

Jan. 12 , 1926.

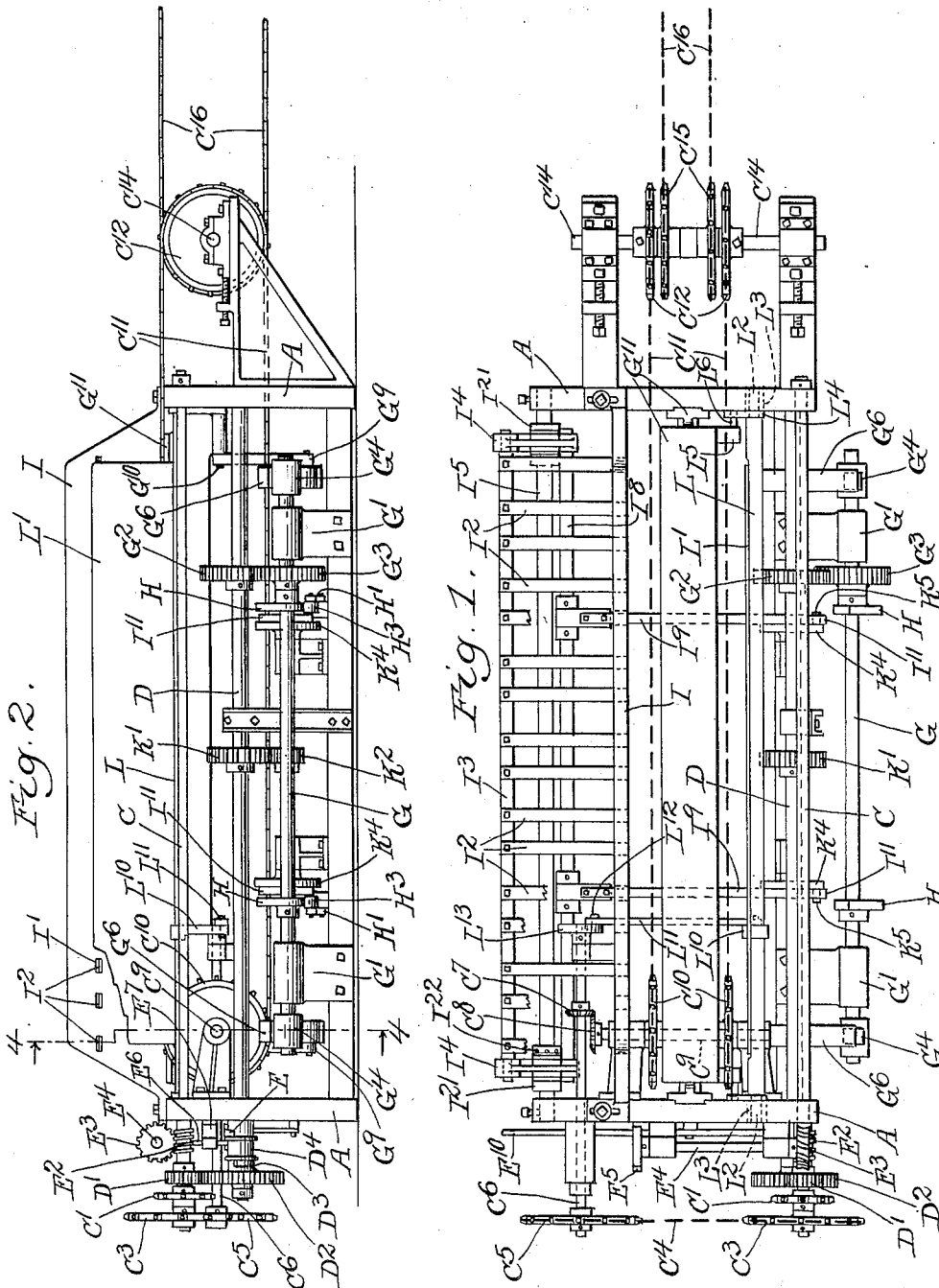
1,569,033

H. REICHEL

SHINGLE STACKER

Filed Nov. 28, 1924

3 Sheets-Sheet 1



Inventor.
Hugo Reichel.
by Parker & Carter
Attorneys.

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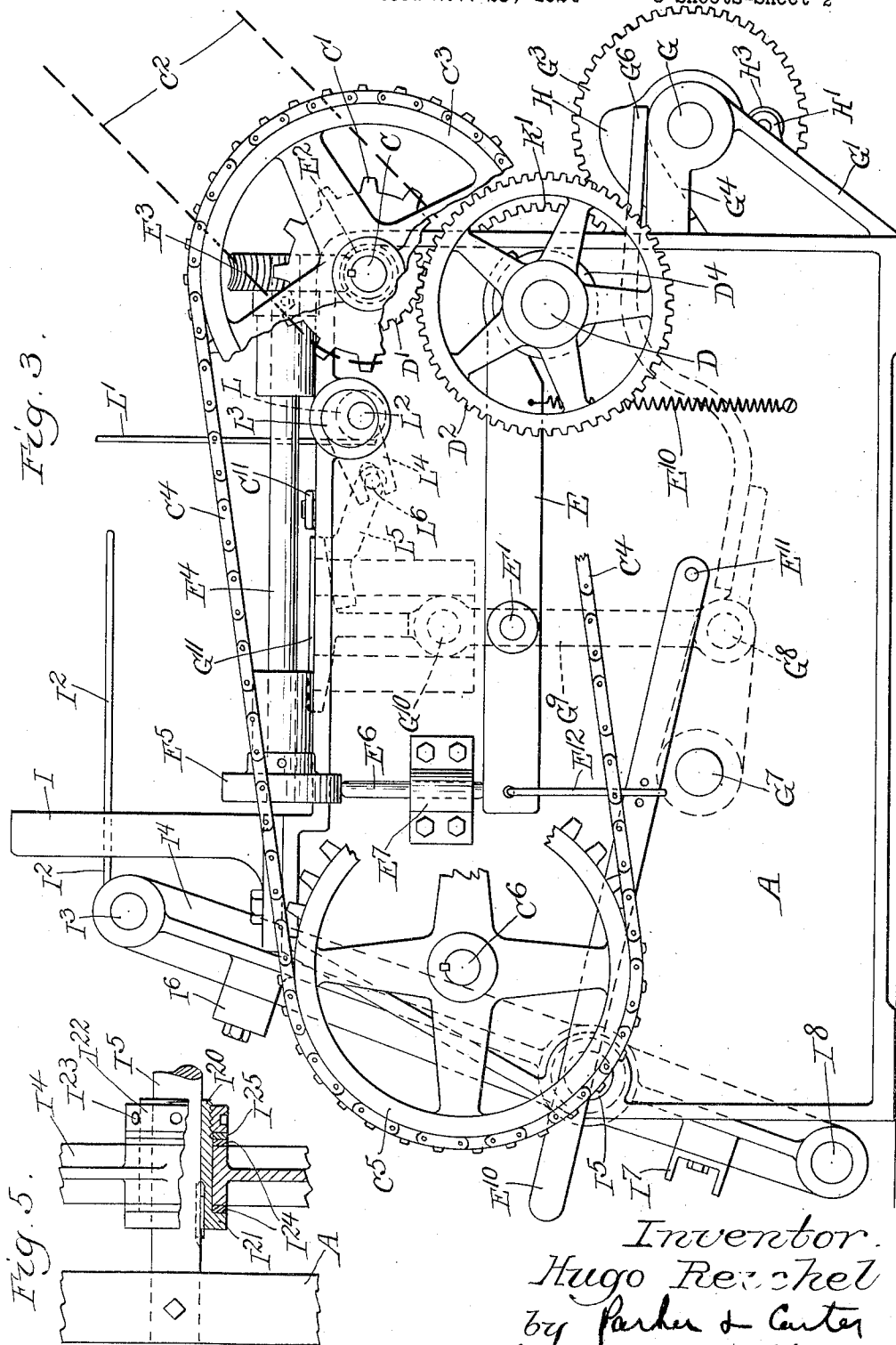
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3 Sheets-Sheet 2



Inventor.
Hugo Reichel
by Parker & Carter
Attorneys

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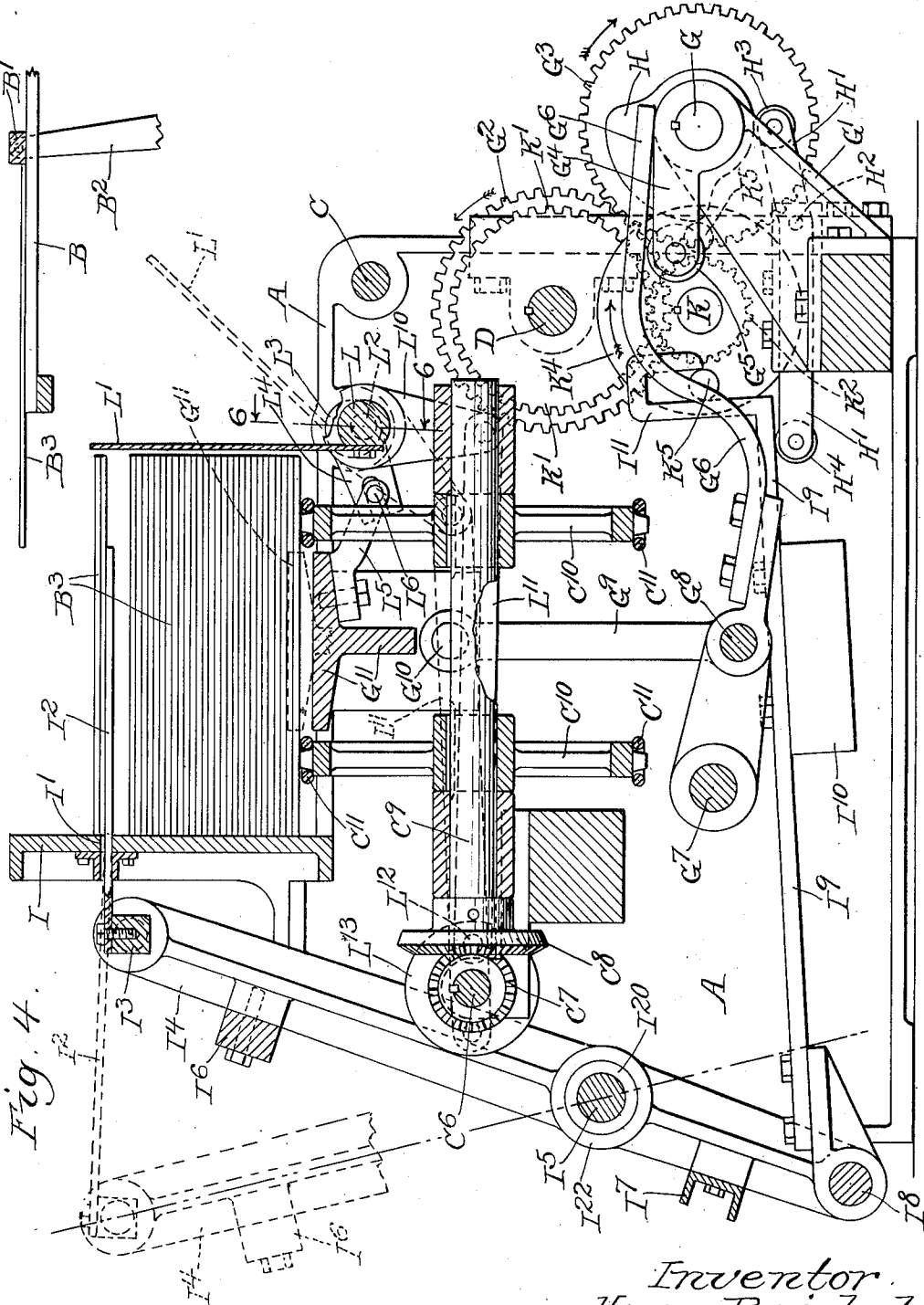
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SHINGLE STACKER

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3 Sheets-Sheet 3



Inventor.
Hugo Reichel.
by Parker & Carter
Attorneys.

UNITED STATES PATENT OFFICE.

HUGO REICHEL, OF CHICAGO, ILLINOIS.

SHINGLE STACKER.

Application filed November 28, 1924. Serial No. 752,528.

To all whom it may concern:

Be it known that I, HUGO REICHEL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Shingle Stacker, of which the following is a specification.

My invention relates to a machine for stacking shingles, and particularly to a machine which receives the shingles as they are cut from a relay or strip of shingle making material, permits their accumulation in piles or bundles of predetermined size or weight, maintains the bundles of predetermined size or weight, maintains the bundles in even alignment, and discharges them when they reach their predetermined size.

Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings wherein—

Figure 1 is a plan view of my machine;

Figure 2 is a side elevation in the direction of the arrow of Figure 1;

Figure 3 is an end view;

Figure 4 is a section on the line 4—4 of Figure 2; and

Figure 5 is a detail.

All parts are illustrated by like characteristics throughout the specification and drawings.

A is a shingle stacking machine frame mounted upon or secured to any suitable floor or supporting element.

Mounted adjacent the stacking machine is any suitable shingle cutting mechanism, the details of which form no part herein. I illustrate, of the shingle cutting mechanism only the shingle supporting surface B having the reciprocating element B¹ which is actuated by the arm B², and discharges from the surface B the shingles B³, which are delivered thence to the shingle stacking mechanism below described. It will be understood that there is a definite predetermined relation or synchronization between the reciprocation of the element B¹ and the actuating of the stacking mechanism below described.

C is a longitudinally positioned shaft suitably mounted in the frame elements A and provided at one end with a sprocket C¹ adapted to be driven by means of the chain C² from the shingle cutting machine,

in definite relation to or synchronization with the deliveries of the shingle from the shingle cutter. It will be understood that the shaft C is continuously rotated at constant speed. Mounted on the end of the shaft is the larger sprocket C³ which through the chain C⁴ drives the sprocket C⁵ on the shaft C⁶ parallel with the shaft C and at the opposite side of the mechanism. The bevel gear C⁷ on the shaft C⁶ is in mesh with the bevel gear C⁸ on the transverse shaft C⁹. Keyed to C⁹ are sprockets C¹⁰ C¹⁰ about which pass the bundle conveying chains C¹¹ C¹¹ which pass about the sprockets C¹² C¹² fast on the shaft C¹⁴. The sprockets C¹⁵ are rotatably mounted on the shaft C¹⁴ and are surrounded by the bundle receiving and supporting chains C¹⁶ the purpose of which will later appear.

The shaft D, parallel with and beneath the shaft C is driven intermittently therefrom in the following manner. The pinion D¹ keyed to the shaft C is in mesh with the gear D² rotatably mounted about the shaft D and provided with any suitable clutch element D³. Keyed to the shaft D is the opposed clutch element D⁴. The clutch element D⁴ is normally kept in an inoperative position by means of the wedge bar or lever E which is pivoted as at E¹ to the frame A. When the bar is in the position shown in Figures 2 and 3 the clutch elements are separated and the shaft D is not rotating although the gear D² is constantly driven by the pinion D¹. The bar E is periodically lifted in the following manner: E² is a worm on the shaft C in mesh with the worm gear E³ on the transverse shaft E⁴ at the opposite end of which is the cam element E⁵ in opposition to the vertical pin E⁶ guided by the guide E⁷ and contacting with its lower end the lever E. The number of teeth on the worm gear E³, which is constantly rotated with the shaft C determines the number of rotations of the shaft E⁴ which shall intervene between successive liftings of the lever E and engagements of the opposed clutch members D³ D⁴. Thus when the lever E is lifted the shaft D rotates in response to the rotation of the gear D². The shaft D, once its rotation begins, makes one complete rotation and then stops, since the effective end of the lever E has meanwhile dropped back into position, being yieldingly drawn downwardly, for example, by the coil spring E¹⁰, and thereby discon-

nects the opposed clutch element D⁴ from the clutch element D³.

Positioned beneath the shaft D is the shaft G supported in any suitable manner for example, in the outwardly inclined bearing brackets G¹. The shaft G is driven in unison with the shaft D for one rotation, being driven through the gear G² on the shaft D and the gear G³ on the shaft G, the two gears being of like diameter. Keyed to the shaft G are cam acting crank arms G⁴ at opposite ends of the shaft, on the outer ends of which are positioned the rollers G⁵. When the shaft G rotates the arms G⁴ contact and lift the levers G⁶ which are pivoted as at G⁷ to the frame, pivoted to the levers G⁶ as at G⁸ are the substantially vertical links G⁹ which in turn are pivoted at their upper ends as at G¹⁰ to the table G¹¹ which is slidably mounted along the vertical axis in the ends of the frame A. It will be understood that when the shaft G is at rest the arms G⁴ are in vertical position and the levers G⁶ are raised and the top of the table G¹¹ is in the position shown in the dotted line in Figure 4 being substantially above the sprockets C¹⁰ and the chain C¹¹.

The shaft G also carries a pair of cams H positioned adjacent the arms G⁴. These cams are in opposition to the levers H¹ which are pivoted as at H² and have at each end rollers H³ H⁴. When the cams H contact the rollers H³ and depress them the rollers H⁴ are raised and lift the levers I⁹.

I is an actuating or abutment plate vertically positioned on the frame A to one side of the table G¹¹ and the chains C¹¹. It is adapted to receive the shingles B³ as they are projected from the table B by the reciprocating bar B¹. The element I is penetrated adjacent its top by a plurality of apertures I¹ through which pass the shingle receiving fingers I² which are secured to the longitudinal supporting bar I³ pivoted to the upper ends of the levers I⁴ which in turn are pivoted as at I⁵ upon the frames A. The levers I⁴ are joined adjacent the top and the bottom by longitudinal reinforcing or bracing elements I⁶ I⁷. Pivoted to the bottom of the levers I⁴ as at I⁸ are the levers I⁹ weighted as at I¹⁰ and provided with the updrawn rectangular hook element I¹¹.

K is a longitudinal shaft parallel with the shaft G and positioned at about the same level. It is driven from the shaft D by means of the gear K¹ on the shaft D and the pinion K² on the shaft K, the relative size of gear and pinion being such that the shaft K makes two complete revolutions during the single revolution of the shaft D. Keyed to the shaft K are the crank disks K⁴ having on them each a crank pin K⁵ adapted to engage the rectangular hook member I¹¹. When the shaft K is at rest

the crank pins K⁵ are in the position shown in dotted lines in Figure 4, at the right of the crank disks. The element I¹¹ is withdrawn to the right with it and the lever I⁴ is in the position shown in dotted line in Figure 4. Upon the rotation of the shaft K the crank pins K⁵ press against the rectangular hook element I¹¹ and thrust it into the position shown in full line in Figure 4. By the time the crank pins K⁵ reach their position at the left of the crank disks K⁴ the cam H engages the roller H³ of the lever H¹ and lifts the roller H⁴ and with it the right end of the lever I⁹. The hook I¹¹ is thereby lifted so high as to permit the crank pins K⁵ to clear, and they make a complete revolution.

When the crank pins K⁵ return to the position shown in full line in Figure 4 the hook element I¹¹ have been released by the cams H and are in the position shown in full line in Figure 4. The crank pins K⁵ accordingly enter into the hooks and as the crank disks continue their rotation they draw the lever I⁹ to the right and thus withdraw the upper end of the lever I⁴ to the left, withdrawing the supporting fingers I² from the position above the stacking table G¹¹ at which point they come to rest.

Positioned adjacent the top of the frame elements A at substantially the level of the shaft C is the rocking bar L. Secured to it is the upwardly projecting tapping plate L¹ which is adapted to thrust the shingles B³ against the opposed vertical guide or stop plate I. The rock shaft L is reduced at its end as at L², the cylindrical reduced portion being rotatably mounted eccentrically within the sleeves L³. Associated with the sleeves L³ are the slotted arms L⁴. The arms L⁵ are mounted at each end of the table G¹¹ and have the pins L⁶ which engage in the slots of the arms L⁴. As the table raises and lowers it causes the sleeve L³ to rotate and moves the plate L¹ to and from the bundle of shingles.

Keyed to the rock shaft L is the crank arm L¹⁰ to the outer end of which is pivoted the link L¹¹ the opposite end of which is pivoted to the crank pin L¹² on the crank disk L¹³ keyed upon the inner end of the shaft C⁶.

In order to prevent a rebound of the upper ends of the levers I⁴, and oscillation of the fingers I², I provide damping means for damping the rotation of said lever and for preventing vibration or oscillation of the lever at the termination of its desired excursion. I therefore rotate the arms I⁴ about the fixed shaft I⁵ which is held against rotation in relation to the frame elements A. Surrounding the shaft I⁵ and preferably keyed to it are the bearing sleeves I²⁰ being provided with a collar I²¹ at one end and being screw threaded at the other. A screw

threaded collar I²² is mounted upon the screw threaded end and may be provided for example, with the spanner apertures I²³ for adjusting to limit or damp the rotation of the lever I¹. Interposed at either side of the lever are the leather washers I²⁴, and interposed between one of said leather washers and the screw threaded collar I²² is the metal washer I²⁵.

It will be realized that although I have described and shown a practical operative device, and one which is already in operation, that nevertheless many changes might be made in the size, shape, number, relation and disposition of parts without departing from the spirit of my invention. I therefore wish the showing herein to be taken as in a broad sense illustrative, rather than as limiting me to the specific form of device herein shown.

The use and operation of my invention are as follows:

I provide a stacking mechanism which is adaptable for stacking relatively thin broad articles, such as shingles and the like. My stacking mechanism is preferably employed in connection with a shingle cutting device, the details of which form no part of the present invention. I therefore illustrate merely the delivery table B upon which the shingles are deposited as they are cut, and from which they are projected by the reciprocating arm B¹, and whence they are received by the stacking table G¹¹ or the supporting arms I². The operation of the stacking mechanism is preferably synchronized with the movement of the reciprocating bar B¹, so that the tapping plate L will tap each shingle into position against the vertical guide or stop I, as it is delivered from the table B.

Broadly stated, my invention consists of means for receiving the successively fed thin articles, as above described, and means for conveying them away, after a predetermined number of such articles have been stacked in a pile. The stacking mechanism, being synchronized with the feeding mechanism, at the termination of a predetermined number of feed movements of the bar B¹, the longitudinally disposed stacking table G¹¹ is depressed and lowers the stack upon the constantly moving conveyor chains C¹¹.

Meanwhile, to permit the succeeding stack to be formed, the fingers I² are thrust forwardly along the stacking table, as shown in Figure 4, and receive the articles fed from the table B. As soon as the completed stack has been conveyed away, the table G¹¹ rises to its normal position above the level of the chains C¹¹, and the fingers I² are withdrawn to the position shown in dotted line in Figure 4, dropping the already delivered articles upon the table G¹¹.

This cycle may be carried on with a single row of articles, or of course, all articles may

be fed to form simultaneously a plurality of stacks. The number of stacks formed does not depend on the feeding or stacking mechanism herein shown but may be controlled by any suitable mechanism not herein shown.

In order to effectuate these various movements, I employ the constantly driven shaft C which periodically and intermittently rotates the shaft D. The intermittent clutch connection is controlled, as above described, by the wedge bar or lever E which is periodically lifted by the rotation of the cam E² through the worm E² and the worm gear E³. I also provide manual means for controlling the bar E, namely the lever E¹⁰, pivoted as at E¹¹ to the frame members and connected to the outer end of the wedge bar E.

When the shaft D is rotated, it drives in unison with it the shaft G, the shaft G making a single rotation during the single rotation of the shaft D. The shaft G is provided with cam arms G⁴ which lift the levers G⁶ and thus the table G¹¹. When the shaft G is in its normal inactive position the lever G⁶ is engaged by said arms and raised. During the single rotation of the shaft G the table G¹¹ is depressed by the lowering of said arms and thus by the lever G⁶, and the completed stack of shingles is thus lowered into contact with the constantly driven conveyor chains C¹¹. At the end of the single rotation of the shaft G the lever G⁶ is lifted and the table G¹¹ resumes its normal position, the arms G⁴ being again in vertical position.

The fingers I² are also actuated in response to the rotation of the shaft G. The shaft carries a pair of cams H which engage the rollers H³ on the levers H¹, the opposite ends of said levers being adapted to lift the weighted and hook-ended links I⁹. When the links I⁹ are in the position shown in full line in Figure 4 their hook ends are aligned with the pins K⁵ on the crank disk K⁴ on the shaft K. The shaft K is driven from the shaft D but makes two revolutions during the single revolution of the shafts D and G. When the shaft K is at rest, the pins K⁵ are withdrawn to the right side of the disk, as shown in dotted line in Figure 4. They are at that point in engagement with the hook end of the link I⁹ and the fingers I² are thus in their normal withdrawn position as shown in dotted line in Figure 4. When the shaft K begins its rotation the crank pins K⁵ thrust the links I⁹ to the left, pushing the fingers I² into the position shown in full line in Figure 4. Before the crank pins can draw the hook I¹¹ back and thus withdraw the fingers I², the cams H engage the levers H¹ and thus lift the links I⁹ and disengage their hook ends I¹¹ from the crank pins. Since the shaft K makes two revolutions dur-

ing the single revolution of the other shafts, the crank pins K^5 make a second complete revolution. Before they are again aligned with the hooks I^{11} the cams H have passed beyond the rollers H^3 and the links I^9 and their hook ends are dropped to the position shown in Figure 4. Accordingly, the last half revolution of the crank disks K^4 engages the pins K^5 with the hooks I^{11} and the links I^9 are drawn to the right, and the fingers I^2 are moved again into the position shown in dotted line.

In order to align the stack as it forms and to tap each article into place as it is delivered, I provide the tapping bar or rock shaft L upon which is mounted the forwardly projecting tapping plate L^1 . As earlier described, the shaft L is eccentrically mounted and normally is positioned so as to hold the tapping plate in contact with the outer edges of the articles being stacked. When the table G^{11} is depressed to the position shown in Figure 4 the arm L^5 engages the slotted arm L^4 , rotates the eccentric sleeves L^3 and moves the shaft L of the tapping plate L^1 to the position shown in Figure 4. Thus the clearance is provided for the stack as it is conveyed away on the constantly driven chain conveyor. When the table G^{11} again raises to its normal position, the shaft L and the tapping plate L^1 are again moved toward the stack. The rock shaft L is normally rocked through the crank arm L^{10} and the link L^{11} in response to the constantly driven crank disk L^{13} . Thus as each article is fed to the shaft, it is tapped by the plate L^1 into position against the vertical guide I .

The completed bundles, when the supporting table is depressed, are engaged by the constantly driven chains C^{11} and are carried to the right, as in Figures 1 and 2 and are conveyed by the movement of the said chains, to the end of the chains C^{16} which pass about the sprockets C^{15} which are rotatably mounted on the shaft C^{14} . In the mechanism herein illustrated the chains C^{16} are not driven, but the free rotation of the sprockets C^{15} permits the successive bundles to be advanced along the chains C^{16} , the pressure of each additional bundle serving to advance the bundle series a distance equal to the width of the bundle. The bundles thus fed along the chains C^{16} may be removed and handled in any suitable manner, whether mechanically or manually.

I claim:

1. A stacker for relatively thin articles, comprising a vertical reciprocating receiving table and a conveyor, and means for delivering articles to said receiving table in timed succession, and means for delivering the accumulation of such articles upon said table to said conveyor when a predetermined number of articles has been

received thereupon, comprising in part means for downwardly moving the receiving table below the level of the conveyor, and for raising it again, after the conveyor has removed the accumulated articles there- by deposited thereon.

2. A stacker for relatively thin articles, comprising a receiving table and a conveyor, the conveyor normally underlying the surface of the receiving table, means for constantly driving the conveyor, means for delivering to the table the articles being stacked, and means for delivering the accumulation of such articles upon said table to said conveyor when a predetermined number of articles has been received thereupon, comprising means for reversing the relative levels of table and conveyor, and for immediately returning them, by a second reverse movement in the opposite direction to their original relation.

3. A stacker for relatively thin articles comprising a receiving table and means for delivering upon said table, in timed succession, the articles to be stacked, an endless chain conveyor positioned along said table, the supporting level of the table being normally above the level of the conveyor, means for constantly driving the conveyor, and means for delivering the accumulation of articles upon said table to said conveyor when a predetermined number of articles has been received thereupon, comprising means for changing the relative level of table and conveyor, the chain conveyor continuing longitudinally beyond the end of the table along an axis at right angles to the axis of delivery of the articles to the stacking table.

4. A stacker for relatively thin articles comprising a receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, means for supporting said table in said elevated position comprising a lever, a supporting connection between said lever and said table, a shaft and means for rotating it intermittently, after the feed of a predetermined number of articles, and a cam element on said shaft adapted, during non-rotation of said shaft, to hold said lever in elevated position.

5. A stacker for relatively thin articles comprising a receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, an aligning element along said table and a tapping element adapted to tap each successive article into position against said aligning element, means for intermittently depressing said table to permit a predetermined accumulation of articles to be removed by said conveyor, and means for laterally mov-

ing said tapping element away from said aligning element during such removal.

6. A stacker for relatively thin articles comprising a receiving table and means for feeding articles to it, an aligning element along said table and a tapping element adapted to tap each successive article into position against said aligning element, means for removing the accumulation of articles from said table, after a predetermined number has been fed thereto, and means for moving said tapping element laterally away from said aligning element during such removal.

7. A stacker for relatively thin articles comprising a vertically movable receiving table and means for feeding articles to it, aligning means along said table and tapping means adapted to tap the articles in position against said aligning means, a conveyor, and means for depressing said table, after a predetermined number of articles have been fed thereto, to deposit said articles upon said conveyor, and means, responsive to the movement of said table, for moving said tapping means laterally away from said aligning means.

8. A stacker for relatively thin articles comprising a vertically movable receiving table and means for feeding articles to it, aligning means along said table and tapping means adapted to tap the articles in position against said aligning means, a conveyor, and means for depressing said table, after a predetermined number of articles have been fed thereto, to deposit said articles upon said conveyor, and means, responsive to the movement of said table, for moving said tapping means laterally away from said aligning means, comprising a shaft on which said tapping means is mounted, eccentric bearing elements for said shaft and means for rotating them in response to movement of the table.

9. A stacker for relatively thin articles comprising a vertically movable receiving table and means for feeding articles to it, aligning means along said table and tapping means adapted to tap the articles in position against said aligning means, a conveyor, and means for depressing said table, after a predetermined number of articles have been fed thereto, to deposit said articles upon said conveyor, and means, responsive to the movement of said table, for moving said tapping means laterally away from said aligning means, comprising a shaft on which said tapping means are mounted, eccentric bearing sleeves for the ends of said shaft, and means for rotating them in response to movement of the table, comprising levers extending from said sleeves and engaging said table.

10. In a stacker for relatively thin articles, a receiving table and means for feeding

articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, a shaft and means for constantly rotating it, two shafts adapted to be intermittently driven from said shaft, at the termination of a predetermined number of revolutions of said first shaft, an actuating connection between one of said intermittently driven shafts and the receiving table, intercepting receiving means adapted to be positioned over said table, and an actuating connection between said intercepting receiving means and the other of said intermittently driven shafts.

11. In a stacker for relatively thin articles, a receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, a shaft and means for constantly rotating it, two shafts adapted to be intermittently driven from said first shaft at the termination of a predetermined number of revolutions of said first shaft, one through one revolution and the other through two revolutions, an actuating connection between the first mentioned of said intermittently driven shafts and the receiving table, intercepting receiving means adapted to be positioned over said table, and an actuating connection between such means and the other of said intermittently driven shafts.

12. In a stacker for relatively thin articles a vertically movable receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, intercepting receiving means adapted to be moved into position over said table, and means for simultaneously depressing said table beneath the level of said conveyor, and for moving the intercepting receiving means into operative position, after the feed of a predetermined number of articles to said table.

13. In a stacker for relatively thin articles a vertically movable receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, intercepting receiving means adapted to be moved into position over said table, and means for simultaneously depressing said table beneath the level of said conveyor, and for moving the intercepting receiving means into operative position, after the feed of a predetermined number of articles to said table, comprising a plurality of shafts and means for intermittently rotating them, an actuating connection between one of said shafts and the table, and an actuating connection between another of said shafts and the intercepting feeding means.

14. In a stacker for relatively thin arti-

cles a vertically movable receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, intercepting receiving means adapted to be moved into position over said table, and means for simultaneously depressing said table beneath the level of said conveyor, and for moving the intercepting receiving means into operative position, after the feed of a predetermined number of articles to said table, comprising a plurality of shafts and means for intermittently rotating them, a lever, an actuating connection between said lever and the receiving table, a cam element on one of said shafts adapted normally to hold said lever in raised position, and an actuating connection between another of said shafts and the intercepting feeding means.

15. In a stacker for relatively thin articles a vertically movable receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, intercepting receiving means adapted to be moved into position over said table, comprising a plurality of fingers, a supporting frame therefor, a controlling lever for said supporting frame, means for simultaneously depressing said table beneath the level of said conveyor and for moving the intercepting receiving means into operative position, comprising a plurality of shafts and means for intermittently rotating them after the feed of a predetermined number of articles to said table, a lever, an actuating connection between said lever and the receiving table, a cam element on one of said shafts adapted normally to hold said lever in raised position, a crank disk on the other of said shafts, a crank pin thereon, a connecting element pivoted to the lower end of the lever controlling the intercepting feeding means, one end thereof adapted to be engaged by said crank pin.

16. In a stacker for relatively thin articles a vertically movable receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, intercepting receiving means adapted to be moved into position over said table, comprising a plurality of fingers, a supporting frame therefor, a controlling lever for said supporting frame, means for simultaneously depressing said table beneath the level of said conveyor and for moving the intercepting receiving means into operative position, comprising a plurality of shafts and means for intermittently rotating them after the feed of a predetermined number of articles to said table, an actuating connection between one of them and the

receiving table, a crank disk on the other of said shafts, a crank pin thereon, a connecting element pivoted to the lower end of the lever controlling the intercepting feeding means, one end thereof adapted to be engaged by said crank pin.

17. In a stacker for relatively thin articles comprising a receiving table and means for feeding articles to it, an intercepting receiving means adapted to be intermittently positioned above said receiving table, a lever controlling said intermittent receiving means, a shaft and means for constantly driving it, a second shaft adapted to be intermittently driven from said first shaft, and an actuating connection between said second shaft and said lever.

18. In a stacker for relatively thin articles comprising a receiving table and means for feeding articles to it, an intercepting receiving means adapted to be intermittently positioned above said receiving table, a lever controlling said intermittent receiving means, a shaft and means for constantly driving it, a second shaft adapted to be intermittently driven from said first shaft, a connection member secured to said lever, a crank pin mounted on said shaft, said connection member being adapted to be engaged by said crank pin and held in withdrawn position during non-rotation of said shaft.

19. In a stacker for relatively thin articles comprising a receiving table and means for feeding articles to it, an intercepting receiving means adapted to be intermittently positioned above said receiving table, a lever controlling said intermittent receiving means, a shaft and means for constantly driving it, a second shaft adapted to be intermittently driven from said first shaft, a connection member secured to said lever, a crank pin mounted on said shaft, said connection member being adapted to be engaged by said crank pin and held in withdrawn position during non-rotation of said shaft, and being shaped to engage said crank pin during rotation of said shaft and pin, and means for intermittently disengaging it from said crank pin.

20. In a stacker for relatively thin articles, a vertically movable receiving table and means for feeding articles to it, and a constantly driven conveyor, said table being normally positioned above the level of said conveyor, intercepting means adapted to be moved into position over said table, a controlling lever for said means, means for simultaneously depressing said table beneath the level of said conveyor, and for moving the intercepting means into operative position above the table comprising a constantly driven drive shaft, a driven shaft adapted to be intermittently driven from said drive shafts, a worm on said drive shaft, a worm

gear in mesh therewith, a shaft rotated by said worm gear, a cam member on said shaft, a lever adapted to be actuated by said cam member, a constantly driven clutch member
 5 rotatable about said intermittently driven shaft, an opposed clutch member keyed on said shaft, said lever adapted normally to hold said opposed clutch members out of operative engagement but adapted to be lifted
 10 intermittently by the action of said cam member to permit engagement of said clutch members and rotation of said shaft, a plurality of shafts adapted to be driven from and during the rotation of said last mentioned shaft, a lever, an actuating connection between said lever and receiving table, a cam element on one of said last mentioned shafts adapted normally to hold said lever in raised position, during non-rotation of
 15 said shaft, a crank pin on the other of said shafts, a connecting element secured to the lower end of the lever controlling the intercepting means, one end thereof adapted to be engaged by said crank pin, said crank pin bearing shaft being adapted to rotate through two revolutions during a single revolution of the other shaft, a cam on said last mentioned shaft, and a member controlled thereby and adapted to lift said connecting element out of engagement with the
 20 crank pin during one revolution thereof.

21. In a stacker for relatively thin articles, a vertically movable receiving table and means for feeding articles to it, and a
 25 constantly driven conveyor, said table being normally positioned above the level of said conveyor, means for lowering said table in relation to said conveyor, after the feeding thereto of a predetermined number of articles, comprising a lever, a connection between
 30 said lever and said table, an intermittently driven shaft, a cam element thereon, said cam element being adapted normally to hold said lever in raised position during non-rotation of said shaft.

22. In a stacker for relatively thin articles, a receiving table and means for feeding articles to it, intercepting receiving means adapted to be interposed above said table, a lever controlling the movement of said intercepting receiving means, a shaft and means for intermittently driving it after the delivery of a predetermined number of articles to said table, a connecting member secured to said lever and a member associated with said shaft and adapted to impart movement to said connecting member.

23. In a stacker for relatively thin articles, a receiving table and means for feeding articles to it, intercepting receiving means adapted to be interposed above said table, a lever controlling the movement of said intercepting receiving means, a shaft and means for intermittently driving it after the
 60 delivery of a predetermined number of ar-

ticles to said table, a crank pin associated with said shaft, a connecting member secured to said lever, and adapted to be engaged by said crank pin, and means for moving said member out of engagement
 70 with said crank pin.

24. In a stacker for relatively thin articles, a receiving table and means for feeding articles to it, intercepting receiving means adapted to be interposed above said table, a lever
 75 controlling the movement of said intercepting receiving means, a shaft and means for intermittently driving it after the delivery of a predetermined number of articles to said table, a crank pin associated with said shaft, a connecting member secured to said lever, the end of said connecting member being notched to receive said crank pin, said pin being adapted to remain normally in engagement with said notch, and in position
 80 to hold said intercepting receiving means in inoperative position, during non-rotation of said shaft.

25. In a stacker for relatively thin articles, a receiving table and means for feeding articles to it, intercepting receiving means adapted to be interposed above said table, a lever controlling the movement of said intercepting receiving means, a shaft and means for intermittently driving it after
 85 the delivery of a predetermined number of articles to said table, a crank pin associated with said shaft, a connecting member secured to said lever, the end of said connecting member being notched to receive
 90 said crank pin, said pin being adapted to remain normally in engagement with said notch, and in position to hold said intercepting receiving means in inoperative position, during non-rotation of said
 95 shaft, means for breaking the operative connection between crank pin and connecting member after a one-half revolution of the pin, means for restoring said operative connection after an additional revolution of
 100 said pin, and means for terminating the rotation of said pin.

26. In a stacker for relatively thin articles, a receiving table and means for feeding articles to it, intercepting receiving
 105 means adapted to be interposed above said table, a lever controlling the movement of said intercepting receiving means, a shaft and means for intermittently driving it after the delivery of a predetermined number of
 110 articles to said table, a crank pin associated with said shaft, a connecting member secured to said lever, the end of said connecting member being notched to receive said crank pin, said pin being adapted to remain
 115 normally in engagement with said notch, and in position to hold said intercepting receiving means in inoperative position, during non-rotation of said shaft, means for lifting the connecting member out of contact with
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the crank pin after one-half revolution of the pin, and for permitting it to be engaged by said pin after an additional revolution of said pin, comprising a second shaft, and a cam member thereon, and a connection between said cam member and the connecting member.

27. In a stacker for relatively thin articles, a vertically reciprocating receiving table, and means for feeding articles to it, and a constantly driven conveyor, means for lowering the table, to a position below the level of the conveyor, after the feeding to said table of a predetermined number of articles, and for immediately thereafter raising it again to its normal level, and for holding it fixed at such normal level until the succeeding stack is completed, and an idler conveyor positioned beyond said constantly driven conveyor and adapted to receive therefrom the accumulation of articles delivered thereto.

28. In a stacker for relatively thin articles, a receiving table, an intercepting table, and intercepting receiving means adapted to be interposed above said table, a lever adapted to actuate said intercepting receiving means, a shaft about which said lever rotates, a bearing sleeve positioned on said shaft, a flange at one end of said sleeve, a yielding washer positioned about said sleeve at the opposite side of said lever, a securing ring and means for adjustably moving said ring along said sleeve toward said lever.

29. In a stacker for relatively thin articles, a receiving table, an intercepting table, and intercepting receiving means adapted to be interposed above said table, a lever adapted to actuate said intercepting receiving means, a shaft about which said lever rotates, compressible washers positioned on said shaft about said lever and means for adjusting the compression of said washers about said lever.

30. In a stacker for relatively thin articles, a receiving table, an intercepting table, and intercepting receiving means adapted to be interposed above said table, a lever adapted to actuate said intercepting receiving means, a shaft about which said lever rotates, compressible washers positioned on said shaft about said lever and means for adjusting the compression of said washers about said lever, comprising a bearing sleeve, a flange at one end of said sleeve, the opposite end being screw-threaded, and a collar screw-threaded thereabout.

31. A stacker for relatively thin articles comprising a receiving table and a conveyor, the receiving table being normally positioned above the level of the conveyor, means for delivering articles in timed succession to said receiving table, and means for delivering the accumulation of such articles upon

said table to said conveyor when a predetermined number of articles has been received thereupon, comprising in part means for reversing the relative levels of table and conveyor, and for immediately thereafter returning them, by a second reverse movement in the opposite direction, to their original relation and means for maintaining said table at a constant level intermediate said delivery excursions.

32. A stacker for relatively thin articles comprising a vertically reciprocating receiving table and a conveyor, the receiving table being normally positioned above the level of the conveyor, means for delivering articles in timed succession to said receiving table, and means for delivering the accumulation of such articles upon said table to said conveyor when a predetermined number of articles has been received thereupon, comprising in part means for downwardly moving said table below the level of said conveyor, and for immediately thereafter returning said table upwardly above the level of said conveyor, and means for maintaining said table at a constant level intermediate said delivery excursion.

33. A stacker for relatively thin articles comprising a receiving table and a conveyor, the receiving table being normally positioned above the level of the conveyor, means for delivering articles in timed succession to said receiving table, and means for periodically reciprocating said table downwardly to and upwardly from a level below the normal level of the conveyor, comprising in part a constantly driven timing shaft, a trip member controlled thereby, a table supporting member adapted normally to be supported by said trip member, and means for periodically actuating said trip member to lower said table supporting member after a predetermined rotation of said timing shaft.

34. A stacker for relatively thin articles comprising a receiving table and a conveyor, the receiving table being normally positioned above the level of the conveyor, means for delivering articles in timed succession to said receiving table, and means for periodically reciprocating said table downwardly to and upwardly from a level below the normal level of the conveyor, comprising in part a constantly driven timing shaft, a trip member controlled thereby, a lever adapted normally to be contacted and supported by said cam, a supporting connection between said lever and said table, means for periodically actuating said trip member to lower said lever and said table after a predetermined rotation of said timing shaft, and vertical guides at the ends of said tables.

35. In a stacker for relatively thin articles, a receiving table and a conveyor,

means for maintaining the level of said receiving table normally fixed above the effective level of the conveyor, means for delivering a succession of articles to said table, and means for delivering the accumulation of articles on said table to said conveyor, after a predetermined feed thereof, comprising in part means for reversing the relative level of the conveyor and the table.

36. In a stacker for relatively thin articles, a receiving table, and a conveyor, means for maintaining the level of said receiving table normally fixed above the effective level of the conveyor, and supplemental receiving means adapted to be laterally moved into position above said table, means for delivering the accumulation of articles on said table to said conveyor, after a predetermined feed thereof, comprising in part means for reversing the relative level of the conveyor and the table, and means for substantially simultaneously moving the supplemental receiving means into position above the table.

37. In a stacker, a stacking table, endless conveyor elements aligned along each side of said table at a level slightly below the upper surface of said table, means for feeding articles to said table along a path substantially at right angles to the path of said conveyor elements, and means, responsive to the feed of a predetermined number of said articles for depressing said table and depositing the completed stack upon said conveyor.

38. In a stacker, a stacking table, endless conveyor elements aligned along each side of said table at a level slightly below the upper surface of said table, means for feeding articles to said table along a path sub-

stantially at right angles to the path of said conveyor elements, and means, responsive to the feed of a predetermined number of said articles for changing the relative level of table and conveyor and depositing the completed stack upon said conveyor.

39. In a stacker for relatively thin articles, a receiving table and means for feeding articles to it, intercepting receiving means adapted to be interposed above said table, a lever controlling the movement of said intercepting receiving means, a shaft and means for intermittently driving it after the delivery of a predetermined number of articles to said table, a crank pin associated with said shaft, a connecting member secured to said lever, the end of said connecting member being notched to receive said crank pin, said pin being adapted to remain normally in engagement with said notch, and in position to hold said intercepting receiving means in inoperative position, during non-rotation of said shaft, means for lifting the connecting member out of contact with the crank pin after one-half revolution of the pin, and for permitting it to be engaged by said pin after an additional revolution of said pin, comprising a second shaft, and a cam member thereon, and a connection between said cam member and the connecting member, comprising a lever pivoted intermediate its ends, one end of said lever adapted to engage said cam, the other end adapted to engage and lift said connecting member.

Signed at Chicago, county of Cook and State of Illinois, this 24th day of November, 1924.

HUGO REICHEL.