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A. W. FERRES.

VENEER DISH MACHINE.

No. 570,088. Patented Oct. 27, 1896.

Fig. 1.

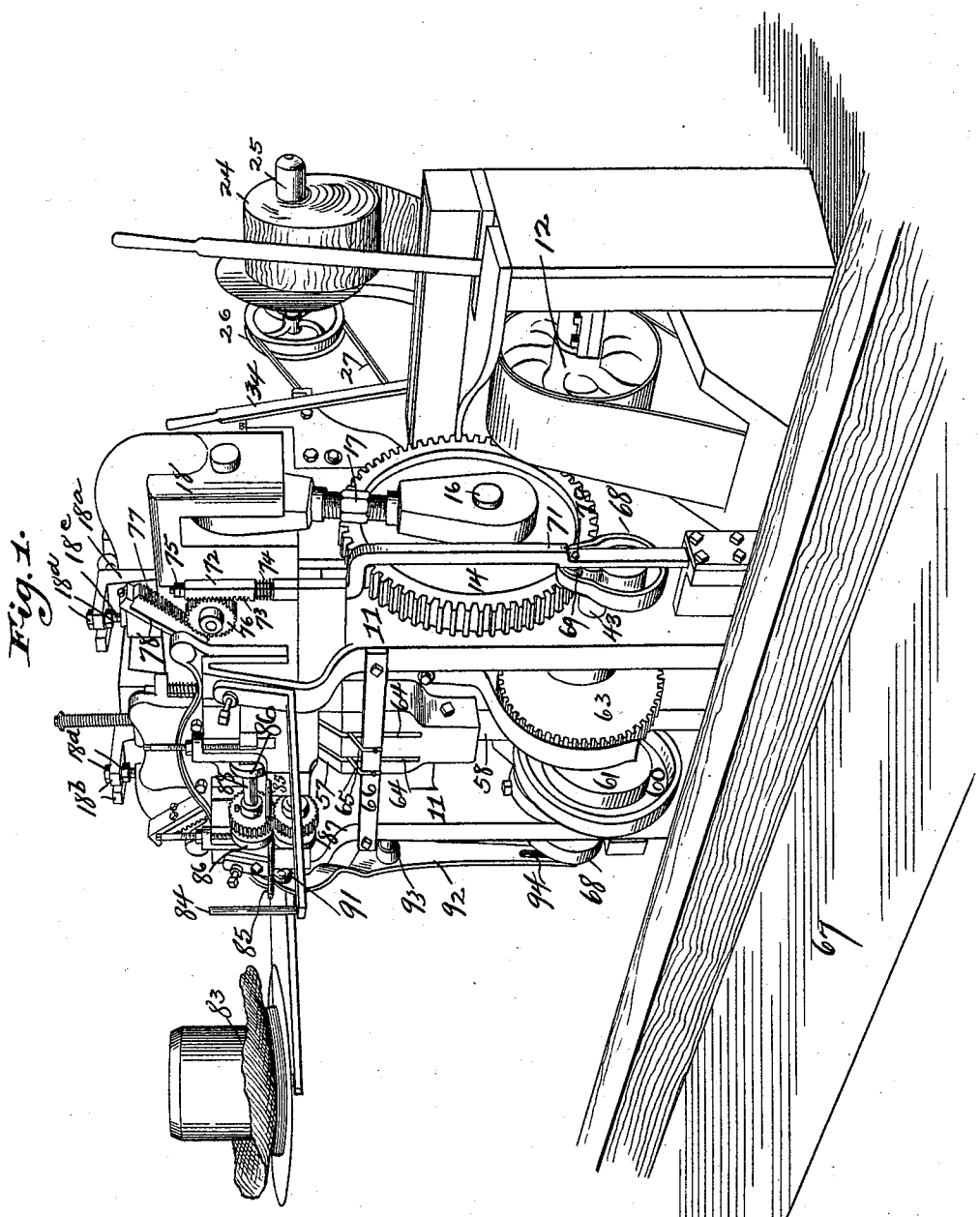

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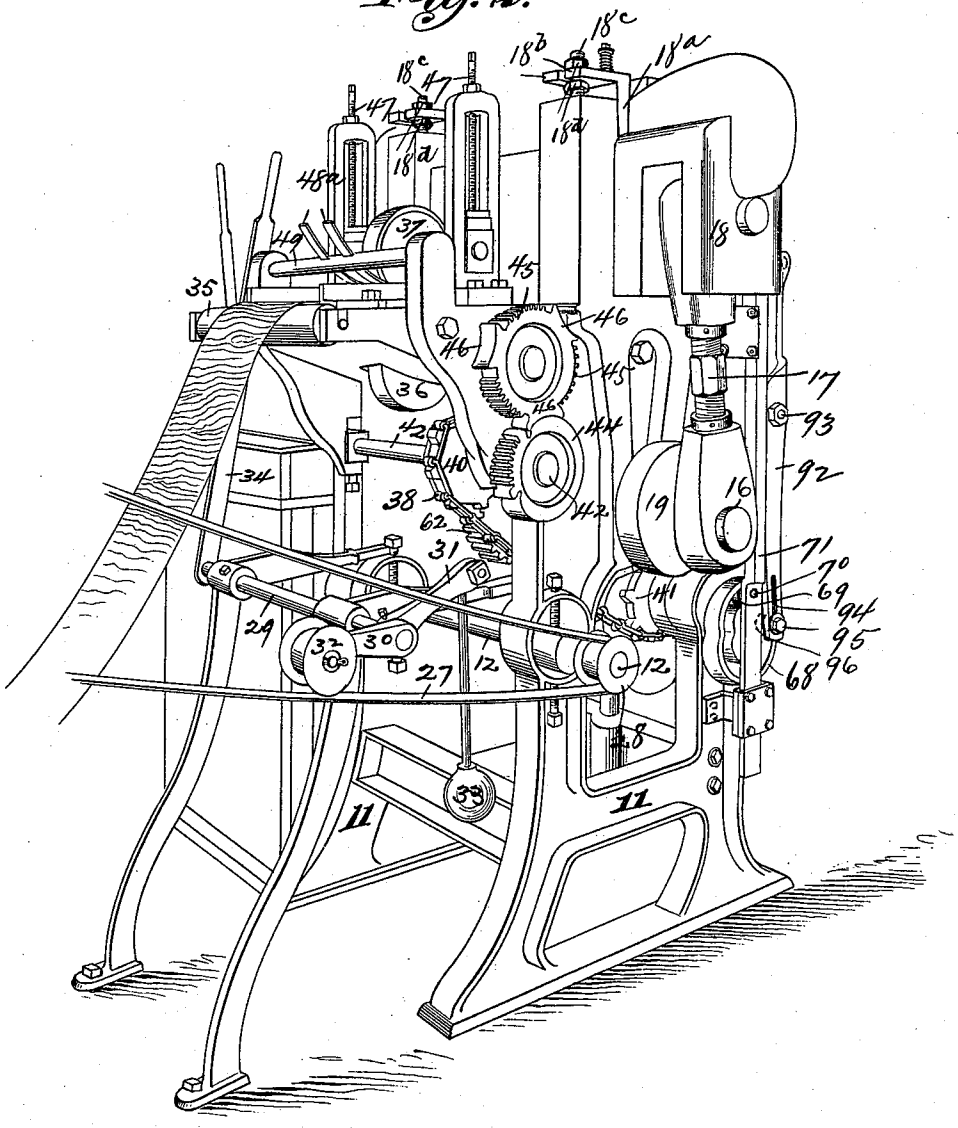
Fig. 2.



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VENEER DISH MACHINE.

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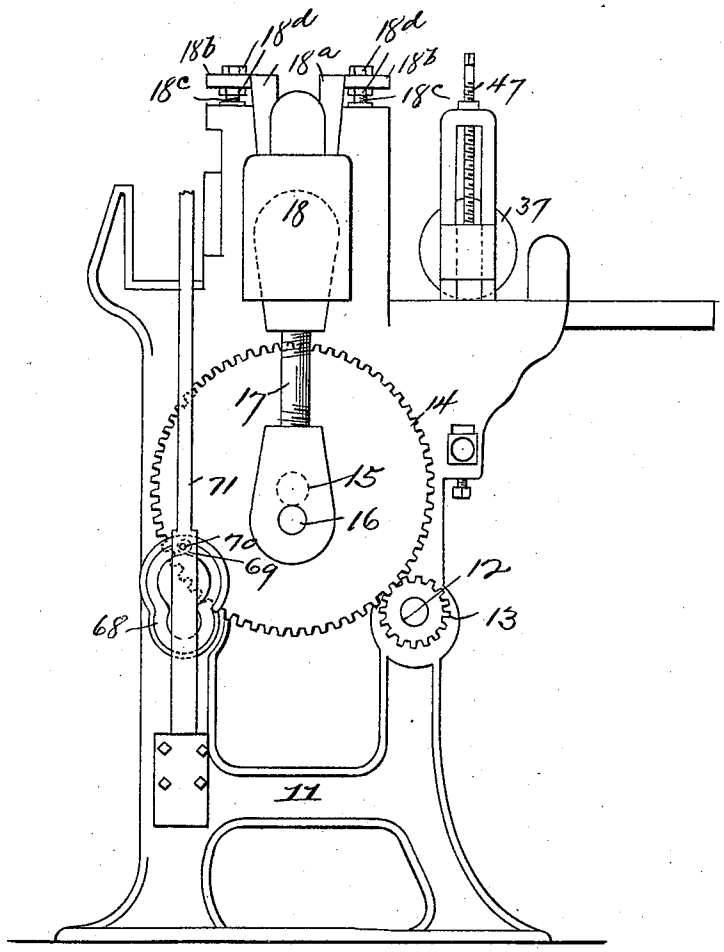
Fig. 3



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VENEER DISH MACHINE.

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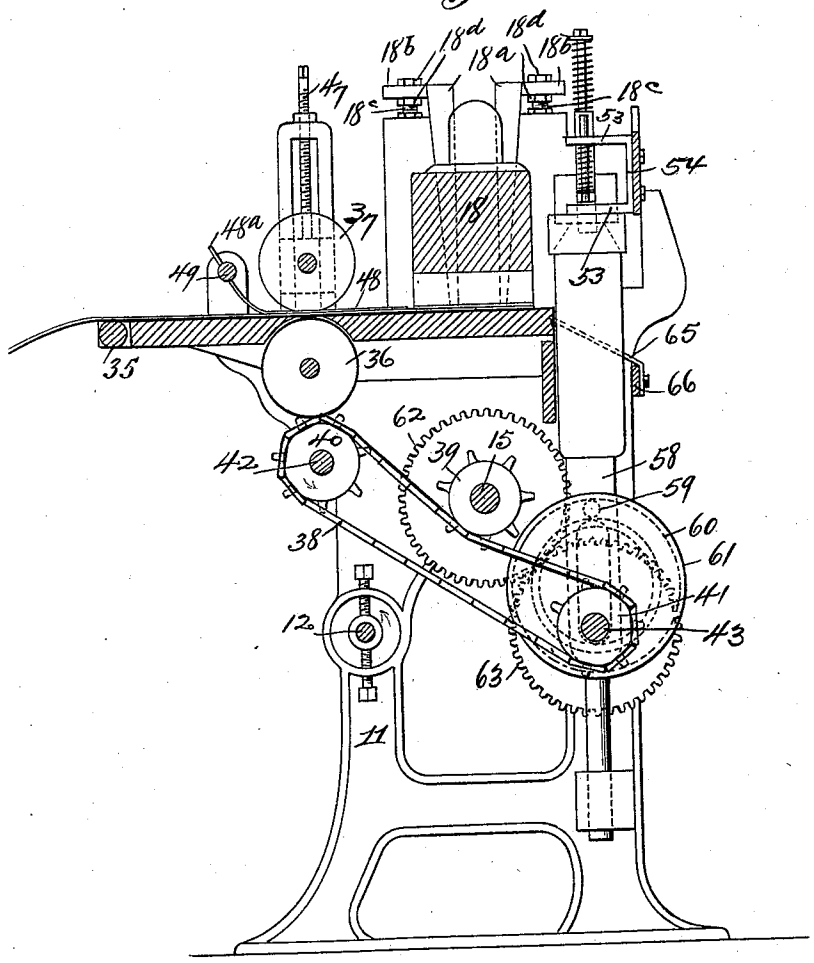
Fig. 4.



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VENEER DISH MACHINE.

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Fig. 5.

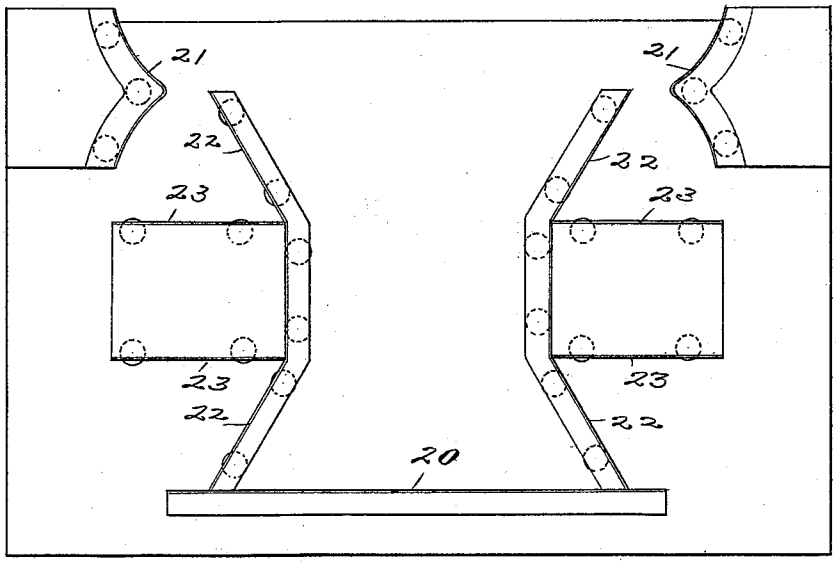


Fig. 9.

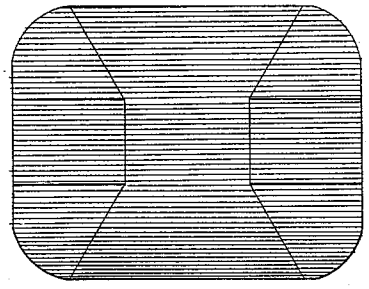
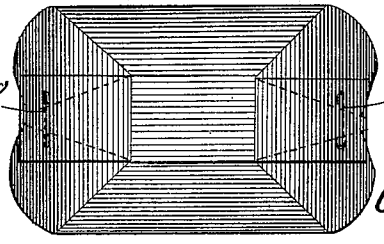


Fig. 10.



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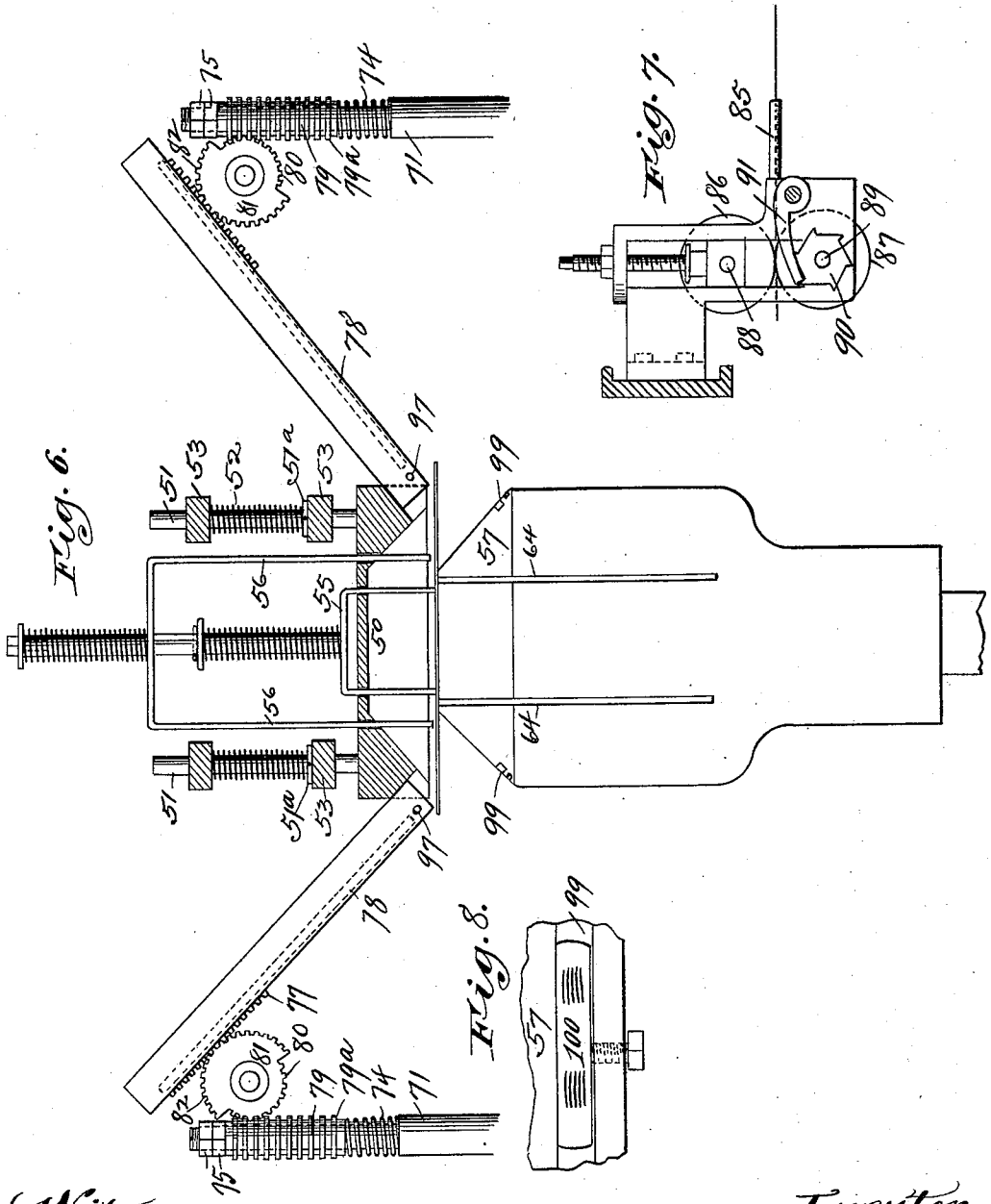

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UNITED STATES PATENT OFFICE.

AINSLIE W. FERRES, OF MEMPHIS, TENNESSEE, ASSIGNOR TO WILLIAM M. VAN NORTWICK AND THEODORE R. TROENDLE, OF BATAVIA, ILLINOIS.

VENEER-DISH MACHINE.

SPECIFICATION forming part of Letters Patent No. 570,088, dated October 27, 1896.

Application filed May 25, 1895. Serial No. 550,647. (No model.)

To all whom it may concern:

Be it known that I, AINSLIE W. FERRES, of Memphis, Tennessee, have invented certain new and useful Improvements in Veneer-Dish Machines, of which the following is a specification.

This invention relates to a machine for forming articles, such as butter-dishes, from veneer; and the machine is so constructed and organized as to feed forward a strip of veneer of wood or other suitable material from a roll and to pass the same beneath a reciprocating cutter-die, whereby dish-blanks are cut and scored, the blanks being then moved forward singly beneath a forming mechanism, whereby the edges of the blank are folded, the side and end portions overlapping at the corner and finally the overlapping portions secured by staples which are made and set by mechanism operating in due order and relation to the blank-cutting and dish-forming mechanism.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view showing a roll of veneer on the feed side of the machine and a traveling belt on the delivery side thereof. Fig. 2 is also a perspective view, but taken from the feed side of the machine. Fig. 3 is a side elevation with parts omitted and intended, mainly, to show the driving-shaft and gearing connected therewith. Fig. 4 is a sectional elevation with parts omitted, also intended to show the arrangement of the gears between the sides of the frame. Fig. 5 is an inverted plan of the cutter-die. Fig. 6 is a detail showing in sectional elevation the upper former and its spring-supports and in due relation thereto parts of the stapling mechanism. Fig. 7 is a detail of a part of a feed mechanism for advancing the staple-wire. Fig. 8 is a detail showing a broken section of the movable member of the former and showing a clenching-anvil secured in a recess thereof. Fig. 9 shows the blank, and Fig. 10 the completed article.

The mechanism comprises in the preferred construction a spindle on which the material, say a strip of wood veneer, is rolled and from which it is unwound or paid out, means for feeding forward intermittently the strip of veneer, a blank-cutting mechanism comprising a reciprocating die having cutting and scoring knives, a former comprising coacting dies by which the blank is bent into the required shape, mechanism for feeding staple-wires and for forming and driving the staples to hold the overlapped portions of the dish, and a means for discharging or clearing the completed dishes from the machine and delivering them upon a conveyer. The principal part of this mechanism is supported upon a skeleton framework 11, in which is provided bearings for a main driving-shaft 12, its driving-pulley and belt being clearly shown in Fig. 1. This main shaft has thereon a spur-gear 13, which imparts motion through a large intermeshing gear 14 to a counter-shaft 15. Said gear 14 has a wrist-pin 16, to which a pitman 17 is connected, said pitman being connected at its upper end to one end of a cross-head 18. This cross-head reciprocates between adjustable guide-plates 18^a, having angular arms 18^b, which are slotted for the passage of threaded studs 18^c and confined between the adjusting-nuts 18^d. By turning the latter the guide-plates may be lowered, so as to secure the cross-head in desired position, and being wedge-shaped the plates may also be made to compensate for wear.

The shaft 15 has upon its opposite end a crank-disk 19 with a wrist-pin and pitman marked 16 17, respectively, the latter being connected at its upper end to the opposite end of the cross-head. Said cross-head carries upon its lower surface a series of knives for cutting and scoring the blank, and the arrangement and form of these knives are shown in Fig. 5.

20 represents the cutting-off knife, whereby the strip of veneer is severed into blanks of the required length. The dishes are of flat oval form with rounded corners. The cutting-die preferably has the corner-knives 21, by which the corners of the blank are cut. The die carries also the scoring-knives 22 and the slitting-knives 23.

The dish-blank is shown in Fig. 9, and the cuts and scores corresponding to these several knives are therein indicated by the heavy lines of the drawings.

The material, in the form of a long strip of veneer, is wound into a roll 24 and placed on the spindle, as 25, which spindle is provided with a sheave 26, adapted to be driven by a belt 27, which is driven from a small pulley 28 on the main shaft 12. Said belt is intended to run loosely, so as not to turn the spindle 25 unless tightened by the attendant. This is done by the belt-tightening device shown in the drawings, Fig. 2, and comprising the rock-shaft 29, having the arms 30 31, the former being provided with a pulley 32 to impinge the belt and the other, with the weight 33, normally tending to hold the pulley out of contact. The shaft 29 has the lever 34, by which the attendant may rock the shaft and tighten the belt. This mechanism serves to unwind the strip of veneer from the roll 24, allowing it to depend loosely, so that it shall not break.

The material being conducted over the roller 35 passes between two feed-rolls, (best shown in Fig. 4 and marked 36 37,) one of the feed-roll shafts being driven by the link belt 38, deriving its power from a sprocket-gear 39 on the shaft 15. The belt 38 passes over sprockets 40 41, the former being mounted on the shaft 42 and the latter on a shaft 43, hereinafter designated as the "cam-shaft." Shaft 42 is mounted in adjustable bearings in order to take up wear and to adjust the gearing. The shaft 42 and the shaft of the feed-wheel 36 each carries a mutilated gear, said gears being marked 44 45. The gear 44 has only a portion of its periphery provided with teeth, the remainder of its rim being blank, while the gear 45 has three tooth-sections separated by intervening blanks 46. Obviously, therefore, the toothed sections of said gears being of corresponding length, one revolution of the gear 44 will produce one-third of a revolution of the gear 45, and consequently the shaft of the lower feed-roll 36 will be given an intermittent rotary movement, while the shaft 42 has a constant rotary movement, the idle periods being filled in by the manipulations upon the blank in converting it into the finished dish. The strip of veneer is fed by the frictional contact of the wheels 36 37, and the upper feed-wheel may be mounted in sliding bearing with adjustable screws 47 therefor.

In order to prevent the veneer from buckling or bending, which it would be likely to do if force were applied to the end of the blank to move it, I make use of a spring-shoe 48, which rests on the sheet of veneer beneath the feed-wheel, and its rear end being bifurcated to embrace the wheel and the bifurcations extending up, as at 48[a], and being secured to the cross-piece 49. The shoe is therefore under a spring-tension due to the resiliency of its material and serves to hold the sheet of veneer flat some distance in front of the feed-wheel. The shaft 12 being put in motion, at each revolution the cross-head carrying the cutting and scoring knives is caused to reciprocate, and at the end of its downward movement it severs the blank, such as shown in Fig. 9, from the continuous strip of veneer. At each such revolution a complete revolution is imparted to the shaft 42, and through the mutilated gear thereon a partial rotary movement is imparted to the feed-wheels 36 37. Obviously, however, the feed-wheels remain at rest, notwithstanding the constant rotation of the shaft 42, while the blank portion 46 is in contact with the non-toothed portion of the periphery of the gear 44, and therefore time is allowed for the descent of the die and the cutting off of the blank. The blanks follow each other successively, each one pushing those in front of it onward toward the forming-dies. The latter are best shown in Figs. 4 and 5. 50 represents an upper chambered die of approximately the same shape in cross-section as the completed dish. This die is mounted so as to have a slight vertical yield, this being accomplished by providing it with stems 51, which pass through the axes of coiled springs 52, arranged between the arms 53 of the bracket 54. The stems 51 have collars 51[a] pinned thereto, and the lower ends of the springs rest on said collars. A slight clearance is allowed between the lower bracket-arms and the upper surface of the die to permit the vertical movement of the die against the tension of the springs. This die is transversely apertured and is provided with spring-yokes 55 56, the prongs of the yoke 55 serving to engage the blank and hold it upon the lower or reciprocating die and the prongs of the yoke 56 serving to tuck in the end flaps of the blank. The lower or plunger die is marked 57. It has a stem 58 provided with a roller 59, which travels in the groove 60 of the cam-disk 61, mounted on the cam-shaft 43. The cam-shaft is driven by the spur-gears 62 63, the former being mounted on counter-shaft 15. Obviously, therefore, an intermittent vertical reciprocatory movement is imparted to the lower or plunger die. The plunger-die 57 is provided with vertical slots 64, and stripper-fingers 65, carried upon a bar 66, project diagonally through said slots. (See Figs. 1 and 4.) As the die recedes with the finished dish these fingers act to strip the dish from the lower die, and being inclined rearwardly drop it upon the belt conveyer 67, by which the dish is carried off.

The staple-forming mechanism may be of any usual or desired type, the only features of novelty in reference to such staple-forming mechanism herein claimed being the gearing by which it is driven.

The cam-shaft 43 has on its extremities the grooved cams 68, which through the instrumentality of the rollers 69, carried on studs 70, secured with the reciprocating pitmen 71, operate the staple-forming mechanism. The upper ends of the pitmen are provided with racks, which drive the staple-formers through the instrumentalities of gears. Two forms

of gearing are shown. In Fig. 1 the upper end of the pitman is square and has a reduced portion, over which is slipped a sliding sleeve 72, provided with a rack 73 on one face thereof. This sliding rack-sleeve is seated upon a spring 74 and is confined by the nuts 75. The rack engages a spur-gear 76, which in turn is enmeshed with a rack 77 on sliding plunger 78, said plunger being taken as representative of the staple-forming mechanism. The preferred construction, however, of the gear connection between the plunger and the pitman is shown in Fig. 6, wherein the upper end of the pitman has its reduced portion round instead of angular and carries a sliding sleeve 79, having ribs 79ª, which are engaged by the gear-teeth 80 of an irregular gear 81. Said gear 81 has also the gear-teeth 82 working in the rack 77 on the plunger 78. The object of constructing the gear 81 in the peculiar form shown is to secure a long stroke of the plunger 78 with a short stroke of the pitman 71. The interposition of the spring 74 and the employment of a yielding toothed sleeve provides for any inaccuracies of adjustment and prevents injury to the gear-teeth.

The wire for forming the staples is carried upon spools, one of which is shown in Fig. 1 at 83, and the spindle for the other spool is marked 84. The wires are led off through the tubes 85 and pass between pairs of feed-wheels 86 87, mounted on shafts 88 89. The shaft 89 has a ratchet-wheel 90, which is engaged by a pawl 91, carried upon the upper end of a pivoted lever 92, the pivot of the lever being shown at 93. The lower end of said lever is slotted, as at 94, and a pin 95 works in said slot and carries an antifriction-roller 96, which works in the cam-groove of one of the cams 68. The rotation of said cam will therefore effect the vibration of the lever 92 on its pivot and the feeding step by step of the wire.

The wire is fed to the staple-forming mechanism at the point indicated at 97, Fig. 6, and the action of the parts is such that upon the completion of the formation of a dish by the dies the staple-forming mechanism is actuated and staples 98 are driven into the overlapped flaps of the trays or dishes. The staples are of the usual U shape, and in order to bend their prongs uniformly I employ an anvil, which is shown in detail in Fig. 8. Said anvils are mounted in grooves 99 in the lower die 57, as shown in Fig. 6. The anvil is marked 100 and has scores in its face intended to receive the ends of the staple-prongs and direct them toward each other, preventing their bending to one side. These anvil-blocks are removably held in the groove by a set-screw or in any other convenient manner.

I claim—

1. In a machine of the class described, a dish-forming mechanism comprising a recessed die and a plunger-die, said plunger-die being provided with vertical slots in its substance and bent arms projected into said slots and adapted to strip the dish from the die as the latter recedes with the finished dish, substantially as described.

2. In a machine of the class described, the combination with a blank cutting and forming mechanism, of stapling mechanism having reciprocating plungers and gearing for reciprocating said plungers comprising pitmen, toothed sleeves slidably mounted on said pitmen, a rack on the plunger and a gear interposed between the toothed sleeve and the rack, said sleeves being spring-supported, substantially as described.

3. In a machine of the class described, the combination with a blank cutting and forming mechanism, of stapling mechanism having reciprocating plungers and gearing for reciprocating said plungers comprising a pitman for each plunger, a toothed sleeve slidably mounted on said pitman, a rack on the plunger and a gear interposed between the toothed sleeve and the rack, said sleeve being spring-supported and said gear having tooth-sections of different radii, substantially as and for the purposes described.

4. In a machine of the class described, the combination with blank-cutting and dish-forming mechanism, of a stapling mechanism embodying reciprocating plungers, pitmen and interposed gearing for reciprocating said plungers, cams for imparting movement to said pitmen, and a staple-wire-feeding mechanism comprising a pivoted lever operated by one of the pitmen-cams, a pawl actuated by said lever and wire-feeding mechanism intermittently actuated by the pawl, substantially as described.

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