

J. T. FERRES.
VENEER DISH MACHINE.

No. 456,483.

Patented July 21, 1891.

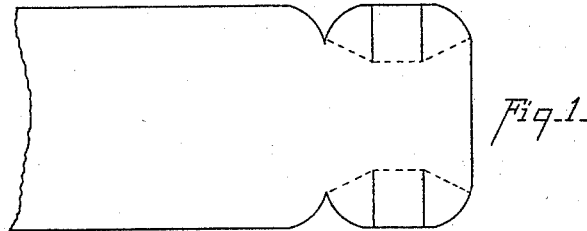


Fig. 1.

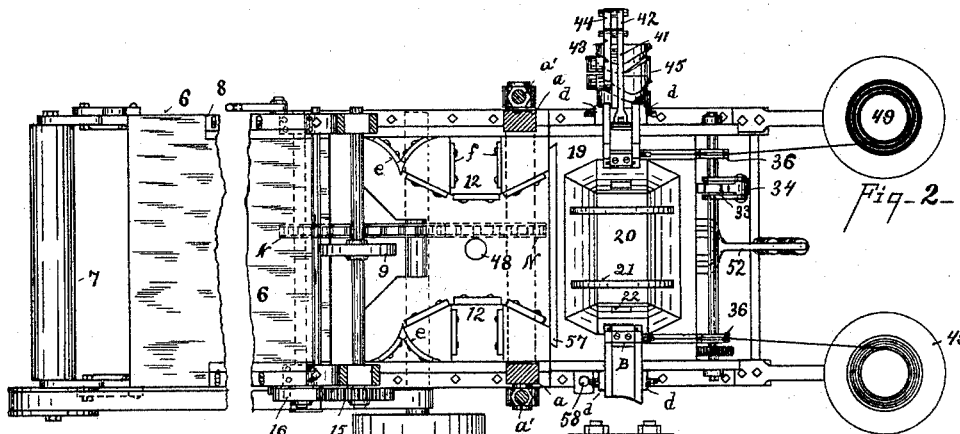


Fig. 2.

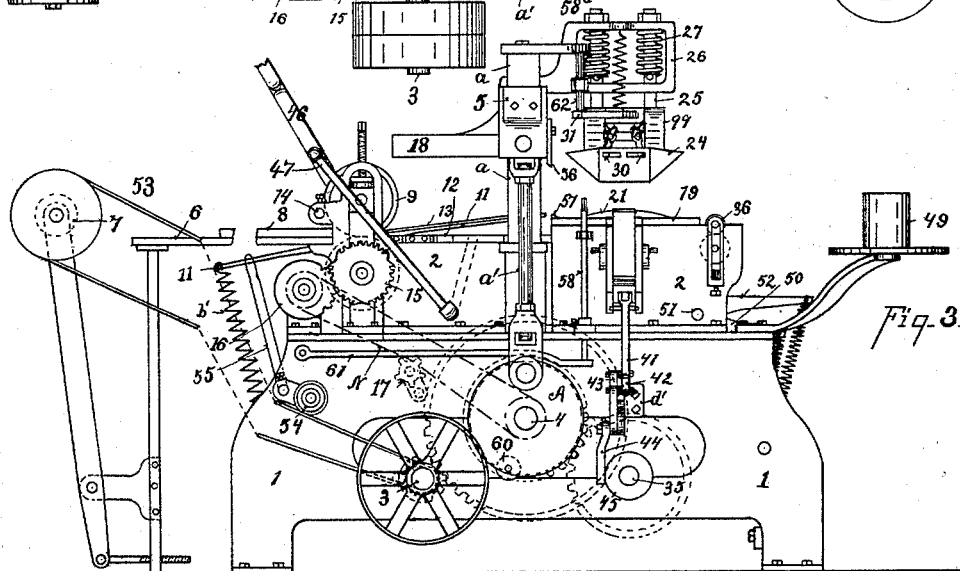


Fig. 3.

Witnesses

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T. Simmons

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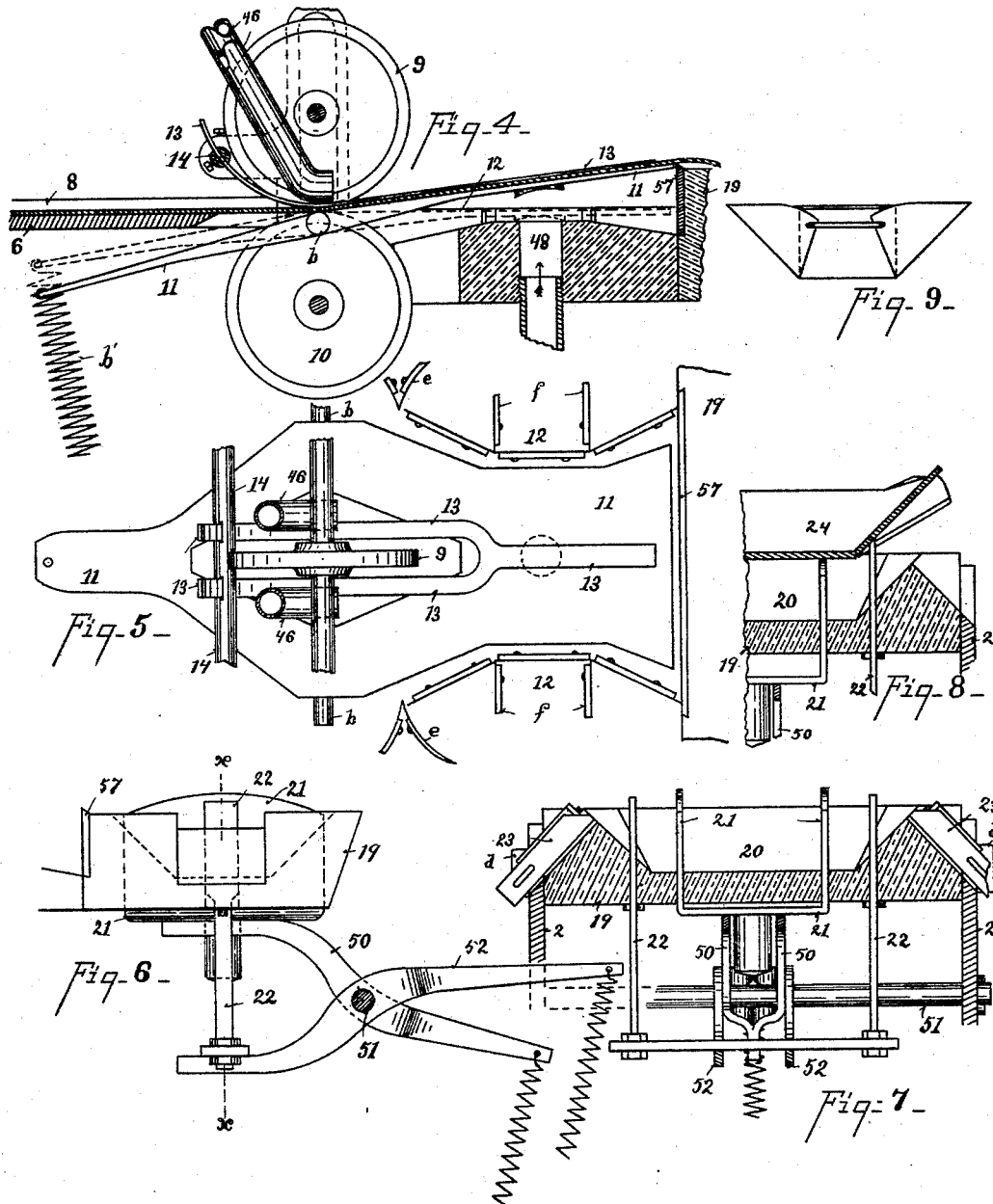
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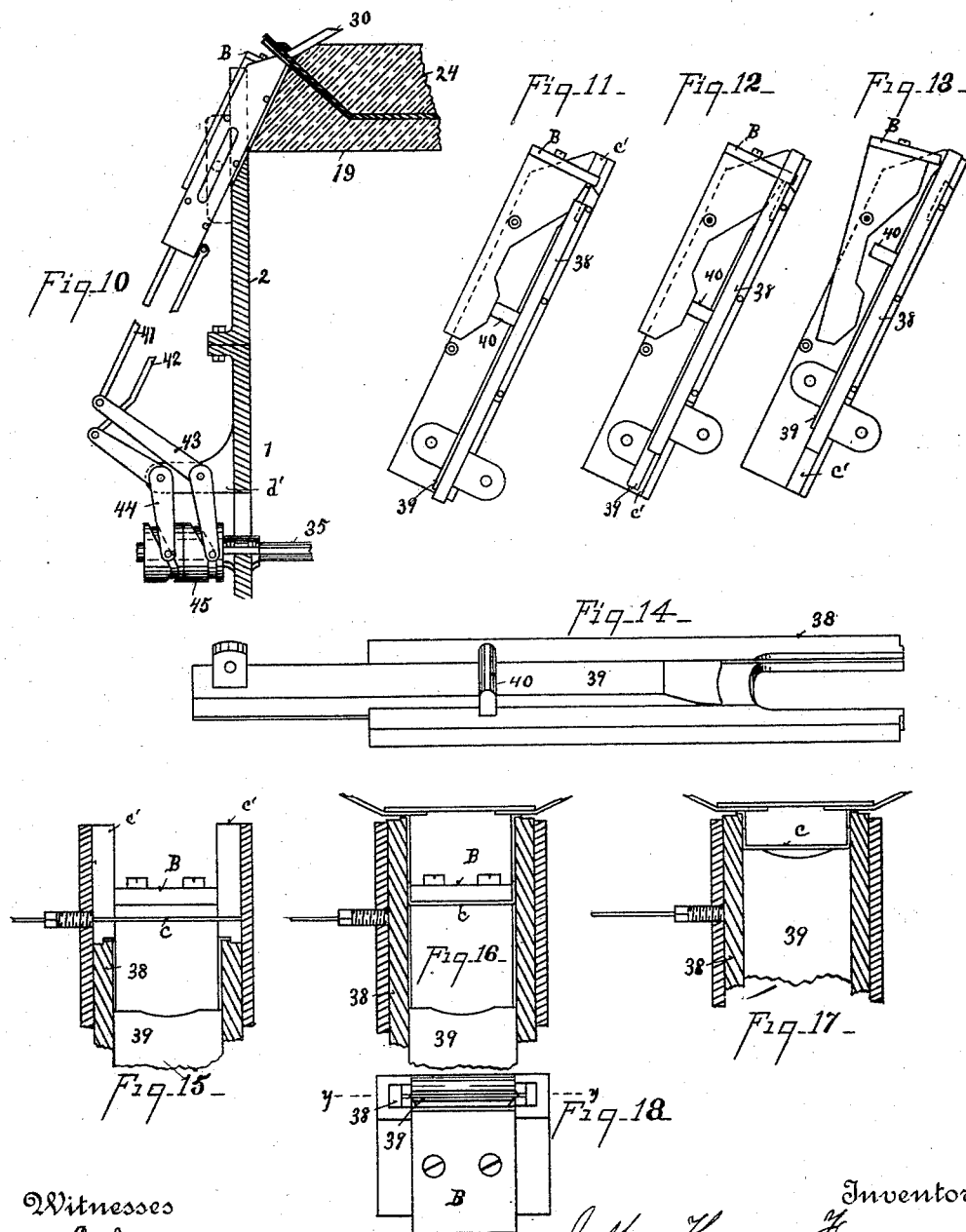
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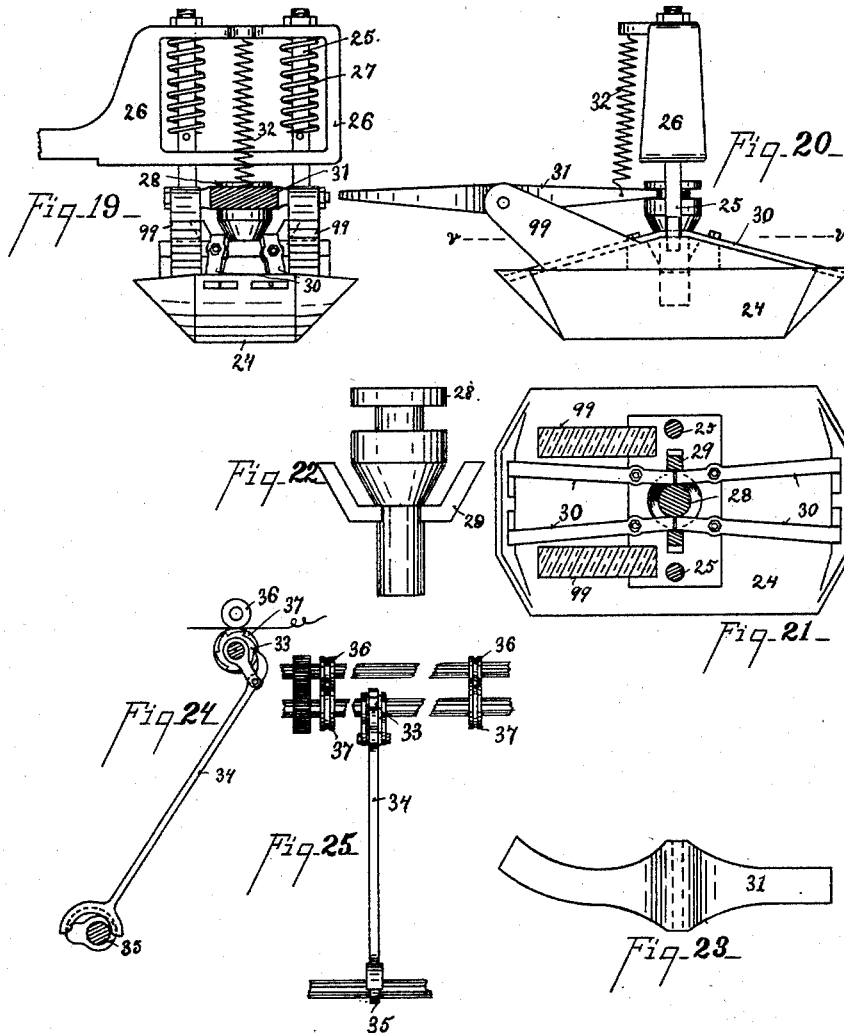
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Witnesses
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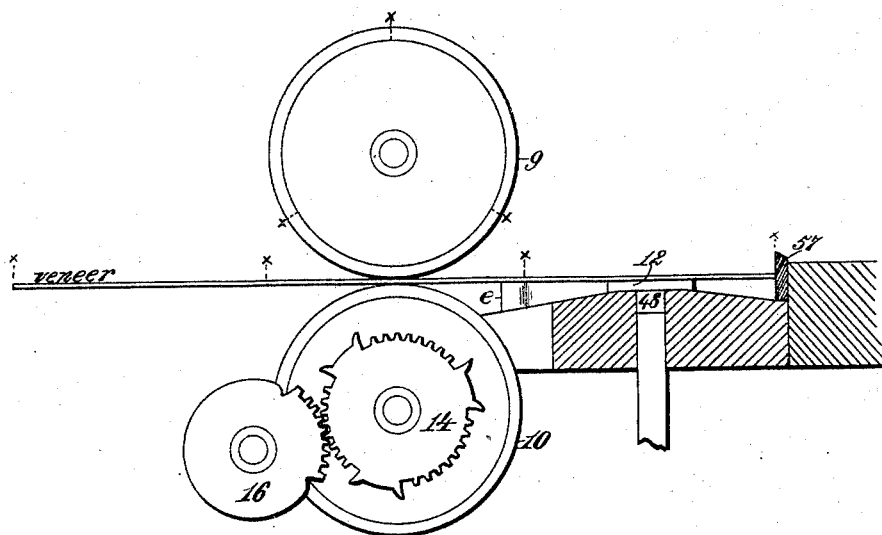
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Fig. 26.



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UNITED STATES PATENT OFFICE.

JEFFREY THOMAS FERRES, OF ANDERSON, INDIANA.

VENEER-DISH MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,483, dated July 21, 1891.

Application filed March 25, 1890. Serial No. 345,277. (No model.)

To all whom it may concern:

Be it known that I, JEFFREY THOMAS FERRES, a citizen of Canada, and a resident of Anderson, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Veneer-Dish Machines, of which the following is a specification.

The object of my invention is to form dishes—such as butter-dishes—from a veneer of wood or other suitable material by feeding a strip or roll of veneer of the same into a machine which is constructed so that the first operation of the machine is to feed a sufficient amount of veneer to form a dish which is cut into shape and scored by means of knives ready for bending into shape; second, to form die-shaping mechanism which bends up the ends and sides of the dish and laps the slitted portions, and, lastly, to secure the lapped portions by staples, which are automatically inserted and clinched while the dish is held under operation, all of which will be fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan of a blank shaped and scored ready for forming into a dish. Fig. 2 is a top plan view of the machine, the cross-head and part of the feeding mechanism being removed. Fig. 3 is a side elevation of the same. Fig. 4 is an enlarged detail view, partly in section, of the feed mechanism. Fig. 5 is a top plan view of the same. Fig. 6 is a detail representing the lower die in end elevation. Fig. 7 is a section of the same through line *xx*, Fig. 6. Fig. 8 is a view similar to Fig. 7, showing the manner of folding in the ends of the dish. Fig. 9 is an end view of a completed dish. Fig. 10 is a detail view, partly in section, showing the stapling mechanism in side elevation. Figs. 11, 12, and 13 are detail views showing the successive movements of the stapling mechanism. Fig. 14 is a perspective view of the staple forming and driving slides. Figs. 15, 16, and 17 are sectional views on line *yy*, Fig. 18, corresponding, respectively, to Figs. 11, 12, and 13, and showing the manner of forming and driving the staples. Fig. 18 is an end view of the stapling mechanism. Fig. 19 is an end elevation of the male die. Fig. 20 is a side elevation

of the same. Fig. 21 is a section on line *vv* of Fig. 20. Figs. 22 and 23 are elevations of parts shown in Figs. 19 and 20. Figs. 24 and 25 are details of the wire-feeding mechanism. Fig. 26 is a view illustrating the extent of circumference given to the rolls 9 and 10, with relation to the surface of the blanks to be acted on, the width of the blanks being designated by the letters *x*; but in Figs. 2 and 3 no attempt is made to show the veneer blanks in their proper relative proportions with reference to the rolls.

1 represents the main frame, on which the various parts are separately secured in secondary frames—2.

3 represents the driving-shaft, which is journaled in opposite sides of the main frame. Motion is communicated from the driving-shaft to the shaft 4 by means of spur-gear, as indicated in dotted lines.

5 represents a cross-head, supported on upright guides *a* and actuated through connecting-rods *a'* by crank-wheel A on shaft 4.

6 represents a table, over which the veneer is fed to the machine from the roll 7, the table 6 being provided with adjustable guides 8 on its opposite sides. The veneer is fed to the machine by means of rolls 9 and 10, which are located one above and the other below the veneer.

11 represents a vibratory tongue or knife-clearer, which is mounted on trunnions *b* and held normally in the raised position by a spring *b'*, attached to its outer end. As the veneer passes through the feed-rollers it is fed onto the vibrating tongue, which holds it suspended above the scoring-knives 12, the veneer being held firmly against tongue 11 by means of spring-arm 13, which is bifurcated to pass on the opposite sides of the feed-roller 9, and is adjustably secured to the shaft 14 behind the feed-roller.

Motion is communicated intermittently to the lower feed-roll 10 by means of the mutilated gears 15 and 16, the gear 16 being operated by a chain-belt N from the shaft 4, as indicated in Figs. 2 and 3.

17 represents an ordinary belt-tightener.

The feed-rolls will make one-third of a revolution to each revolution of the gear 16, thereby suspending the feed during the operation of scoring and forming the dish. After the

veneer has been fed over the scoring-knives the cross-head 5 descends, bringing the press 18 down onto the veneer, forcing the vibrating tongue 11 into the position shown in dotted lines, Fig. 4, bringing the veneer onto the scoring-knives 12, forming the blank represented in Fig. 1. As the cross-head rises, the tongue 11 is raised by the spring *b'* forcing the veneer off from the scoring-knives and raising it sufficiently so as to pass over the shearing-blade 57 at the next operation of the feed. When the feed again operates, the blank previously formed is fed onto the top of the lower forming-die 19, while a new length of veneer is brought over the scoring-knives. The lower forming-die, as seen in Fig. 2, consists of a shallow cup 20, the contour of which determines the form of the dish. It is slotted to receive the upwardly-projecting ends of the yoke 21 and also at the ends to receive the folding-fingers 22. It is also recessed at the ends to admit the ends of the stapling devices. The upper die consists of the head 24, which is the counterpart of the lower die, mounted on the rods 25, which pass up through bracket 26, which is secured to the cross-head 5. The rods 25 are limited in their downward motion by nuts above the brackets 26. They are also held to the work by means of the springs 27 and pins passing through the rods below the springs. In the center of the upper die between the rods 25 is mounted a spindle 28, having lugs 29, resting in grooves in the top of the die-plate. 30 represents the four clinching-levers. They are pivoted to the die-plate, as shown in Fig. 21, with the inner ends resting between the spindle 28 and its lugs 29, while the other ends pass through the slots in the ends of the die-plate and rest against the dish when the dies are closed.

The clinching-levers are operated by means of the lever 31 pivoted in lugs 39 projecting from the upper side of the die-plate, the inner end of said lever resting in an annular groove at the upper end of the spindle 28, while its opposite end projects out over the end of rod 58, by which it is actuated at the proper time.

32 represents a spring to hold the lever 31 normally in the raised position. As the outer end of the lever 31 is forced up, the inner end forces the spindle 28 down. The conical portion being forced down between the inner ends of the clinching-levers 30 forces them out and bringing the opposite ends together clinches the staples which have previously been driven through over the inner side of the dish.

Figs. 10 to 18, inclusive, represent the staple-forming mechanism, Fig. 10 representing the dies closed upon a dish and the stapling device ready for operation.

Figs. 11, 12, 13, 15, 16, and 17 represent the different steps in the process of forming and driving the staples. The wire is fed to the stapling device intermittently by feed-rollers

36 and 37, as represented in Figs. 24 and 25, the feed-rolls being partially rotated at regular intervals by means of a ratchet 33 and pawl 34, the extended shank of the pawl resting on a cam secured to shaft 35.

Figs. 11 and 15 represent the relative positions of the staple former and driver in their boxing as the wire is fed in, *c* representing the wire, which is fed through a hardened steel plug screwed into the side of the staple-boxing. The staple-former 38, Fig. 14, which moves backward and forward in grooves *c'* in the sides of the boxing, now moves forward, shearing the wire off against the end of the hardened plug, and continuing its forward motion bends the ends of the wire around the corners of the steel templet B. The templet B is held in place by screws, Fig. 18, and is thus detachable and reversible, so that when its corners become worn by bending the wire around them the templet can be turned with its other side to the work ends of the staple resting in grooves in the sides of the former, as illustrated in Figs. 12 and 16. The former continues its forward movement until its ends are pressed against the dish, which is firmly clamped between the dies. During the preceding operations the templet B has been held in the path of the staple by a lug 40, extending from the upper side of the staple-driver 39. The driver now moves forward, releasing the plate B, the wedge-shaped forward end of the driver forcing it out of the path of the staple. The staple is then forced forward by the driver 39 and its ends driven through the overlapping portions of the dish and into the slots in the ends of the upper die, there to be operated upon in turn by the clinching-levers 30, while the stapler assumes its first position preparatory to forming another staple.

The staple-former and driver are actuated through connecting-rods 41 and 42 by means of bell-cranks 43 and 44, which are pivoted to the lug *d'*, projecting from the main frame, and are operated by pins traveling in cam-grooves on rollers 45. The shaft on which the rollers 45 are mounted receives motion through shaft 4 by means of a spur-gear, as indicated in Fig. 3.

46 represents a blast-tube which is forked at its lower end to pass on opposite sides of the feed-roller 9, as shown in Figs. 4 and 5.

47 represents a branch pipe connecting with the opening 48 between the scoring-knives, the purpose of these pipes being to carry blast to the machine to keep it free from chips and dirt, and also to throw the finished dishes out of the machine. The blast coming through the opening 48 is deflected by means of a cup-shaped lug on the under side of the vibrating tongue 11.

The yoke 21 is held in place by means of the bifurcated lever 50, pivoted on shaft 51, being held in position by means of a spring connected to the lower portion of the main frame of the machine. 52 represents a similar lever

which supports the fingers 22. The roller 7, which supplies veneer to the machine, is rotated by means of the belt 53, which passes from the driving-shaft over a pulley at one end of the roll 7.

54 represents a belt-tightener operating from the opposite side of the machine by lever 55, which enables the operator to unwind at frequent intervals a sufficient quantity of veneer for immediate use without passing back to the veneer-roll, the veneer not being strong enough to permit moving it from the roll by means of the feed 9 and 10.

49 represents wire drums, which are mounted on brackets secured to the front of the machine.

The operation of my device is as follows: A sufficient quantity of veneer is unwound to reach the feed-roll and leave two or three yards of slack hanging over the end of the table 6. The machine is then started, when the feed-rolls feed forward on the vibrating tongue 11 a sufficient quantity to form a blank. The cross-head then descends, forcing the tongue 11 down between the scoring-knives forming and scoring a blank—that is, trimming the corners with the V-shaped knives *e*, slitting the ends with knives *f*, and scoring or cutting the veneer partially through by knives 12, as indicated in dotted lines, Fig. 1, to facilitate the bending of the blank in the dies, and as the cross-head rises again the tongue 11 is forced up by the spring at its opposite end and the veneer again fed forward, bringing the blank that has already been formed above the lower die 20, the veneer resting on the ends of the yoke 21. As the cross-head descends again, the veneer is first caught between the upper die 24 and the ends of the yoke 21, holding it firmly in position while the blank is cut loose from the roll by the shear-blades 56 and 57. As the upper die descends farther, the yoke 21 is forced down until the lugs 22 strike the center lap at the ends of the blanks and force it up against the end of the upper die, as indicated in Fig. 8, thus permitting the side laps of the blank to fold beneath the center lap. The fingers 22 are now also forced down and the dish tightly compressed between the two dies. The stapling device then operates and the staple is formed and driven through the ends of the dish. The ends of the staples are next clinched down, as previously described. The outer end of the lever 31 is raised by means of the rod 58, which is mounted vertically in lugs on the outside of the frame 2. As the cross-head descends, the end of the lever rests on the top of the rod 58, and as the crank-wheel A revolves the roller 60, mounted in its periphery, strikes the lever 61, lifting its outer end and raising the rod 58, thereby actuating the clinching-levers 30. As the cross-head rises, the yoke 21 and fingers 22 are brought to their normal position, forcing the dish out the lower die, when the blast

catches it and throws it out at the front of the machine. Should the lever 31 become clogged or refuse to act at the extent of the upward stroke, it would be forced to the proper position by striking the lower end of the rod 62, projecting downward from the extended end of the cross-bar at the top of the cross-head guides. At the same time that this dish is being stapled another blank is being formed and scored by the press 18.

Having thus described my invention, what I claim is—

1. In a veneer-dish-forming machine, the combination of the cutting and scoring knives arranged substantially as described, the folding-dies, the feeding mechanism consisting of the rolls 9 and 10, each having a circumference equal to the width of three or more dish-blanks, and the mutilated gears 15 and 16 for actuating the feed-rolls intermittently, substantially as described.

2. In a veneer-dish-forming machine, the combination of the feed-rolls, the cutting and scoring knives arranged substantially as described, the knife-clearing mechanism consisting of the vibratory tongue 11, operating in front of the feed-rolls and between the scoring-knives, and a spring for holding the tongue away from the knives, substantially as described.

3. In a veneer-dish-forming machine, the combination of the air-blast pipe 48, the vibratory tongue 11, having a cup on its under side for the air-blast to strike against, the scoring-knives, the spring *b'* for normally holding the tongue away from the knives, and mechanism for intermittently depressing said tongue, substantially as described.

4. In a veneer-dish-forming machine, the combination of the shaping and scoring knives, the vibratory tongue 11, and the flexible spring-guide 13 for holding the veneer down straight to the action of the knives, substantially as described.

5. In a veneer-dish-forming machine, the combination of the feeding mechanism, substantially as described, the cutting-knives *e*, located to cut the last corners of the dish being scored and the first corners of the dish following it, the scoring-knives 12, the vibratory tongue 11, and the slitting-knives *f* for simultaneously shaping, scoring, and slitting the blank, substantially as described.

6. In a veneer-dish-forming machine, the combination, with the stationary die 19 and shaping-die 24, of the yieldingsupporting-yoke 21, projecting up through the die 19, for guiding the veneer over said die and its fingers 22, and for holding the central part of the blank to the work of the dies, and for ejecting the dish from the stationary die as the shaping-die recedes therefrom, substantially as described.

7. In a veneer-dish-forming machine, the combination of the dies 19 and 24, the staple-former 38, the staple-driver 39, the clinching-

levers 30, the spindle 28, lever 31, rods 58, lever 61, and roller 60, substantially as described.

8. In a veneer-dish-forming machine, the
5 combination of intermittently operating feed-rolls, the vibratory tongue 11, the slitting, shaping, and scoring knives, the folding-dies, the staple forming, inserting, and clinching mechanism, substantially as described, the
10 vertically-reciprocating cross-head 5, and the scoring-press 18, carried by said cross-head, said parts being operated intermittently in successive time movements for feeding, scoring, slitting, and shaping a blank and sta-
15 pling it, substantially as described.

9. In a veneer-dish-forming machine, the combination, with the feeding-rolls and the cutting, scoring, and shaping mechanism, substantially as described, of one or more blast-
20 pipes 46, terminating near the feed-rolls, where the blast can best strike the finished dish and eject it from the machine, substantially as described.

10. In a veneer-dish-forming machine, the
25 combination, with the cutting and scoring knives and the vibrating tongue 11, having a cup on its under side, of the air-blast pipe 47, terminating under said vibrating tongue and striking in the center of the cup to deflect
30 the air horizontally, for blowing chips away from the cutting and scoring knives, substantially as described.

11. In a veneer-dish-forming machine, the combination of the score-bed, the knives *e*,
35 12, and *f*, and the blast-pipe 48, located centrally between said knives, for blowing away the chips and dust, substantially as described.

12. In a veneer-dish-forming machine, the combination of the intermittently-actuated
40 feed-rolls 9 and 10, the trimming-knives *e*,

scoring-knives 12, slitting-knives *f*, vibratory tongue or knife-clearer 11, having spring *b'*, and the bifurcated adjustable spring guide-arm 13, substantially as described.

13. In a veneer-dish-forming machine, the
45 combination of the vertically-reciprocating cross-head 5, the press 18, carried by said cross-head, the shearing-blades 56 and 57, the upper movable die 24, the stationary slotted lower die 19, the yielding supporting-yoke 21,
50 and the fingers 22, substantially as described.

14. In a veneer-dish-forming machine, the combination of the stationary cup-shaped and slotted lower die 19, the yielding yoke 21, the
55 fingers 22, the upper vertically-movable die 24, bracket 26, springs 27, and the vertically-reciprocating cross-head 5, substantially as described.

15. In a veneer-dish-forming machine, the combination of the stationary lower die 19,
60 the movable upper die 24, the spindle 28, having lugs 29, and pivoted levers 30, substantially as described.

16. In a veneer-dish-forming machine, the combination of the slotted lower die 19, the
65 upper die 24, the spindle 28, the pivoted clinching-levers 30, lever 31, rod 58, and spring 32, substantially as described.

17. In a veneer-dish-forming machine, the combination of the movable die 24, the sta-
70 tionary slotted die 19, the yielding supporting-yoke 21, the fingers 22, and the levers 50 and 52, substantially as described.

In testimony whereof I have hereunto set my hand.

JEFFREY THOMAS FERRES.

Witnesses:

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JAMES E. CLENNY.