(No Model.) 2 Sheets—Sheet 1.

C. CUNO.

SHINGLE PAINTING MACHINE.

No. 444,902. Patented Jan. 20, 1891.

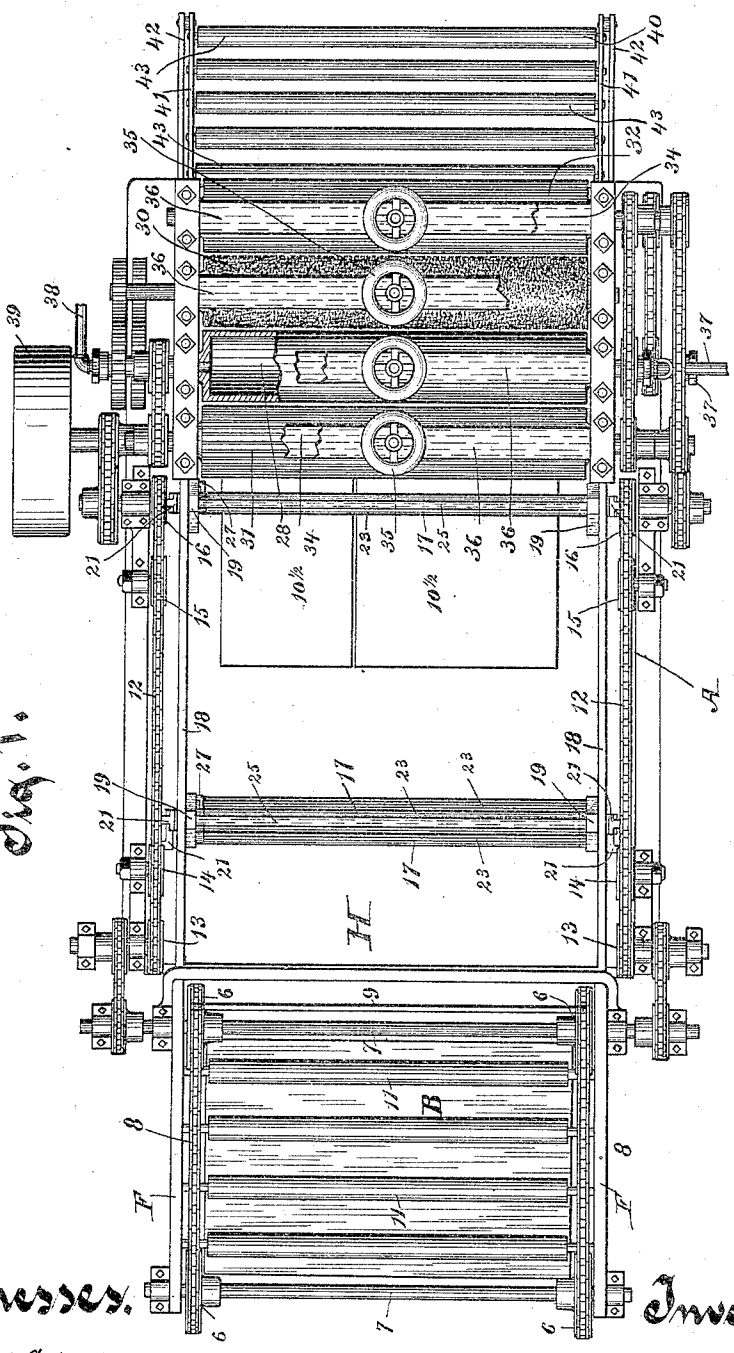

Fig. 1.

Witnesses.
A. F. Keeney.
Anna Faust.

Inventor
Charles Cuno
Ernest Benedict
Attorneys.

(No Model.) 2 Sheets—Sheet 2.

C. CUNO.

SHINGLE PAINTING MACHINE.

No. 444,902. Patented Jan. 20, 1891.

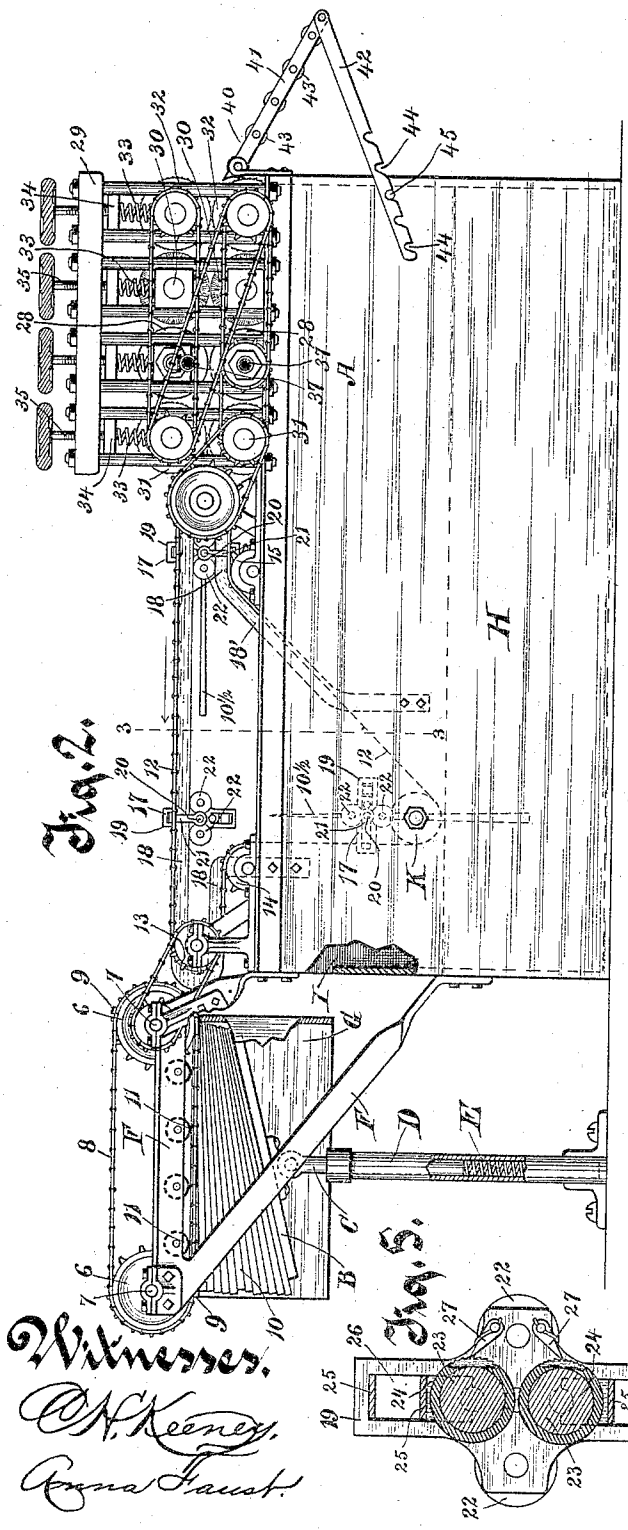

Fig. 2.

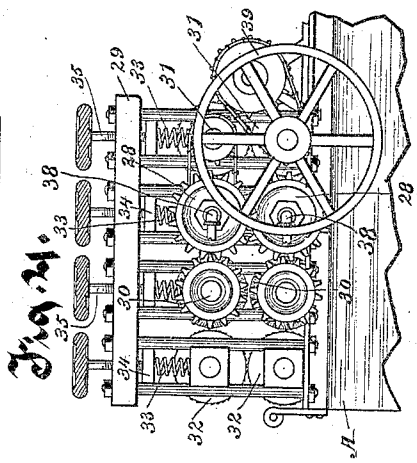

Fig. 4.

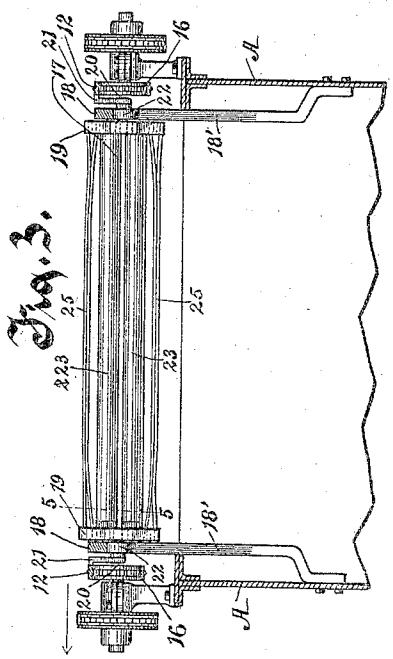

Fig. 3.

Fig. 5.

Witnesses.
O. F. Keeney.
Anna Faust.

Inventor.
Charles Cuno
Erwin Benedict
Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES CUNO, OF MILWAUKEE, WISCONSIN.

SHINGLE-PAINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 444,902, dated January 20, 1891.

Application filed February 12, 1890. Serial No. 340,147. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CUNO, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Shingle-Painting Machines; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to a machine which is adapted to support a supply of shingles and to take single layers therefrom automatically and paint them by dipping them in asphaltum or other proper coating material, and after removing the surplus asphalt or paint from them to deliver them in a pile at the tail of the machine.

In the drawings, Figure 1 is a top plan view of the machine, parts being broken away to show other portions. Fig. 2 is a side elevation of the same machine, parts being broken away to show interior construction. Fig. 3 is a side view of a portion of the device, taken as a cross-section on line 3 3 of Fig. 2, the part shown being the shingle gripping and carrying device in connection with its track and operating mechanism. Fig. 4 is an elevation of the opposite end of the same operative mechanism, shown immediately above it in Fig. 2. Fig. 5 is a cross-section of a part of the machine, taken on line 5 5 of Fig. 3.

A is a tank for holding a supply of asphalt or liquid paint in which to dip the shingles, which tank also serves as a frame or the base for a frame for supporting the other parts of the mechanism. A table B is pivoted in the top of a vertically-movable leg C, which leg C enters and moves vertically in the post D, wherein it is supported yieldingly by a spring E. The post D is fixed on the floor or other convenient support therefor. A frame F is bracketed on one end of the tank A, and a box G about the table B, which box is open at the top and bottom, is supported conveniently by being fastened to the bracketed frame F. Two sets of sprocket-wheels 6 6, arranged in pairs on axles 7 7 at a distance from each other, have their journal-bearings in the frame F, and carry sprocket-chains 8 8 thereon, one chain running on one set of the wheels at one side of the machine and the other chain running on the other set of wheels at the other side of the machine. Two transverse bars 9 9 are each rigidly secured at its ends to the two sprocket-chains, and are adapted as the chains are carried around the wheels 6 6 to engage a single layer of shingles and force it forward into a gripping device hereinafter to be described.

The table is adapted to receive and support a supply of shingles 10, arranged thereon in the form shown in Fig. 2—that is, with their thick ends all toward the front of the machine—and are held up by the spring E against a series of rollers 11 11, journaled in the frame F, in which position the top shingle is engaged by the advancing bar 9, and as the sprocket-chains 8 8 advance is forced rearwardly into the machine in a horizontal direction. The box G serves to retain the shingles 10 in place against movement laterally on the table B, but is so located and arranged that the top shingle when engaged by a bar 9 is carried over the top of the box.

A set of endless sprocket-chains 12 12, one on each side of the machine, run on sets of sprocket-wheels 13, 14, K, 15, and 16, which sprocket-wheels 13, 14, 15, and 16 are journaled in blocks fixed on the tank A, and the wheels K K are axled on bolts fixed in the sides of the tank, the sprocket-wheels 13 and 16 being in the same horizontal plane, and the sprocket-wheels 14 and 15 being in a common horizontal plane below the plane of the wheels 13 and 16. The sprocket-wheels K K are located in the tank just above the surface of the supply of asphalt or paint therein.

The sprocket-chains 12 12 carry several shingle-gripping devices 17 17, preferably three, which devices are provided with anti-friction wheels, which travel a considerable portion of their route on tracks 18 18 therefor, one on each side of the machine, which tracks are affixed to the tank A. At one end the tracks are secured to the tank below and about midway between the sprocket-wheels 14 and 15; and thence run upward and rearwardly, forming inclines 18′ 18′, to a point about opposite the sprocket-wheels 15 15, and thence rearwardly horizontally to just beyond

the sprocket-wheels 16 16, curving upwardly and forwardly at that point, extending thence in a horizontal plane to a little beyond the sprocket-wheels 13 13, and there curving downwardly and extending rearwardly therefrom to a point about opposite the sprocket-wheels 14 14, where they terminate, leaving a space between their two ends, in which space the gripping devices 17 17 are supported in their travel only on the sprocket-chains 12 12, running around the sprocket-wheels K K.

The shingle-gripping device consists of two head-blocks 19 19, having outwardly-extending gudgeons 20 20, journaled in arms 21 21, which arms are secured rigidly to the sprocket-chains 12 12. A pair of anti-friction or traveling wheels 22 22, located one on each side of the gudgeon 20, are axled on pins therefor inserted in each of the head-blocks 19. Two parallel rotatable gripping-rollers 23 23, located near to each other, are journaled in blocks 24 24, movable in recesses 26 26 therefor in the head-blocks 19 19. Two pairs of elliptical springs 25 25 have their ends inserted in the slots 26 26 and bear against the blocks 24 24, which move in the slots 26 26 and hold them yieldingly up to their work. Pawls 27 27, pivoted on the head-blocks 19 19, engage ratchets on the ends of the rotatable rollers 23 23 and prevent their rotation except in one direction.

It will be understood that the sprocket-chains 12 12 travel at the top in the horizontal plane toward the left, as indicated by the arrow, and that when a gripping device 17, traveling therewith, is alongside of any portion of the tracks 18 the wheels 22 22 bear against the horizontal tracks and keep the gripping device in such position that the longer axis of the head-blocks 19 19 will be at right angles to the horizontal portions of the track, except only while the device is opposite the inclines 18′, when the head-blocks will be at right angles thereto. By this construction, when a gripping device reaches the end of the track at the left and the arms 21 21 are carried around the sprocket-wheels 13 13, the gripping-bars remain temporarily at rest one above the other, as shown in Fig. 3, while the arms 21 21 are being carried around the sprocket-wheels 13 13 from their horizontal travel above to their horizontal reverse travel below. It will also be understood that as the gripping device traveling with the sprocket-chains 12 12 reaches its extreme travel toward the left, the mechanism being properly arranged and constructed therefor, a shingle is forced forward from the table B and is thrust between the rollers 23 23 a portion of its length, and that as the gripping device travels toward the right the shingle is carried with it in a horizontal position until the gripping device runs off the end of the track opposite the sprocket-wheels 14 14, and is carried downward into the tank by the chains running around the sprocket-wheels K K, the rollers 23 23 in the meantime turning under the weight of the heavier end of the shingle, so that this end of the shingle goes down into the asphalt or paint H in the tank, and that part of the shingle is thereby coated or painted, and the gripping device and shingle being carried forward by the sprocket-chains the gripping device directly comes in contact with the inclined parts 18′ of the track, when the wheels 22 22, bearing against the track, will tilt the shingle and the gripping device over forwardly, so that when the gripping device comes to the horizontal part of the track, commencing opposite the sprocket-wheels 15 15, the shingle will again assume a horizontal position and will be carried horizontally until the gripping device has reached the extreme travel of the sprocket-chain to the right, at which time the thin forward end of the shingle will have been thrust between two feed-rollers in the frame carrying the heating and brushing devices hereinafter to be described, which feed-rollers will seize the shingle and pull it forward away from the gripping device. The top of the left-end wall of the tank is removed down to a point I, as shown in Fig. 2, to give ample room for the thick heavy end of the shingle to drop into the tank.

Two parallel hollow steam-drums 28 28, one above the other, are journaled in blocks in a frame 29, fixed on the tank A. Two rotating parallel brushes 30 30, one above the other and located just in the rear of the steam-drums 28 28, are journaled in blocks therefor in the frame 29. Two sets of parallel rotating feed-rollers 31 31 and 32 32, one roller of each set being above the other roller of the same set, and one set being in front of the steam-drums and the other at the rear of the brushes, and are journaled in blocks therefor in the frame 29. The journal-blocks of the upper rollers 31 and 32 of the upper steam-drums 28 and of the upper brush 30 are movable vertically in the frame 29, and are held yieldingly to their work by sprinsg 33 33, inserted between the journal-blocks and vertically-movable cross-bars 34 34, arranged one above each set of journal-blocks, which cross-bars are held adjustably to their work by set-screws 35 turning against them through cross-beams 36 36, fixed in the frame 29. The steam-drums are supplied with steam through the pipes 37 37, which steam is discharged therefrom through pipes 38 38, all which pipes are connected with the steam-drums by movable joints, so as to permit the rotation of the steam-drums. The shaft of the lower feed-roller 31 is provided with a driving-band pulley 39. The shafts of the uppper and lower steam-drums are geared to the shafts of the upper and lower brushes, respectively, and otherwise the mechanism is connected together mechanically operatively by sprocket wheels and chains, as follows: the shaft of the lower feed-roll 31 to the shafts of the sprocket-wheels 16 16 and the sprocket-wheels 16 16 to the sprocket-wheels 13 13, and the shafts of the sprocket-

wheels 13 13 to one of the axles 7 and that axle to the other axle 7; also, the shaft of the lower feed-roll 31 to the shaft of the lower feed-roll 32 and the shaft of the lower feed-roll 32 to the shaft of the upper feed-roll 31, the upper feed-roll 31 to the upper feed-roll 32, the upper feed-roll 31 to the upper steam-drum 28, and the lower feed-roll 32 to the lower steam-drum 28.

A swinging adjustable apron or tail-board 40 is provided, consisting of the swinging side rails 41 41, hinged at one end to the upper edge of the tank at its rear end, the swinging adjusting-arms 42 42, hinged at one end to the outer ends of the side rails 41 41 and the series of transverse idle-rollers 43 43, journaled in the side rails 41 41. The arms 42 42 are provided with racks 44 44, adapted to engage pins 45, inserted in the sides of the tank. This apron is adapted for carrying the shingles away from the machine, and it may be raised or lowered to such extent as is provided for by the adjusting-arms 42 42. The shingles 10½ 10½ (shown and indicated in dotted lines in the gripping devices) illustrate the positions of the shingles at the points at which they are shown as they pass through the machine.

It will be understood that the steam-drums being supplied constantly with live steam will reduce the paint on the shingles to a very thin liquid form, and the pressure of the drums against the shingles as the shingles pass between them will force the paint into the crevices and depressions in the surfaces of the shingles, and that the brushes thereafter will distribute or remove any possible surplus paint on the shingles as they pass between the brushes.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a shingle-painting machine, a shingle-holding table hinged in the top of a vertically-moving leg supported and guided in a fixed post and held up to its work yieldingly by a spring, substantially as described.

2. In a shingle-painting machine, the combination, with a vertically-moving shingle-holding table, of a surrounding box or guard, substantially as described.

3. In a shingle-painting machine, the combination, with a vertically-moving shingle-holding table held yieldingly upward, of a set of sprocket-chains carried on wheels, the chains being located above the shingle-holding table and provided with transverse bars arranged and adapted to engage a single shingle or layer of shingles and force the same forward as the sprocket-chains travel, substantially as described.

4. In a shingle-painting machine, a set of endless sprocket-chains carried on sprocket-wheels in and above a liquid-holding tank, and a track extending parallel with the sprocket-chains through a portion of their course, in combination with shingle-gripping devices suspended on the sprocket-chains and guided by the track throughout its length, and at a part of the course of the chains where the track does not exist being carried with the chains below the track and near to the liquid in the tank, substantially as described.

5. In a shingle-painting machine, a set of sprocket-chains carried on wheels in and above a liquid-holding tank, in combination with gripping devices pivoted at distances apart on the sprocket-chains, and a track extending alongside the sprocket-chains throughout their course, except for a short distance in a lower part thereof, on which track the gripping devices are guided and held in a vertical position when traveling alongside, the gripping devices being so constructed as to tilt a part of a revolution by the gravity of their loads when not supported and guided by the track, substantially as described.

6. In a shingle-painting machine, a track having an upper horizontal line recurved at its ends and lower horizontal lengths, and an incline 18′, the track being omitted for a certain portion of the distance of its lower horizontal line between the extreme horizontal length of the track, in combination with endless sprocket-chains running parallel with the track throughout its course and dropping below the line of the track at the point in its course of the absence of the track, and gripping devices carried on the chains, which devices are provided with wheels that bear against the track while traveling alongside thereof, substantially as described.

7. In a shingle-painting machine, a gripping device secured to and carried on endless sprocket-chains, consisting of head-blocks 19 19, journaled in arms 21 21, wheels 22 22, axled on the head-blocks, and gripping-rollers 23 23, supported movably and yieldingly in the head-blocks, substantially as described.

8. In a shingle-painting machine, the combination, with a set of endless sprocket-chains and tracks running parallel thereto through a portion of the course of the chains, of head-blocks 19 19, carrying yielding gripping-rollers 23 23 and journaled in arms 21 21, affixed to the sprocket-chains, and wheels 22 22, axled on pins inserted in the head-blocks and arranged to travel on the tracks and support the head-blocks in a desired position with reference thereto, substantially as described.

9. In a shingle-painting machine, an upper and lower revolving steam-drum and an upper and lower revolving brush arranged parallel to each other, the steam-drums being provided with pipes for supplying them with steam, the drums and the brushes being held yieldingly near to each other, in combination with two sets of feed-rolls, one set before and the other set following the steam-drums and brushes, substantially as described.

10. In a shingle-painting machine, the combination, with endless sprocket-chains carrying devices arranged to grip one or more shingles and carry them forward into and out of

a liquid-holding tank, of an independent set of sprocket-chains arranged above an automatically vertically-moving table, which independent sprocket-chains are provided with cross-bars, whereby they are adapted to feed shingles to the gripping devices automatically, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES CUNO.

Witnesses:
C. T. BENEDICT,
ANNA FAUST.