April 12, 1927. 1,623,983

A. S. SPEER

MACHINE FOR MAKING SHINGLE STRIPS

Filed Feb. 17, 1922 2 Sheets-Sheet 1

Fig. 1.

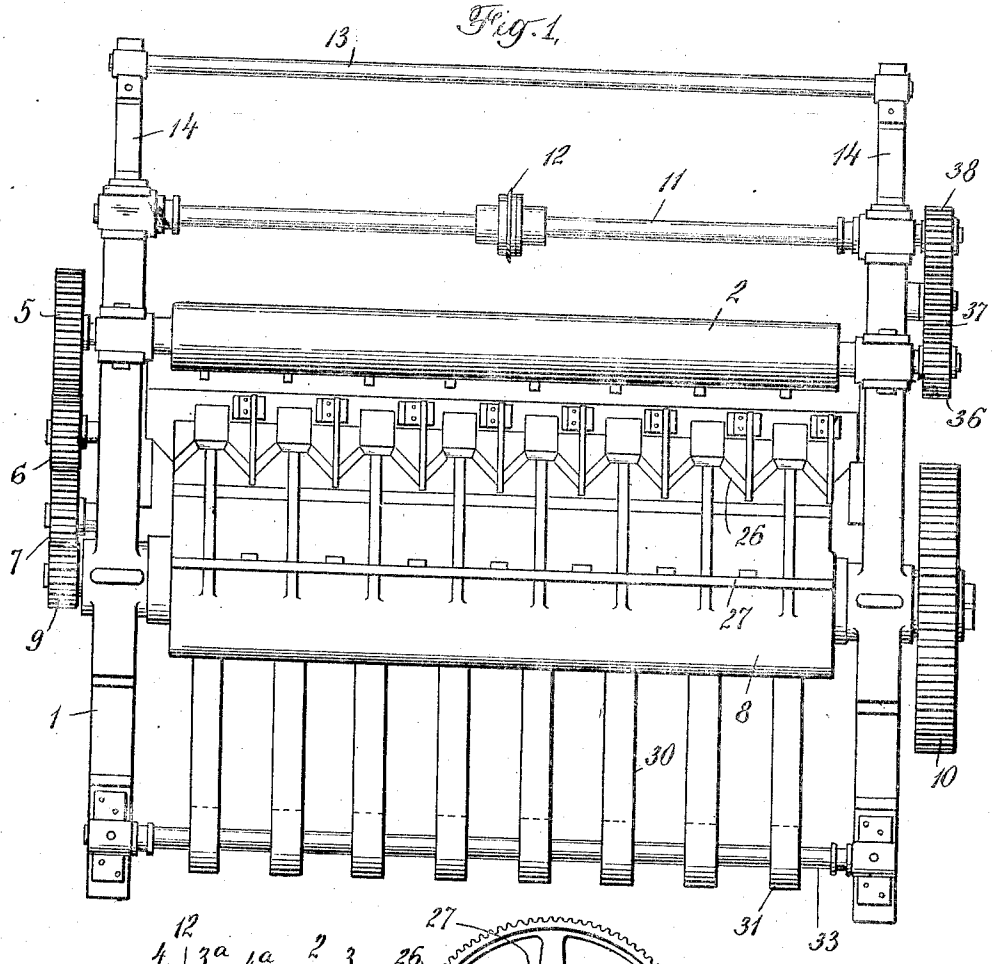
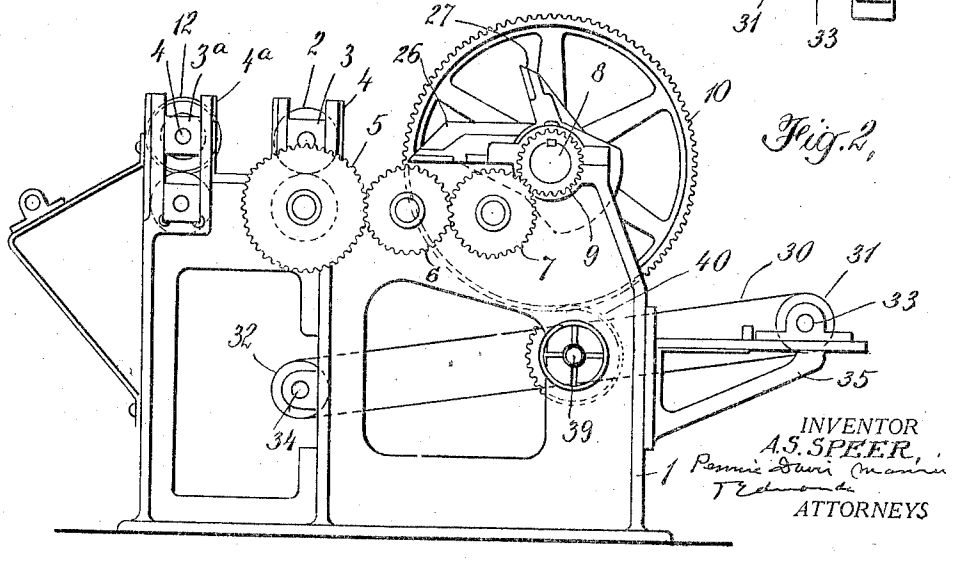


Fig. 2.



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Fig. 3.

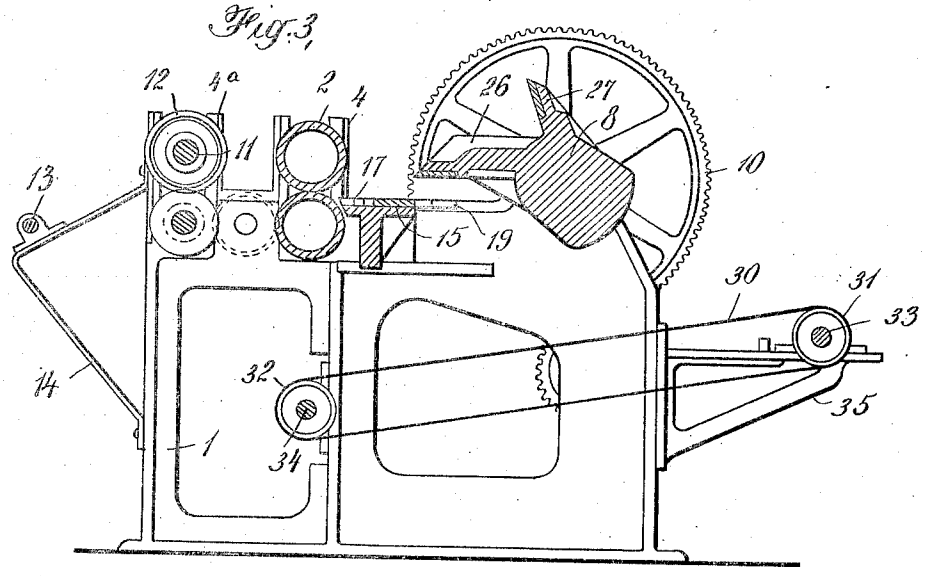


Fig. 4.

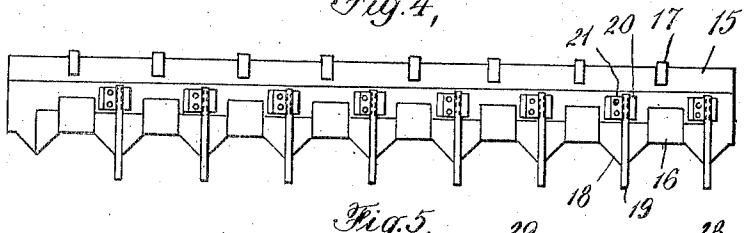


Fig. 5.

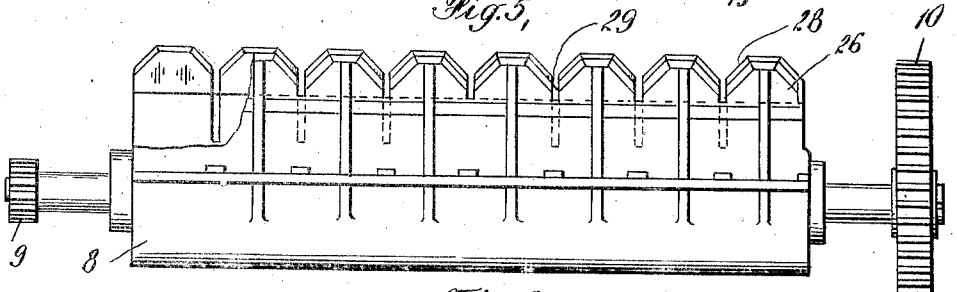


Fig. 6.

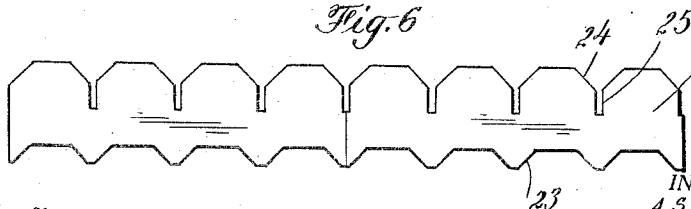


Fig. 7.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING SHINGLE STRIPS.

Application filed February 17, 1922. Serial No. 537,327.

My invention is an improvement in machines for cutting shingle strips, and relates particularly to machines for cutting shingle strips from prepared roofing. For the purpose of illustration, I shall describe the invention in connection with the manufacture of shingle strips or units known to the trade as "doubletite." Shingle strips known as "doubletite", are characterized by an arrangement of shingle tab and reinforcing tab, such that when the strips are laid with the shingle tabs exposed to the weather, to present the appearance of individual shingles, there will be a double layer of roofing material below each space between the adjacent shingle tabs, and with a width of strip corresponding to only double the length of a shingle tab. This result is attained by cutting the strips in such manner, that the reinforcing tabs of each strip are formed by the material removed from the preceding strip to provide the spaces between the shingle tabs. Such spaces are however, of greater depth than the length of reinforcing tab required, and the extremities of the portions removed to form such spaces, which are narrow tongues, are afterwards cut away.

In the present machine, I provide means for severing complete shingle strips from the web, two cutters being provided, one forming the edge having the tongues, and the other severing the tongues, the arrangement being such that the first cutter cuts off a complete shingle strip, and forms the tabbed edge of another including the tongues, which are afterwards severed by the other cutter.

In the drawings;

Figure 1 is a top plan view of the improved machine,

Figure 2 is a side view,

Figure 3 is a longitudinal section,

Figure 4 is a plan view of the bed knife or plate,

Figure 5 is a similar view of the movable knife or blade,

Figure 6 is a plan view of a completed strip,

Figure 7 is a perspective view of one of the punches.

In the present embodiment of the invention, a suitable frame 1 is provided, having journaled thereon at one side a pair of feed rollers 2, the rollers being arranged one above the other. The top roller 2 is journaled in bearing blocks 3, which are mounted to slide vertically in guides 4 on the frame, and the upper roller may move away from the lower roller, to compensate for unevenness in the thickness of the roofing material. The lower roller 2 carries a gear wheel 5, which meshes with an idler 6 on the frame, and the idler is driven through a second idler 7, from a shaft 8 journaled on the frame at the opposite side from the rollers 2, and having a pinion 9 meshing with the idler 7. The shaft 8 carries a gear wheel 10, which is adapted for connection with a suitable source of power, to drive the machine.

A pair of slitting rollers 11 is arranged in front of the feed rollers 2. Each of the rollers 11 has an annular blade 12 at the center thereof to slit the web longitudinally, as it is fed by the feed rollers. The rollers 11 are mounted in slidable bearings 3^a, similar to the bearings 3 for the feed rollers, the bearings being slidable in guides 4^a corresponding to the guides 4 for the feed roller bearings. The web of roofing material from which the shingle strips are to be cut, is fed to the feed rollers, between the slitting rollers, and over a supporting rod 13 held by brackets 14 at the front of the frame. From the feed rollers the web passes over a bed plate or ledger blade to be described which is supported just in rear of the feed rollers 2.

The bed plate comprises a suitable support 15, having on the upper face thereof a series of spaced abutments 16 at one side edge, and having at the other side edge a series of lugs 17, spaced in accordance with the spacing of the abutments. Between each pair of abutments, there is arranged a pair of similar blades 18, and a punch 19, the blades of each pair abutting the punch at each side thereof, being arranged between the punch and the abutments 16, and the punch is held in place by means of clamping plates 20 and 21. Each punch is grooved longitudinally near its forward end, and the clamping plates have tongues engaging the grooves. One of the plates 21 is made detachable, and it will be evident that by removing the said plate, the punch may be removed as may be also the blades 18.

The shingle strips which are cut from the web of roofing material are shown in Figure 6. Referring to this figure, it will be seen that each strip 22 is provided at one side edge with a series of substantially triangular extensions or tabs 23, and at the opposite side edge, with a series of notches or recesses 24, registering with the tabs at the opposite edge and similarly shaped. At each notch 24, the strip is transversely slotted as shown at 25, the slots having parallel side walls, and giving to the roof when laid, the appearance of individual shingles. In cutting the strips from the web, the edge having the notches and slots is first formed, by cutting away the entire end of the web. This leaves the end of the web with the outline of the upper edge of the shingle strip shown in Figure 6. That is the end of the web has a plurality of substantially triangular tabs 23, each of which has a tongue, corresponding in shape and size to a slot 25. In order to provide for the strip edge shown at the bottom of Figure 6, these tongues must be cut away. In order to make these cuts, I provide the cutter shaft 8 before mentioned with blades 26 and 27. The blade 26 as shown more particularly in Figure 5, has the outline of its cutting edge conforming to the free edge of the bed plate, which edge is formed by the bed plate, the blades 18, and the punches 19. That is the edge of the blade 26 has notches 28, and slots 29, the notches 28 being similar in shape to the tabs 23, while the slots are of the same shape and size as the slots 25. The blade 27 has a straight cutting edge, and it cooperates with the square ends of the punches 19 as ledger blades.

In the cutting operation, the web of material is fed by the feed rollers over the bed plate or table 15. The feeding is so timed that as a sufficient amount of web is fed to form a shingle strip, the blade 26 will engage the web, cutting off a complete shingle strip. Immediately after the blade 27 engages the end of the web, removing the tongues above mentioned, and giving to the edge of the web, an outline corresponding to the lower edge of the shingle strip, as shown in Figure 6. It will be obvious that for each complete rotation of the shaft 8, a shingle strip of a length equal to the full width of the web of roofing material is severed. Since the web has been slitted longitudinally at the center, the shingle strip will consist of two similar portions, as shown in Figure 6.

The severed strips fall upon a carrier composed of a plurality of endless belts 30, which are arranged in spaced parallel relation, below the cutter shaft 8. These belts are supported by pulleys 31 and 32 mounted on shafts 33 and 34 journaled on the frame, the shaft 33 being journaled in brackets 35 extending rearwardly from the frame. The belts are driven in any suitable manner, through the shaft 33 or 34, as may be desired. The rollers 11 are driven through gears 36, 37 and 38 from the lower feed roller 2, the gears 36 and 38 being on the lower members of the pairs of rollers 2 and 11 respectively, while the gear 37 is an idler. The cutter is driven from a power shaft 39 by means of a gear wheel 40 meshing with the wheel 10.

In the operation of the device, the web passing the slitting rollers is severed longitudinally into two strips. These strips lying close alongside each other are fed by feed rollers over the ledger blades. At each complete rotation of the cutter shaft, a complete shingle strip is cut from the web, the strip being in two portions because of the slitting of the web, and the excess material is cut from the end of the web.

This application is a continuation in part of my co-pending application Serial No. 337,577, filed November 12, 1919.

I claim:

1. A machine for cutting from a web of roofing material shingle strips each having one edge provided with spaced reinforcing tabs, and having the other edge notched to provide shingle tabs, with the notches opposite the reinforcing tabs and of greater depth than the length of such tabs, comprising a ledger blade having a cutting edge notched to correspond with the shape of the reinforcing tabs and slotted at the bottom of the notches to form extensions to the notches, means for feeding a web of roofing material over the ledger blade, and cutter blades, one blade having its edge shaped to cooperate with the notched edge of the ledger blade, and the other having a straight edge, and means for moving said blades in succession past the ledger blade, thereby to first form the shingle tabs, and to afterwards remove the excess material formed by the slots of the ledger blade.

2. A machine for cutting from a web of roofing material shingle strips each having one edge provided with spaced reinforcing tabs, and having the other edge notched to provide shingle tabs, with the notches opposite the reinforcing tabs and of greater depth than the length of such tabs, comprising a ledger blade having a cutting edge notched to correspond with the shape of the reinforcing tabs and slotted at the bottom of the notches to form extensions to the notches, means for feeding a web of roofing material over the ledger blade, and cutter blades, one blade having its edge shaped to cooperate with the notched edge of the ledger blade, and the other having a straight edge, means for moving said blades in succession past the ledger blade, thereby to first form the shingle tabs, and

to afterwards remove the excess material formed by the slots of the ledger blade, the ledger blade comprising a body having spaced abutments, a punch and a pair of blades between each pair of adjacent abutments, the punch being between the blades, the blades being shaped to form the notches and the punch being shaped to form the slot, and means for detachably holding the blades and punches in place.

3. In a machine for cutting a web of roofing material into shingle strips each having one edge provided with spaced reinforcing tabs, and the other edge notched to form shingle tabs, the notches registering with the reinforcing tabs and being of greater depth than the length of the tabs, a ledger blade comprising a body having spaced abutments, and a punch and a pair of blades between each pair of adjacent abutments, the blades cooperating to form the notches, and the punches forming the slots, and means for removably holding the punches and the blades on the body.

4. In a machine for producing shingle units having spaced shingle tabs with narrowed ends and protecting tabs along the rear edge of the unit, the combination, with means for supporting a sheet of material, of a cutter having a cutting edge which conforms with the contour of the spaced shingle tabs, and arranged to cut the sheet transversely and to leave the material forming the spaces between the tabs and narrowed ends thereof attached to the sheet; and other cutting means for thereafter cutting from the sheet the waste material forming the spaces between the tabs but leaving the material resulting in the narrowed ends of the tabs attached to the sheet.

5. In a machine for producing shingle units having spaced shingle tabs with converging ends, the combination, with means for supporting a sheet of material, of a cutter having a cutting edge which conforms with the contour of the spaced shingle tabs, and arranged to cut the sheet transversely and to leave the material forming the spaces between the tabs and narrowed ends thereof attached to the sheet; other cutting means for thereafter cutting from the sheet the waste material forming the spaces between the tabs but leaving the material resulting in the narrowed ends of the tabs attached to the sheet; means for periodically operating said cutter and cutting means; and means for feeding said sheet synchronously with the cutter and cutting means.

6. In a machine for producing shingle units having along one edge narrow ended shingle tabs separated by slots and triangular tabs along the opposite edge, the combination with means for supporting a sheet of material, of a movable cutter having a cutting edge conforming in contour with that of the edge of the strip having the shingle tabs; a stationary cutting member to cooperate with the movable cutter, said cutter arranged to cut a unit transversely from said sheet, leaving attached thereto the material forming the slots between the tabs and the material forming the triangular tabs of the succeeding unit; other cutting means for cutting the waste material forming the spaces between the tabs, means for operating said cutters periodically, and means for feeding said sheet synchronously with the operation of said cutters whereby said sheet is cut at intervals to form said shingle units.

7. In a machine for producing shingle units having spaced shingle tabs along one edge and triangular tabs along the other edge, the combination with means for supporting a sheet of material, of a rotary cutter having a cutting edge conforming in contour with that of the edge of the strip having the shingle tabs, a stationary cutting member to cooperate with the rotary cutter; said cutter arranged to cut a unit transversely from said sheet, leaving attached thereto the material forming the spaces between the tabs and the material forming the triangular tabs of the succeeding unit; another rotary cutter coaxial with the other cutter but of a radius sufficient only to sever from the sheet the waste material forming the spaces between the tabs, means for operating said cutters periodically, and means for feeding said sheet synchronously with the operation of said cutters whereby said sheet is cut at the proper intervals to form said shingle units.

In testimony whereof I affix my signature.

ALEXANDER S. SPEER.