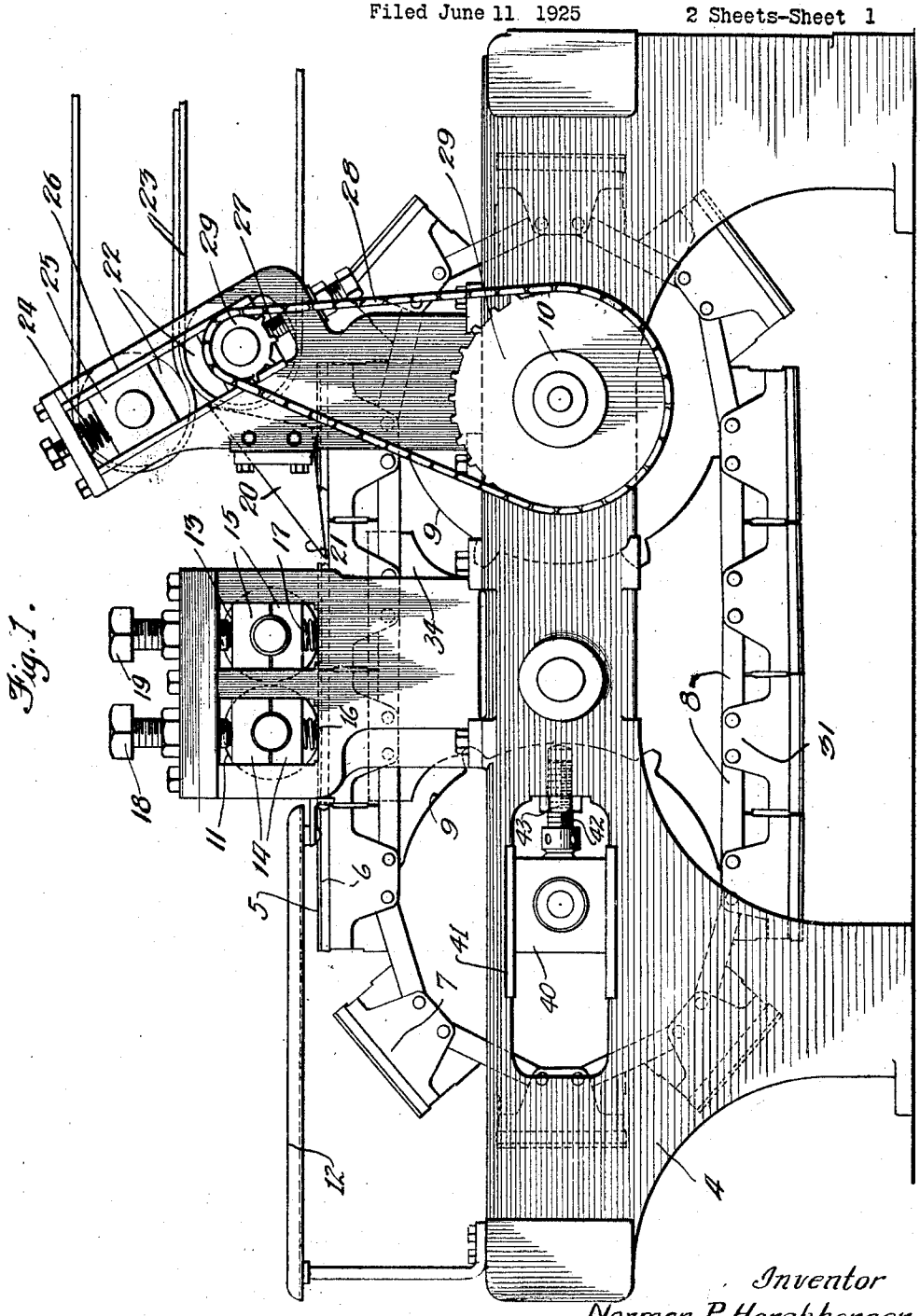


Fig. 1.

Inventor
Norman P. Harshberger
E. J. Andrews Atty.

April 17, 1928. 1,666,203

N. P. HARSHBERGER

SHINGLE MACHINE

Filed June 11 1925 2 Sheets-Sheet 2

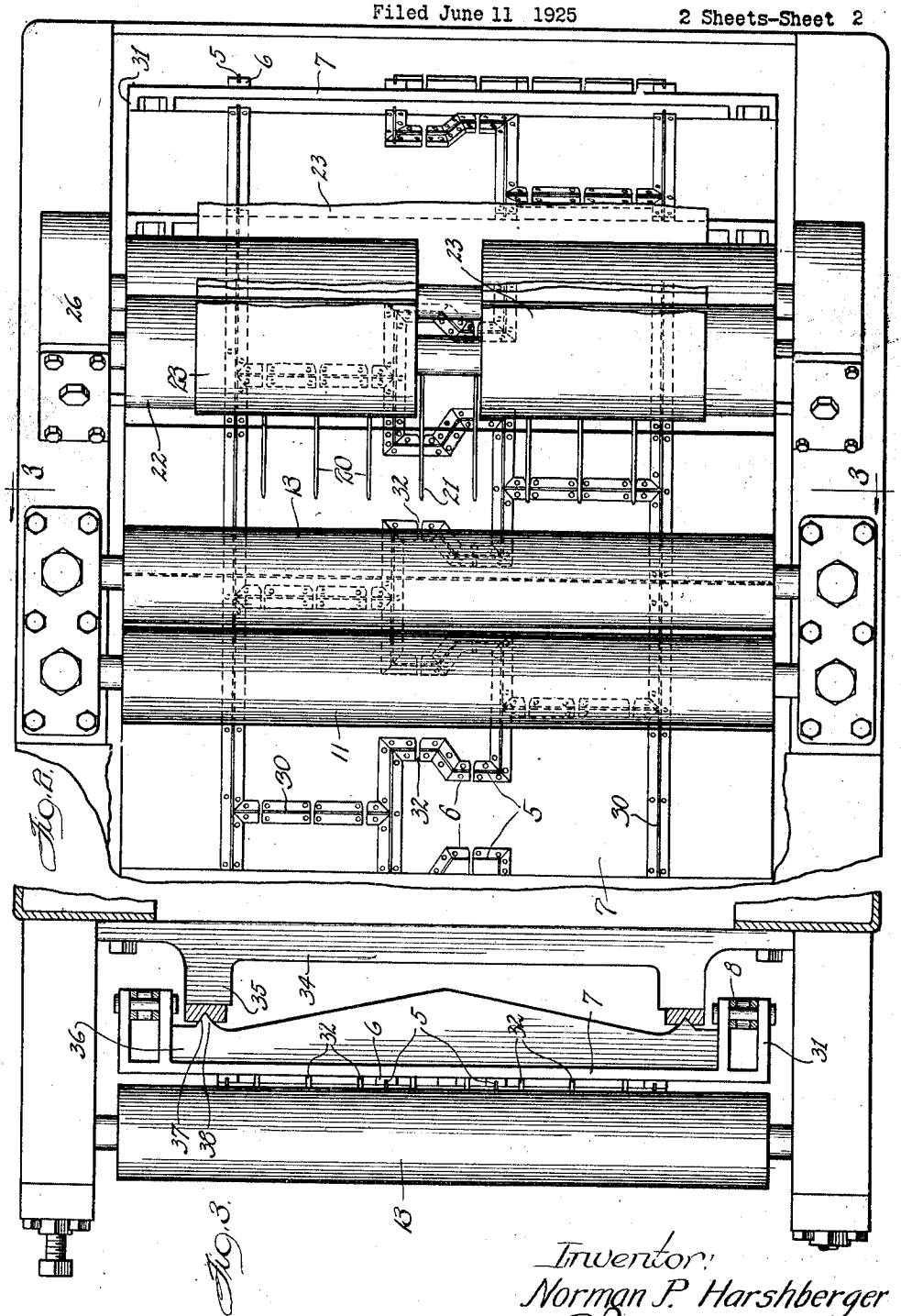


Fig. 3.

Inventor:
Norman P. Harshberger
E. J. Andrews Atty.

Patented Apr. 17, 1928. 1,666,203

UNITED STATES PATENT OFFICE.

NORMAN P. HARSHBERGER, OF CHICAGO, ILLINOIS.

SHINGLE MACHINE.

Application filed June 11, 1925. Serial No. 36,369.

This invention relates to shingle making machines and has for its object the production of an improved machine for cutting out shingles or other articles from strips of material.

Of the accompanying drawing, Fig. 1 is an elevation of a shingle cutting machine which embodies features of my invention; Fig. 2 is a plan view of the machine, and Fig. 3 is a sectional view along the line 3—3 of Fig. 2, of the upper portion of the machine.

Although I have herein illustrated the principal type of shingles which is to be formed by the machine illustrated, yet it is to be understood that any ordinary type or shape of shingle may be formed, provided the machine is suitably arranged and adjusted therefor. Also it should be understood that the use of my invention is not necessarily limited to the manufacturing of shingles, but it may be applied to manufacturing various other articles which are formed similarly to the shingles herein described.

The machine for cutting the shingles is mounted on a frame 4 and in general it consists of a series of knives 5 which are properly arranged and are mounted upon supporting blocks 6, and these blocks are in turn mounted upon large blocks 7. The large blocks are supported by a chain belt 8 passing over suitable wheels 9. Any suitable driving mechanism may be used to operate the wheels, and thus the belt, by means of a pulley 10. Above the blocks as they are moved forwardly, is mounted a roller 11 and the sheet of material which is to be cut into the shingles is placed upon the platform 12 and the moving knife blocks and is then passed between the knives and the roller 11. The roller 11 continually draws the sheet forwardly.

A second roller 13 is mounted parallel to the roller 11, and the shingles are cut from the strip as the strip passes between these rollers and the knives. The rollers are supported in bearings 14 and 15, and bearings in turn are supported by springs 16 and 17. The elevation of the lower surface of the rollers is determined by means of adjusting screws 18 and 19. The strip of material to be cut is placed upon the upwardly projecting edges of the knives 5, and, as the strip passes between the roller 11 and the knives, the knives are forced part way through the material of the strip, the lower surface of the roller 11 being so positioned that the cutting is not completed under this roller. The roller 13, however, is slightly lower than the roller 11, then as the strips and knives pass under this roller, the knives are forced substantially through the material so as to substantially complete the separation of the strip into the individual shingles.

Inasmuch as the shingles thus are forced down on to the supporting blocks 6 between the projecting edges of the knives, means must be provided for forcibly removing the shingles from between the knives. The means which I provide for this purpose comprises strippers 20, the toes 21 of which are positioned immediately over the surfaces of the main blocks 7, and, as the blocks move forwardly, the toes 21 pass through channels 32 between the supporting block 6. As the end of the strip of material passes forwardly beyond the roller 13, these toes pass under the strip which has been cut into individual shingles and forces the strip of shingles upwardly along the upper surface of the strippers and between the rollers 22 which carry belts 23. These belts are held resiliently substantially in contact with each other by means of springs 24, the bearings 25 of the rollers being slidably mounted in the supports 26, and the lower roller bearing being adjustably positioned by means of a screw 27. The rollers may be operated in any suitable manner, such as by means of the chain belt 28 and sprocket wheels 29. By means of the belts 23 the strip of shingle is transferred to any desired point and it may be separated into the individual shingles in any suitable manner. It will be understood that although the channels 32 have no knives for separating the shingles, so that the shingles are connected at these points, yet the shingle material ordinarily is of such a nature that the shingles may be readily broken apart.

The knives are formed of strips of steel having parallel side surfaces and narrow flat cutting edges 30, the shingle material ordinarily being of such a nature that the narrow cutting edges may be readily forced through the material; and with such edges the tendency of the material, particularly the granulated slate which is often applied to such material, is to wear the knives down slightly substantially flat on top, and thus the knives will continue indefinitely to force the material apart without resharpening. The blocks 7 are supported on the chain 8

by means of end plates 31 which are pivotally connected to the links which form the chain 8.

Although the belt is supported by the wheels 9, yet it is desirable to support the blocks under rolls 11 and 13 by other suitable means. The means which I prefer comprises a table 34 mounted on the frame 4, and having risers 35. These risers are arranged to support the blocks 7 by means of flanges 36 on the blocks. The flanges rest upon the upper surface of the risers 35 as the blocks are passed under the rolls 11 and 13. In order to properly guide the blocks 7, as the shingles are being cut, I provide straight-edge V-shaped grooves 37 on the upper surface of the risers 35, and provide corresponding straight edge V-shaped runners 38 on the lower surface of the flanges 36. By this means lateral movement of the blocks is prevented so that there will be no distortion of the shingles which are cut.

In order to take up any loose play of the chain belts, or to adjust the tension thereof, I provide bearings 40 for one pair of wheels 9 and have them slidably mounted in the frame by means of guides 41. I then provide a screw 42 which is threaded into the frame and the head of which abuts against the bearing 40. By screwing the screw outwardly from the frame, the tension of the chain may be increased. The screw may be locked by means of a lock nut 43.

I claim as my invention:

1. A machine for cutting shingles from a relatively flat sheet of composition roofing material, said machine comprising a plurality of blocks arranged for movement one in advance of the other, means pivotally connecting one end of each block with the lower central portion of the following block, means for moving said blocks forwardly, cutting knives projecting from each of said blocks and adapted to cut through the roofing sheet and arranged to conform to the shape of the shingles to be cut, a pair of parallel rolls transversely mounted over said blocks for forcing the sheet against said knives, and a table positioned under said supporting means for forcing said blocks.

2. A machine for cutting shingles from a sheet of composition roofing material, comprising a plurality of blocks, cutting knives projecting from the blocks for cutting through the roofing strip, a pair of parallel rolls above said blocks for forcing the roofing strip against said knives for cutting the shingles from said strip in the movement of said blocks under said rolls, means for moving said blocks, runners fixed to said blocks, and means for supporting said runners while passing under said roll.

3. A machine for cutting shingles from a relatively said flat strip of composition roofing material, comprising an endless row of connected blocks, each block carrying cutting knives projecting from the block to cut through the roofing strip and arranged to conform to the shape of the shingles being cut, a roll above said blocks for forcing the roofing strip against said knives for cutting individual shingles from said strip as the blocks are moved under said roll, means for moving said row of blocks, and means sliding along the surface of said blocks for ejecting the cut shingles therefrom.

4. A machine for cutting shingles, a plurality of blocks, cutting knives mounted on said blocks, means for moving said blocks along a substantially straight path, a pair of rolls above said path for forcing the sheet being cut against said knives, and means for supporting said blocks while passing under said rolls, said means comprising a table having stationary risers projecting upwardly, the upper surface of said risers being straight, and the lower surface of said blocks being arranged to rest on said risers while moving in said path, the lower surface of one of said rolls being higher than that of the other roll.

5. A machine for cutting shingles, a plurality of blocks, cutting knives mounted on said blocks, means for moving said blocks along a substantially straight path, a roll above said path for forcing the sheet being cut against said knives, and means for supporting said blocks while passing under said roll, said means comprising a table having risers projecting upwardly, the upper surface of said risers being straight, and the lower surface of said blocks being arranged to rest on said risers while moving in said path, V-shaped grooves formed in one of said surfaces and V-shaped projections on the other surface adapted to coact with said grooves.

6. A machine for cutting individual pieces from a relatively flat strip of material, said machine comprising a plurality of blocks, cutting knives projecting from the said blocks, a roller mounted over said blocks, means for supporting the blocks as they pass under said roller, said means comprising two co-acting straight edges, one fixed to said blocks, and the other mounted beneath said blocks, and a second roller mounted over said blocks in the rear of said first mentioned roller.

7. A machine for cutting individual pieces from a relatively flat strip of material, said machine comprising a plurality of blocks, cutting knives projecting from the said blocks, a roller mounted over said blocks, means for holding the blocks in position as they pass under said roller, said means comprising two members, one fixed to said blocks, and the other mounted beneath said blocks, said members having co-acting surfaces thereon and a second roller mounted

in the rear of said first mentioned roller with its lower surface slightly higher than the lower surface of said first mentioned roller.

8. In a machine for cutting articles from a relatively flat sheet of material, a block mounted for movement in a substantially straight path, a cutting member projecting from said block for cutting the sheet, strippers mounted adjacent said block for stripping the articles therefrom, and fingers fixed to the ends of said strippers and adapted to pass immediately over the surface of said blocks upon which said knives are mounted.

9. In a machine for cutting articles from a relatively flat sheet of material, a block mounted for movement in a substantially straight path, a cutting member projecting from said block for cutting the sheet, strippers mounted adjacent said block for stripping the articles therefrom, and fingers fixed to the ends of said strippers and adapted to pass immediately over the surface of said blocks upon which said knives are mounted, said knives being separated from each other, and said fingers being arranged to pass between two adjacent knives.

In testimony whereof, I hereunto set my hand.

NORMAN P. HARSHBERGER.