July 18, 1933. H. E. GOSCH 1,918,534

MACHINE FOR APPLYING PAINT OR THE LIKE TO SHINGLES, ETC

Filed Oct. 16, 1930 5 Sheets-Sheet 1

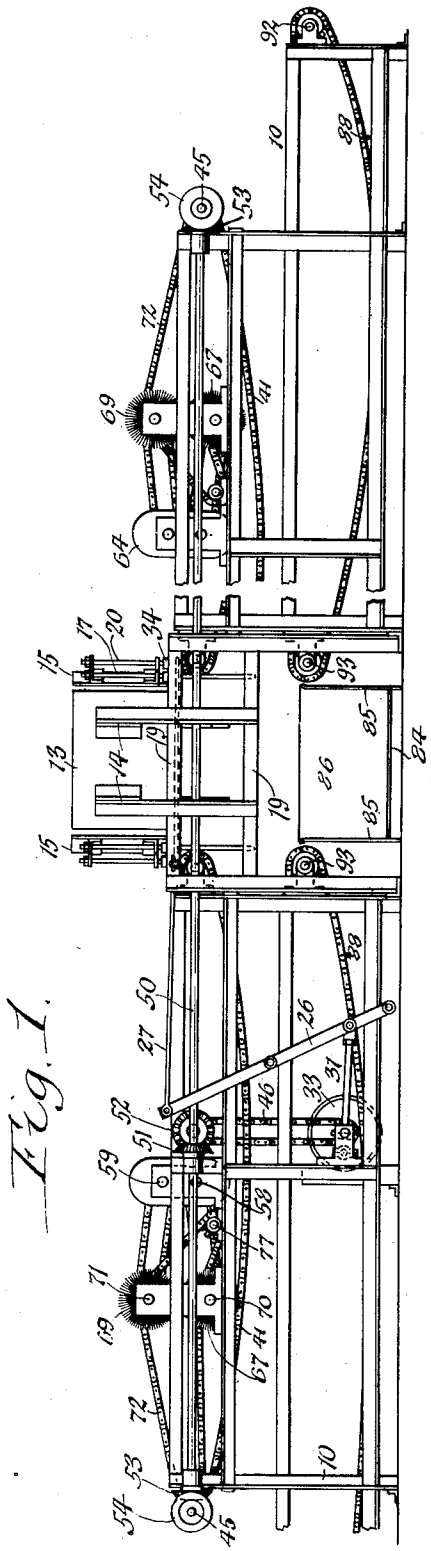

Fig. 1.

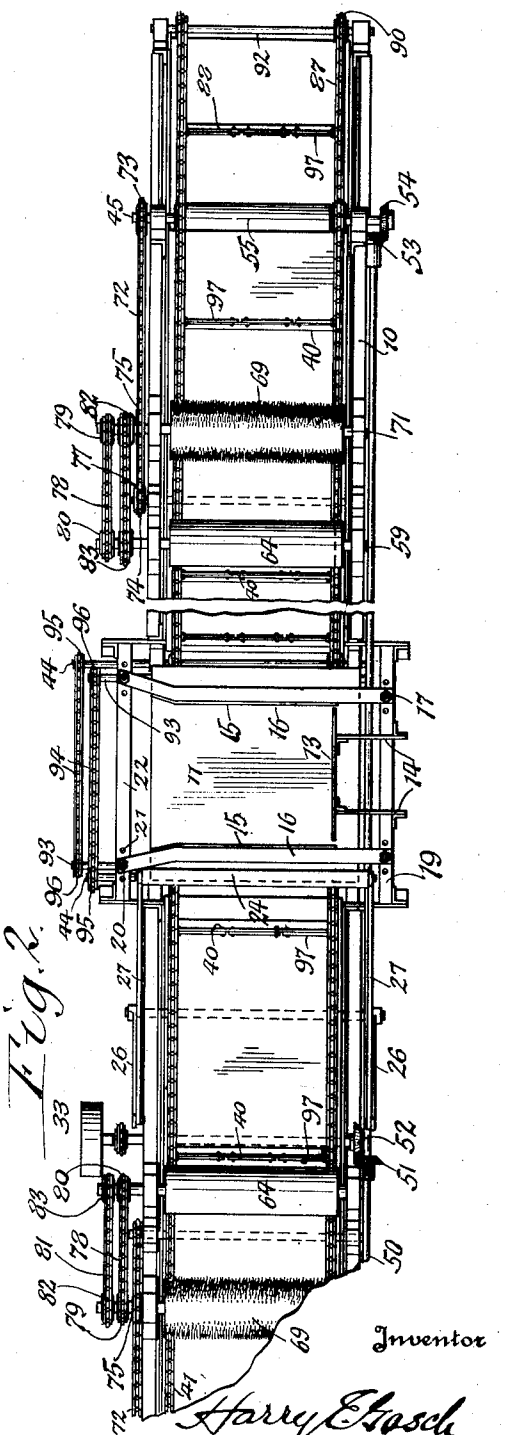

Fig. 2.

Inventor

Harry E. Gosch

By Poole & Powers

Attorneys

July 18, 1933. H. E. GOSCH 1,918,534

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Filed Oct. 16, 1930 5 Sheets-Sheet 2

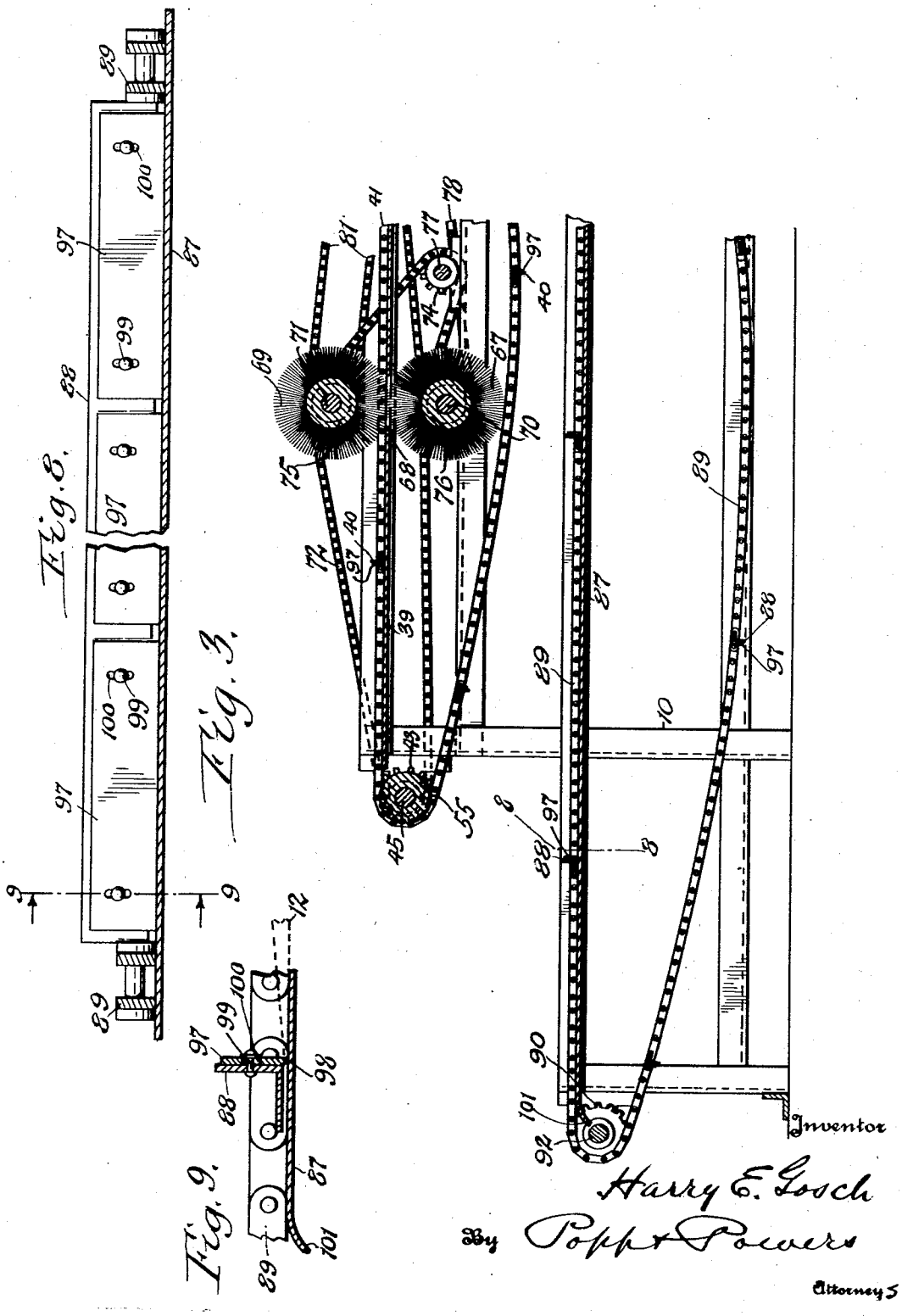

Fig. 8.

Fig. 9.

Fig. 7.

Inventor
Harry E. Gosch
By Popp & Powers
Attorneys

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MACHINE FOR APPLYING PAINT OR THE LIKE TO SHINGLES, ETC

Filed Oct. 16, 1930 5 Sheets-Sheet 3

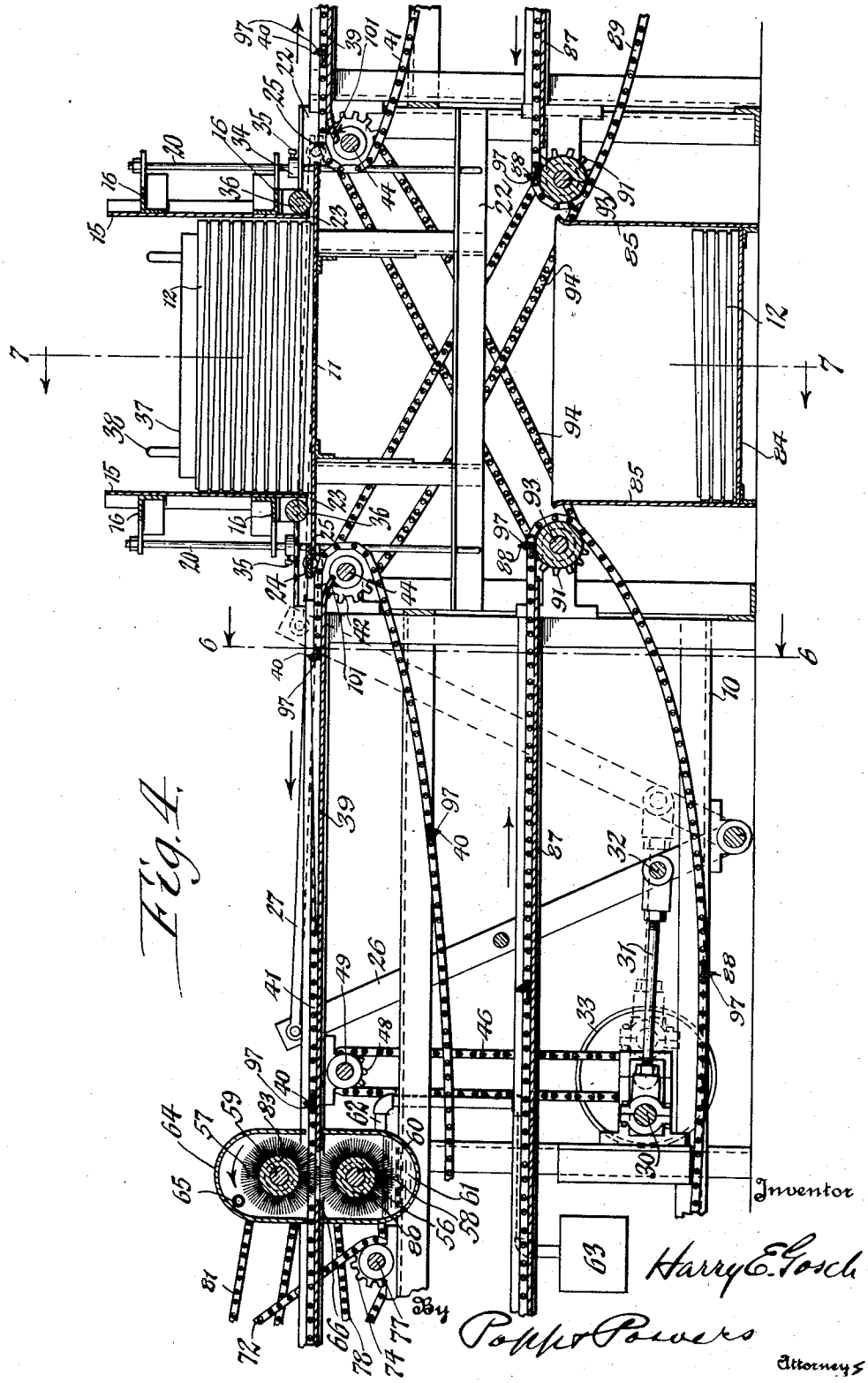

Fig. 4.

Inventor
Harry E. Gosch
By Pollock Powers
Attorneys

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MACHINE FOR APPLYING PAINT OR THE LIKE TO SHINGLES, ETC

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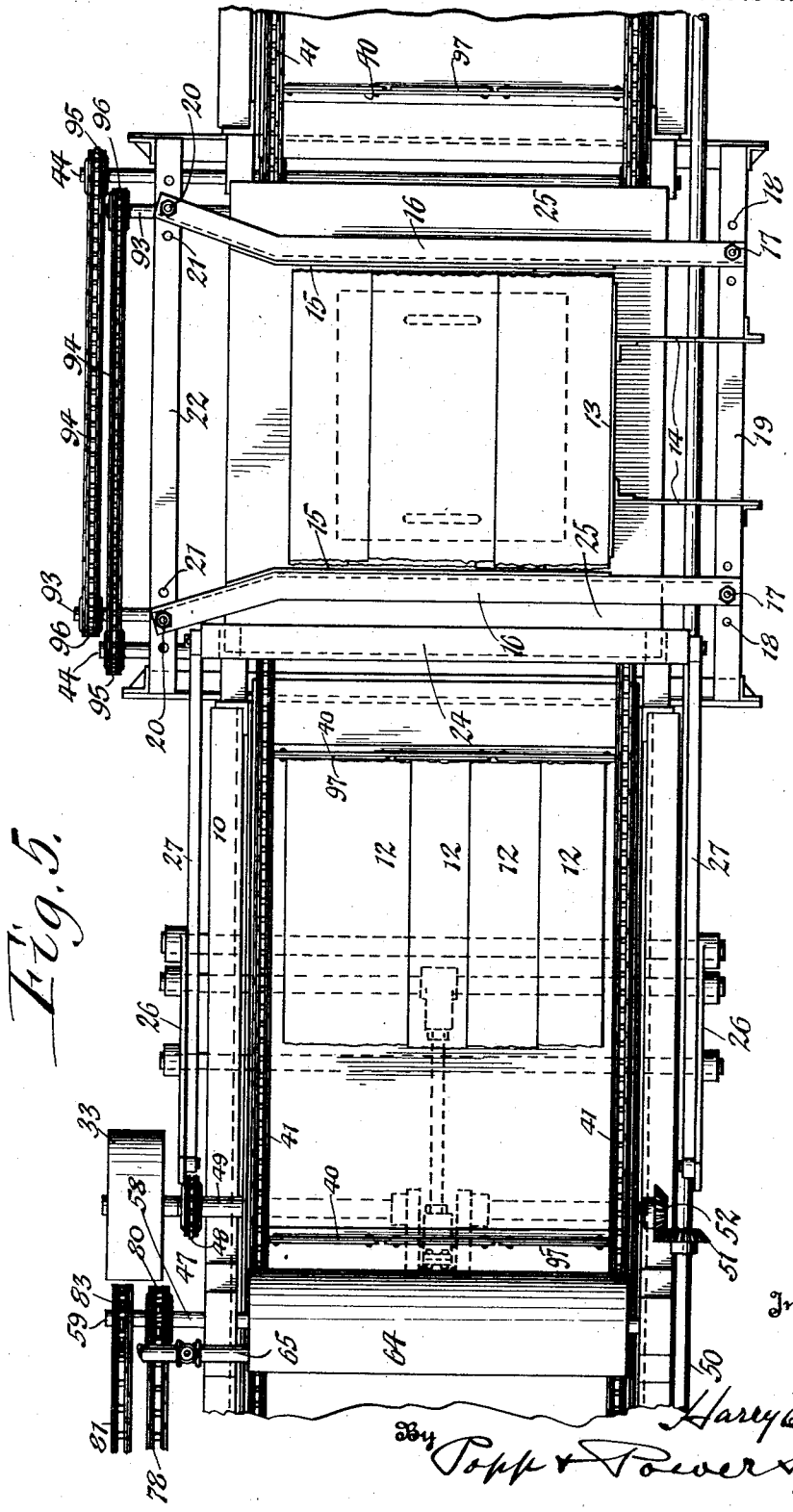

Fig. 5.

Inventor
Harry E. Gosch
By Popp & Power
Attorneys

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MACHINE FOR APPLYING PAINT OR THE LIKE TO SHINGLES, ETC

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Fig. 7.

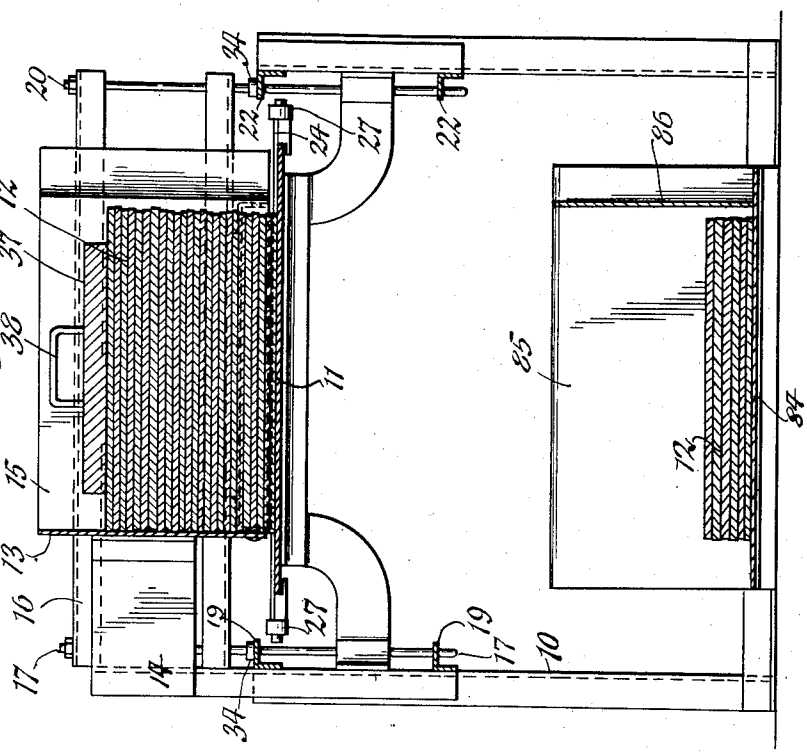
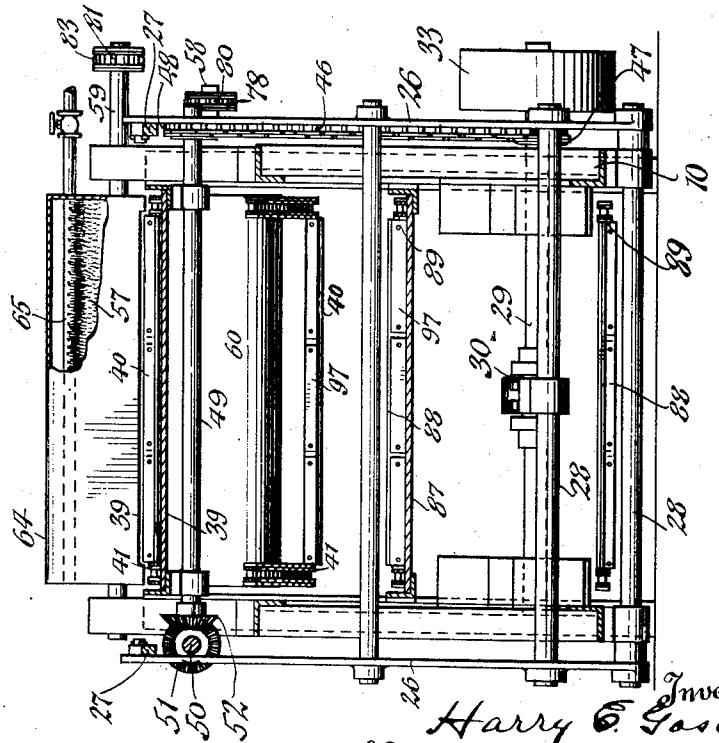


Fig. 6.



Inventor
Harry E. Gosch
By Popp & Powers
Attorneys

Patented July 18, 1933 1,918,534

UNITED STATES PATENT OFFICE

HARRY E. GOSCH, OF NORTH TONAWANDA, NEW YORK, ASSIGNOR TO CREO-DIPT COMPANY INC., OF NORTH TONAWANDA, NEW YORK, A CORPORATION OF NEW YORK

MACHINE FOR APPLYING PAINT OR THE LIKE TO SHINGLES, ETC.

Application filed October 16, 1930. Serial No. 489,123.

This invention relates to a machine for painting, staining or preserving shingles with a liquid such as paint, stain or preservative, and more particularly to a machine whereby shingles are fed from the usual form of bundle in opposite directions to painting devices and then re-assembled in the same position which they occupied in the original bundle, thereby facilitating the cost of painting the shingles and packing them again ready for the trade.

It is the object of this invention to provide a machine for this purpose whereby these operations are effected efficiently, expeditiously and economically and by means which are compact and therefore enable the machine to be installed where a limited amount of space is available.

In the accompanying drawings:

Figure 1 is a fragmentary rear elevation of a machine embodying a practical organization of my improvements.

Figure 2 is a top plan view of the same.

Figure 3 is a fragmentary vertical longitudinal section of one end of the machine, showing the upper and lower conveyor mechanisms and the painting and smoothing means associated with the upper conveyor mechanism.

Figure 4 is a fragmentary vertical longitudinal section of the central part of the machine showing more particularly the means whereby successive courses of shingles are fed off from the underside of a pile and delivered to the means whereby the paint, stain or other liquid is applied to the shingles; also part of the means for re-assembling or stacking the shingles in a pile preparatory to again bundling them for the trade.

Figure 5 is an enlarged view of a portion of Fig. 2.

Figures 6 and 7 are vertical transverse sections taken on the correspondingly numbered lines in Fig. 4.

Figure 8 is a cross section, on an enlarged scale, taken on line 8—8 Fig. 3.

Figure 9 is a vertical longitudinal section taken on line 9—9 Fig. 8.

In the following description similar characters of reference indicate like parts in the several figures of the drawings.

The numeral 10 represents the main frame of the machine which may be of any suitable construction to support the various working parts of the mechanism.

In its general organization the mechanism of this machine comprises means for successively feeding courses of shingles from the underside of a pile in opposite directions, two paint applying devices which are arranged on opposite sides of the shingle feeding mechanism and which operate to apply the liquid paint, stain or preservative or the like to the shingles, two smoothing devices arranged beyond the painting devices and adapted to smooth out the paint or stain which has been applied to the shingles, and reassembling or stacking means whereby the shingles after being treated with the paint, stain or preservative are again re-assembled in the form of a pile preparatory to being bound together in the form ready for distribution to the trade.

The shingle feeding mechanism is arranged on the upper central part of the main frame and constructed as follows:

The numeral 11 represents the horizontal bottom of a feed box in which a pile of shingles 12 is arranged in a loose or unbound condition and in the same relative position which they occupy when bundled in the factory. When bundled in this manner the shingles are arranged in superposed layers or courses, each course containing one or more shingles and the shingles of successive courses having their inner thin end overlapping one another while their thick ends are on the opposite or outer ends of the bundle.

Although this machine is more particularly intended for painting, staining or impregnating with a preservative shingles which are thick at one end and gradually taper or thin out to the opposite edge, the same is also capable of use for treating shingles which are of uniform thickness throughout and also treating other flat or sheet-like objects of a similar character.

The front side of the feed box which is adapted to contain the pile of shingles which

are to be fed from the machine is open to permit the operator to readily introduce additional shingles into this box as the pile become depleted and requires replenishing, but the rear side of the same is closed by means of an upright longitudinal rear wall 13 which is supported on the main frame by brackets 14, and transverse side walls 15 which are preferably made adjustable lengthwise of the machine in order to adapt the shingle feeding box to bundles of shingles which vary in length. For this purpose the upper and lower parts of these side walls are secured to the inner sides of two pairs of transverse supporting bars 16, which latter are connected at their rear ends respectively to upright rods 17 adapted to engage with one or another of two series of openings 18 arranged in longitudinal rows in bars 19 on the rear part of the main frame, while their front ends are secured to upright rods 20 adapted to engage with one or another of two series of openings 21 arranged in longitudinal rows in longitudinal bars 22 on the adjacent part of the main frame. The front ends of the bars 16 are preferably arranged at an angle relatively to each other and diverge forwardly, thereby forming a flaring entrance at the front side of the shingle feeding box which enables the operator to introduce new shingles into the same with greater facility.

When it is desired to increase or decrease the width of the shingle feeding box the rods 17 and 20 of the bars 16 are shifted into the appropriate openings of the two rows 18 and 21 to suit the length of the bundles of shingles which are being treated, but the rear wall is not shifted inasmuch as the bundles of shingles as a rule do not vary in width but only in length.

The lower edge of each of the side walls 15 of the shingle feeding box is spaced apart from the bottom 11 by an intervening throat, gap or outlet passage 23 through which the lowermost course of shingles in the pile within the feeding box is moved outwardly from the latter by a feeding-off mechanism, after which the respective course of shingles is operated upon by one of the painting devices, as will presently appear.

This feeding-off device may be variously constructed but in the preferred construction, best shown in Figs. 4 and 5, the same comprises a feed bar 24 which is arranged transversely of the feed box bottom 11 and is reciprocated lengthwise of the latter so as to pass back and forth across the lower end of the feed box and the outlet passages 23 at the lower ends of its side walls, and terminates at opposite ends of its stroke adjacent to the opposite outer sides of said side walls. For the purpose of retaining this feed bar constantly in engagement with the upper side of the bottom 11 or close thereto said bottom is extended at its opposite ends a sufficient distance beyond the outer sides of the side walls 15, as shown at 25 in Fig. 4. A reciprocating motion is imparted to this feed bar in a direction lengthwise of the machine and across the lower end of the feed box by an operating mechanism which preferably comprises two upright rock levers or arms 26 arranged on opposite sides of the main frame and connected at their upper ends respectively with the opposite ends of the feed bar 24 by means of shifting rods 27, a transverse rock shaft 28 journaled in suitable bearings on the lower part of the main frame and connected with the lower ends of the rock levers 26, a transverse crank shaft 29 journaled in suitable bearings on the lower part of the main frame and provided with a crank 30 which is connected by means of a pitman 31 with the lower parts of the rock levers 26 by means of a cross rod 32, and a driving pulley 33 which is connected with one end of the crank shaft and adapted to receive power from any suitable source through the medium of any suitable transmitting means which in the present case would include a driving belt passing around the driving pulley 33.

This operating mechanism for the feed bar 24 is so timed that as the same moves in one direction from a point adjacent to the outer side of one of the side walls 15 of the feed box across the lower end of the feed box and to the opposite side of the same, this feed bar will engage the thick ends of the shingles in the lowermost course on the underside of the pile in the feed box, thereby moving this course with the thin ends of its shingles foremost from the underside of the supply stack through the feed passage 23 below the opposite side wall 15, and leave them wholly outside of the last-mentioned side wall, in a position to be subsequently operated upon by a conveyor which continues the movement of the respective course of shingles for presentation to the painting device on the respective side of the feed box. In the meantime the pile of shingles has dropped by gravity in the feed box so that the next following upper course of shingles is now lowermost and rests upon the bottom 11 thereof, and presents the thick ends of the lowermost course which is arranged reversely to those in the preceding course so that when the feed bar effects the next following stroke of its reciprocating movement in the opposite direction this feed bar will engage the thick ends of the shingles in the lowermost row or course and push the same from underneath the pile in the feeding box and outwardly through the opposite outlet passage 23, and leave them wholly outside of the respective side of the feeding box when the feed bar completes its stroke in the last-mentioned direction, so that this course of shingles will be

in a position to be engaged by another conveyor mechanism which transmits the same to the painting device on the corresponding side of the feeding box.

The feed bar therefore, during the continued operation of the machine while reciprocating across the lower end of the feeding box, pushes or feeds off the several courses of shingles successively from the lower end of the pile and causes these courses to be moved away from the underside of the pile alternately in opposite directions by first engaging the thick end of one course of shingles while moving in one direction and then engaging the thick end of the next course of shingles while moving in the opposite direction, and in all cases causing the shingles to always move with their thin ends foremost.

In order to prevent more than one course of shingles at a time from being fed off from the bottom of the pile through one of the outlet passages 23, this passage initially at the beginning of the movement of a course of shingles through the respective passage is made sufficiently shallow or narrow that only the thin edge of the lowermost course of shingles can enter the same and thereby cause the respective side wall of the feed box to hold back the next upper course of shingles and prevent the same from being fed off with the lowermost course of shingles. Inasmuch, however, as the shingles gradually become thicker from the thin ends toward the thick ends of the same, means are provided for permitting each of the side walls to rise under the wedging effect of the tapering shingles, and when the thick end of the respective course of shingles has passed outwardly beyond the respective side wall, then the latter again drops by gravity into its lowermost position so as to permit only the thin end of a course of shingles to initially enter the same.

The preferred means for accomplishing this purpose consists in arranging a pair of bars 19, 19 above one another and a pair of bars 22, 22 one above the other and extending the lower ends of the rods 17 and 20 and engaging the same slidingly with openings 18 in the upper and lower bars 19, 19 and openings 21 in the upper and lower bars 22, 22 so that these bars are capable of moving vertically in these openings in harmony with the rising and falling movement of the respective side walls 15 in response to the wedging effect of the shingles against the lower ends of these walls and the force of gravity after the course of shingles have passed outwardly beyond these walls.

The downward movement of these side walls is limited so as to leave a narrow passage between the lower end of each of these walls and the bottom 11 of the feed box by means of stops 34 arranged on the rods 17 and 20 and engaging with the upper frame bars 19 and 22. These stops are preferably made in the form of collars and in order to permit of adjusting the height or width of the outward passages 23 to the thickness or character of the shingles which are being operated upon, these collars are made adjustable on the guide rods 17 and 20 by means of set screws 35 arranged on the stop collar 34 and engaging with the guide rods 17 and 20 respectively.

In order to permit the courses of shingles which are being fed off to lift the side walls 15 without undue friction and wear each of these side walls is provided adjacent to its lower edge and on the outer side thereof with an anti-friction roller 36 which is engaged by the upper side of the course of shingles passing underneath the respective side wall, thereby facilitating the discharge of the shingles and reducing the amount of power required for this work as well as avoiding undue wear.

When the pile of shingles in the feed box is comparatively high sufficient pressure is exerted upon the lowermost course of shingles to hold the latter reliably in place and thereby enable the feed bar 24 to engage the thick ends thereof and feed the same properly from the underside of the pile to one side of the feed box. As the pile of shingles in the feed box becomes depleted this pressure is reduced and in order to compensate for the reduction in pressure and insure positive feeding off of the lowermost course of shingles at all times, a weight 37 is provided which is placed on top of the feed pile. This weight can be lifted off the pile of shingles in the feed box and again replaced when additional shingles have been placed therein by means of handles 38 or any other suitable means.

As the courses of shingles are fed successively from the underside of the pile and discharged alternately in opposite directions beyond the side walls thereof, these courses of shingles are deposited upon two horizontal supporting or guiding tables 39, 39 which extend lengthwise of the machine from opposite sides of the outlet ends of the bottom 11 of the feed box and thereafter each course of shingles deposited upon these tables is moved outwardly along the respective supporting table by a conveyor mechanism which first presents the same to a liquid applying device which deposits paint, stain or preservative thereon, and then presents the same to a smoothing device which operates to distribute the liquid thus applied uniformly over the shingles.

The conveyor device for this purpose associated with each of the supporting tables 39 and the respective paint-applying device and smoothing device may be variously constructed but in the preferred form the same includes a plurality of conveyor bars 40 which

in their operative position are arranged transversely over the upper side of the supporting table 39 and move lengthwise of the latter, and two endless belts 41, preferably of the chain type, arranged on opposite sides of the supporting table and connected with opposite ends of the feed bars 40. The receiving turns of these conveyor belts 41 pass around receiving sprocket wheels 42, as shown in Fig. 4, arranged adjacent to the receiving ends of the tables 39, and the delivery turns of these belts pass around delivery sprocket wheels 43 arranged adjacent to the outer or delivery ends of the tables 39, as shown in Fig. 3. The receiving sprocket wheels are mounted on transverse shafts 44 journaled in suitable bearings on the adjacent parts of the main frame, and the delivery sprocket wheels 43 are also mounted on transverse shafts 45 journaled in suitable bearings on the outer end portions of the main frame.

Motion for driving each conveyor is derived from the main driving shaft 28 and transmitted to this conveyor by means of a chain belt 46 passing around a lower sprocket wheel 47 on the driving shaft, and an upper sprocket wheel 48 and a transverse shaft 49 journaled on the upper part of the main frame, a longitudinal countershaft 50 journaled in bearings on the outer side of the upper part of the main frame and provided with a beveled gear wheel 51 which meshes with another beveled gear wheel 52 on the upper transverse shaft 49, and a pair of intermeshing bevel gear wheels 53, 54 mounted on the countershaft 50 and the adjacent end of the outer conveyor shaft 45, as best shown in Figs. 1, 2, 4 and 6.

As each row or course of shingles is ejected through one of the discharge passages 23 of the feeding box by the feeding bar 24, this course is deposited upon the inner receiving end of the respective supporting table 39. Thereafter the next following conveyor bar 40, when sweeping over the top of this table, engages with the rear or thick end of this course of shingles and moves the same lengthwise outwardly over the top of the table and successively past the paint applying and paint smoothing devices and then discharges the same from the rear or outer end of this supporting table where the delivery shaft 45 is provided with a roller 55 to facilitate the proper discharge of this course of shingles from the respective end of this table.

After each conveyor bar 40 has thus delivered a row or course of shingles from the outer or discharge end of the table 39 the same is carried idly along the underside of the feed table back to the inner or receiving end of this table by means of the lower stretches of the conveyor belts 41, which latter also move with their lower or idle stretches along the underside of the table.

Any suitable form of device may be utilized for applying the liquid paint, stain or impregnant to the shingles as they pass over the upper supporting table 39, but the form of this device which is shown in the drawings has been found satisfactory in practice and the following description applying to one of these devices will therefore apply to both of those shown in the drawings associated with each of the supporting tables 39 on opposite sides of the shingle feeding box:

The numeral 56 represents a lower rotary liquid applying brush arranged below the upper side of the upper supporting table 39 at a suitable distance from the respective side of the shingle feed box and projecting upwardly through an opening 66 therein, and 57 represents an upper rotary liquid applying brush arranged above the upper side of the table but vertically in line with the lower brush 56. The lower brush is mounted on a transverse shaft 58 journaled in bearings on the main frame and the upper brush 57 is mounted on a transverse shaft 59 journaled in bearings on the main frame.

As the shingles are fed forwardly and outwardly over the supporting table 39 by the upper conveyor mechanism the same pass between the opposing parts of the lower and upper brushes 56 and 57, and during this time these brushes apply liquid paint, stain or impregnant to opposite sides of the course of shingles. The liquid for this purpose is preferably supplied to the lower brush by a tank 60 which encloses the lower brush and is mounted on the adjacent part of the main frame and contains a body of treating liquid 61 in its lower part, which is supplied thereto in any suitable manner.

The liquid 61 in this tank 60 is preferably maintained at a substantially uniform level and for this purpose an overflow pipe 62 is provided which communicates with the tank 60 at a predetermined point, preferably below the axis of the shaft 56, which over-flow pipe leads to a catch basin 63 so that any liquid supplied to the tank 60 in excess of that required for maintaining the predetermined level will escape therefrom and flow into the catch basin 63 from which latter the liquid can be returned to the tank 60 by the operator in any desired manner.

The upper liquid applying brush 57 is preferably enclosed in a hood 64 and the treating liquid is supplied thereto by a perforated pipe 65 arranged within the upper part of the hood 64 and adapted to deliver a fine spray of treating liquid to the upper brush, as best shown in Figs. 4 and 6.

The lower and upper brushes are preferably so operated that their opposing parts move in a direction opposite to the direction of movement of the course of shingles as they are carried over the upper supporting table 39 by the respective conveyor mechanism,

thereby causing the brushes to apply the liquid regularly and thoroughly and also avoiding displacement of the course of shingles relative to the conveyor bars 40.

In order to spread out the liquid uniformly and evenly over the entire opposite surfaces of the course of shingles and produce a smooth or finished effect on the same, a smoothing device is provided which preferably consists of a lower rotary brush 67 arranged transversely below the supporting table 39 and projecting with its upper part through an opening 68, and an upper rotary smoothing brush 69 arranged transversely over the table vertically in line with the lower brush 67. As each course of shingles leaves the liquid applying device the same is moved with its thin end foremost between the opposing parts of the lower and upper smoothing brushes, which latter are so operated that their opposing parts move backwardly or in a direction opposite to the advancing movement of the shingles, whereby the paint, stain or preservative or other liquid applied to the shingles is brushed out evenly and smoothly so as to present a finished and uniform appearance.

Various means may be provided for turning the liquid applying brushes and the smoothing brushes but those shown in the drawings will answer the purpose, and as there shown the same are constructed as follows:

The lower brush 67 is mounted on a transverse shaft 70 and the upper brush 69 is mounted on a transverse shaft 71, both of which shafts are mounted in suitable bearings on the main frame.

The numeral 72 represents a belt preferably of the chain type which passes with its outer turn around the sprocket wheel 73 on one end of the delivery shaft 45, while its inner turn passes around an idle sprocket wheel 74, its upper stretch passes over a sprocket wheel 75 on one end of the shaft 71 and its lower stretch passes over a sprocket wheel 76 on one end of the shaft 70. The sprocket wheel 74 is secured to one end of a transverse shaft 77 which is journaled on the main frame.

Motion is transmitted from the shaft 70 of the lower smoothing brush 67 to the shaft 58 by means of a chain belt 78 passing around sprocket wheels 79 and 80 which are secured respectively to the corresponding ends of the shafts 70 and 58, and motion is transmitted from the shaft 71 of the upper smoothing brush to the shaft 59 of the upper liquid applying brush by means of a chain belt 81 passing around sprocket wheels 82 and 83 secured respectively to the corresponding ends of these shafts.

After the courses of shingles have been thus treated with paint or the like by the two liquid applying devices on opposite sides of the feed box and this liquid has been smoothed thereon for finishing the surface of the shingles, then the two sets of shingles which are discharged from opposite ends of the upper supporting tables 39 by the conveyors associated therewith are again assembled or stacked in a pile in the same relative position in which the same were arranged relatively to each other in the feeding box, so as to facilitate re-packing of the bundles ready for distribution to the trade.

In such re-packing the several courses of the bundles of shingles are superposed and so arranged that alternate courses are reversed relative to each other, and their thin inner ends overlap one another.

For convenience in removing the shingles which have been reassembled or restacked in this manner, a restacking box is arranged below the feed box, which restacking box is provided with a bottom 84 and two side walls 85 rising from opposite sides of this bottom while that end of the box 86 which is vertically in line with the inlet of the feed box is closed by an upright end wall 86, and that end of the restacking box in line with the rear wall 13 of the feed box is open and thereby enables the attendant to remove the restacked shingles conveniently from the lower box.

Conveying means are provided below each of the upper supporting tables 39 which operate to carry the finished shingles from the outer end of the respective upper supporting table 39 inwardly and discharge the same into the restacking box, and as the two conveyor mechanisms below both of the tables 39 are identical in construction, the following description will apply to both:

The numeral 87 represents a lower supporting or guiding table arranged horizontally and lengthwise below the upper table 39 and the parts associated therewith and mounted on the adjacent part of the main frame so that its outer receiving end is arranged at a point outwardly beyond the discharge end of the respective upper table 39 while its inner or delivery end is arranged adjacent to the upper end of one of the side walls 85 of the shingle receiving box. As the shingles are discharged from the outer end of one of the tables 39 they fall flatwise on the outer end of the respective lower table 87 and are then carried inwardly over the latter by means of a conveyor consisting preferably of a plurality of transverse conveyor bars 88 which move lengthwise and inwardly over the upper side of this last-mentioned table, and two chain belts 89 arranged adjacent to opposite longitudinal edges of the supporting table 87 and connected with opposite ends of the lower conveyor bars 88. The outer turns of these last-mentioned chain belts pass around sprocket wheels 90 and the inner turns of the same pass around sprocket

wheels 91. The outer sprocket wheels 90 are mounted at opposite ends of a transverse shaft 92 journaled on the adjacent outer part of the main frame and the inner sprocket wheels are mounted at opposite ends of a transverse shaft 93 which is journaled on the adjacent part of the main frame.

Motion is imparted to each of these lower endless carriers in any suitable manner for causing the bars 88 thereof to move actively over the respective lower table 87 from the outer end to the inner end thereof, and thereby engage the outer ends of the courses of shingles which have been deposited thereon by the respective upper conveyor and cause these shingles to be delivered one course at a time into the shingle collecting box arranged below the feed box.

These lower conveyors of the re-assembling mechanism are so timed that courses of shingles discharged from the two upper conveyors are delivered successively and alternately into the collecting box so that as the several courses of shingles are piled up in the collecting box these courses of shingles will be alternately reversed and have their thin ends arranged innermost and overlapping one another while their thick ends are at opposite ends of the pile as the same is accumulated in the collecting box.

Although various means may be employed for operating the two lower shingle conveyors in this manner, the means for this purpose shown in the drawings are satisfactory and comprise two chain belts 94, each of which passes with one turn around a sprocket wheel 95 at one end of the receiving shaft 44 of the upper conveyor on one side of the upper shingle feeding box, while its lower turn passes around a sprocket wheel 96 on the corresponding end of the delivery shaft 93 of the lower conveyor arranged on the opposite side of the shingle collecting box, as best shown in Figs. 2, 4 and 5.

By the use of this machine it is only necessary to remove the usual binder around the waist or mid-section of the bundles of shingles, which is usually placed around the same when packing them for transportation, and then pushing inwardly against the thick outer ends of shingles so that their thin inner ends overlap to a greater extent, and then place them within the feeding box ready for being fed off successively, one course at a time, and successive courses in opposite directions from the underside of the pile to the two liquid applying and smoothing devices located on opposite sides of the feeding off mechanism; and after the shingles are thus treated the two processions of shingles are again brought together at a point below the feeding-off mechanism where alternating courses of the two processions are deposited successively in alternately reversed order in a pile.

It has been found that when the supporting tables, over which the courses of shingles are moved, are not perfectly even or the conveyor bars do not bear uniformly across the entire working area of these tables that the shingles if very thin, are liable to slip in between the upper surface of the respective table and the underside of the conveyor bars and thereby become displaced. This is particularly liable to happen when the conveyor bars engage with the thin trailing ends of the shingles while on the lower collecting tables, but is not so liable to occur when the upper conveyor bars are engaging with the thick trailing edges of the same. To avoid this possibility each of the conveyor bars is provided on its front side with a transverse row of propelling blades 97 each of which is mounted on the respective bar so as to be free to move vertically therein to a limited extent and rest with its lower beveled or sharp edge 98 against the top of the respective table when passing over the same. This sliding connection between each propelling blade and the respective conveyor bar is preferably effected by two or more bolts 99 secured to the conveyor bar and passing through upright slots 100 in the blades, as best shown in Figs. 8 and 9, which illustrate this feature as applied to a lower conveyor, but is intended to apply equally to an upper conveyor.

As the blades approach the receiving end of a table the same engage a cam-shaped guide 101 thereon and are directed thereby to the top of the table and rest thereon by gravity in passing over the table from the receiving to the delivery end thereof.

Each blade of a row or set can rise and fall independently of the others thereby ensuring a full bearing of the several blades across the entire table, whereby the shingles are prevented from getting caught between the conveyor and the table and becoming disarranged. The sharp edges 98 of the blades are particularly useful as they act somewhat like scrapers on the table and engage with the thin ends of the shingles, as shown in Fig. 9, which otherwise would be most liable to become wedged between the conveyor and a lower table, and instead propel them positively and properly over the table.

The shingles are therefore conveniently reassembled without any hand labor and without requiring any re-adjustment, but instead are in condition to be re-packed by pulling out opposite ends thereof if desired, and placing a binder around the waist of the same in the manner now in common practice in marketing shingles for the trade or by packing the same loosely in cartons ready for shipment.

All these operations are performed expeditiously and reliably with a minimum expenditure of power and with an economical use of paint, stain or other liquid with which the

shingles are treated, thereby effecting a considerable saving in cost of thus treating shingles for the trade.

Moreover, this machine is very compact in construction and has no delicate parts which are liable to get out of order, and can be also readily adjusted for operating upon shingles varying in length.

What is claimed is:—

1. A machine for feeding shingles and the like, comprising a supply box adapted to hold a supply of shingles and having a bottom, a rear wall and two side walls, and at least one of said side walls being separated at its lower edge from said bottom to form a passage for said shingles, and also capable of vertical floating movement, stop means for limiting the downward movement of the respective side wall so as to maintain a passage at all times between the lower end thereof and the bottom of said box, and means for feeding one course of shingles at a time from the underside of the pile in the box through said passage and lifting said floating wall out of the path of the respective shingles and enabling the later to leave said box.

2. A machine for feeding shingles and the like, comprising a supply box adapted to hold a supply of shingles and having a bottom, a rear wall and two side walls, and at least one of said side walls being separated at its lower edge from said bottom to form a passage for said shingles, and also capable of vertical floating movement, stop means for limiting the downward movement of said floating wall so as to form a passage at all times between the lower end thereof and the bottom of said box and including vertically movable upright rods, a frame having openings in which said rods slide and stops arranged on said rods and adapted to engage said frame for limiting the downward movement of said floating wall, a roller arranged on the lower edge of said vertically movable wall and adapted to be engaged by the shingles which are being fed off from the supply in said box, and means for feeding one course of shingles at a time from the underside of the pile in said box through said passage.

3. A machine for feeding tapering shingles and the like comprising a box adapted to hold a supply of shingles in the form of a vertical tier of courses in which the thin ends of the shingles in one course engage with the thick ends of the shingles in an adjacent course, and provided on opposite sides of its lower end with outlet passages for the shingles, means for feeding off shingles from the underside of the pile and discharging the same alternately in opposite directions through said passages, including a feed bar adapted to sweep across the entire lower end of said box and the passages on the opposite side thereof and to engage the opposite thick ends of successive courses of said shingles, and means for reciprocating said bar.

4. A machine for feeding tapering shingles and the like comprising a box adapted to hold a supply of shingles in the form of a vertical tier of courses in which the thin ends of the shingles in one course engage with the thick ends of the shingles in an adjacent course, and provided on opposite sides of its lower end with outlet passages for the shingles, means for feeding off shingles from the underside of the pile and discharging the same alternately in opposite directions through said passages, including a feed bar adapted to sweep across the entire lower end of said box and the passages on the opposite side thereof and to engage the opposite thick ends of successive courses of said shingles, and means for reciprocating said bar including rock arms connected with opposite ends of said feed bar, a crank shaft, and a pitman connecting said crank shaft with said rock arms.

HARRY E. GOSCH.