No. 771,049. PATENTED SEPT. 27, 1904.

C. ENGBERG.

BASKET MACHINE.

APPLICATION FILED JUNE 20, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.

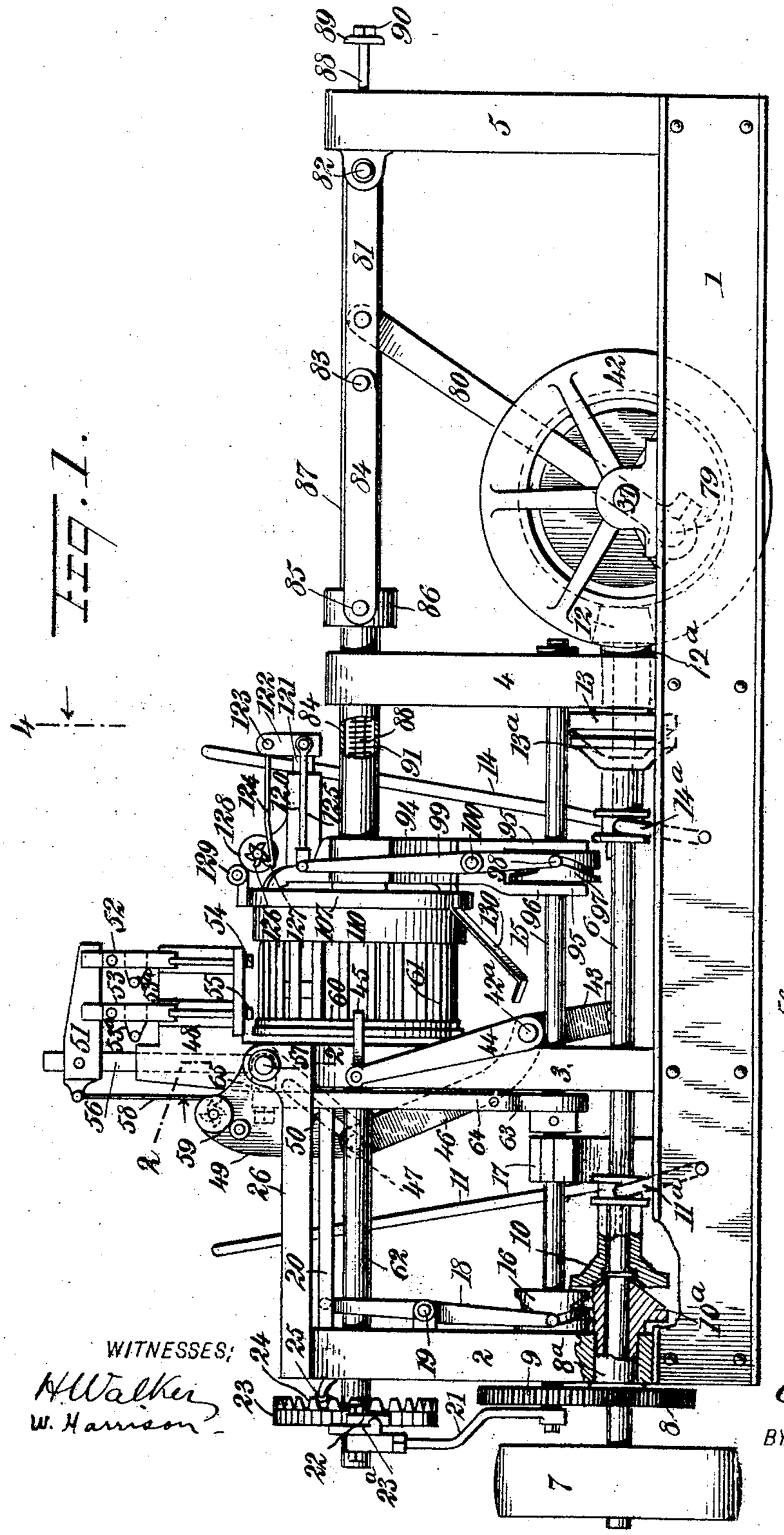

Fig. 2.

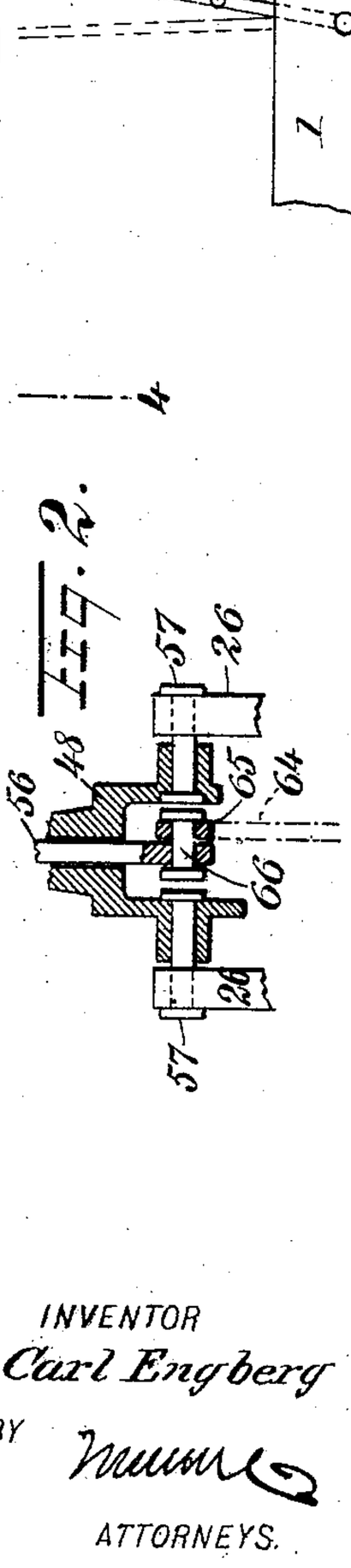

Fig. 9.

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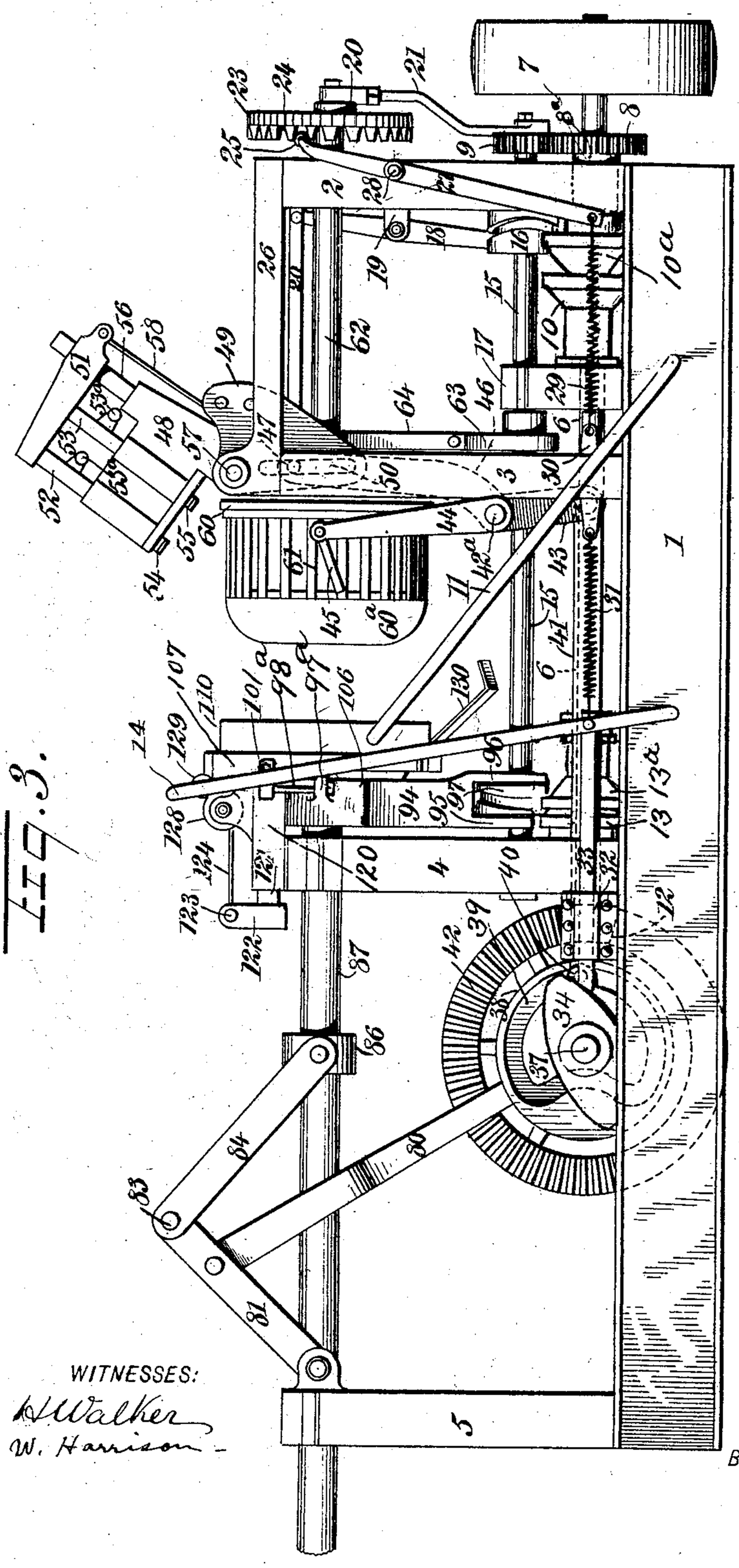
NO MODEL. 4 SHEETS—SHEET 2.

FIG. 3.



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NO MODEL. 4 SHEETS—SHEET 3.

FIG. 3.

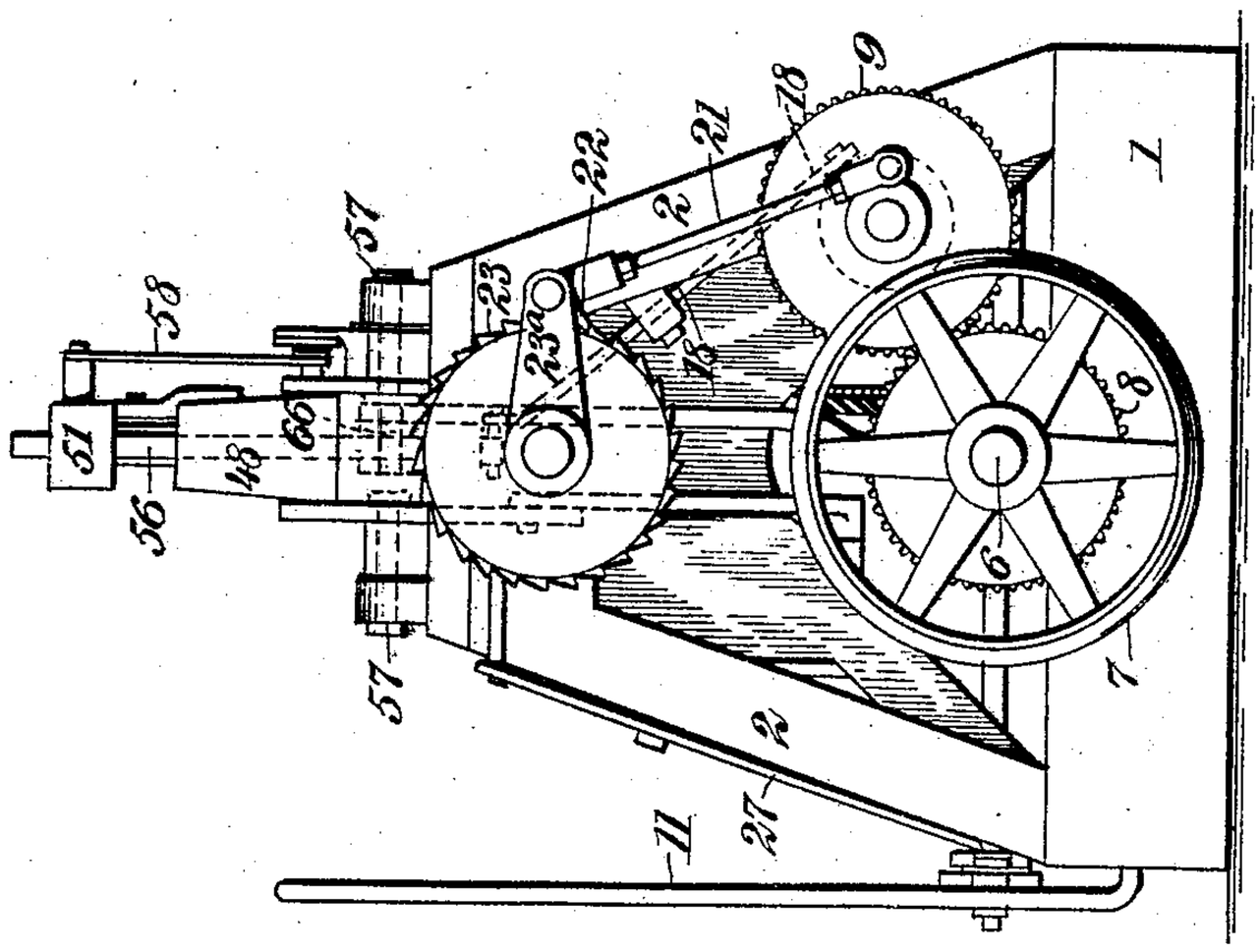

FIG. 4.

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NO MODEL. 4 SHEETS—SHEET 4.

Fig. 6.

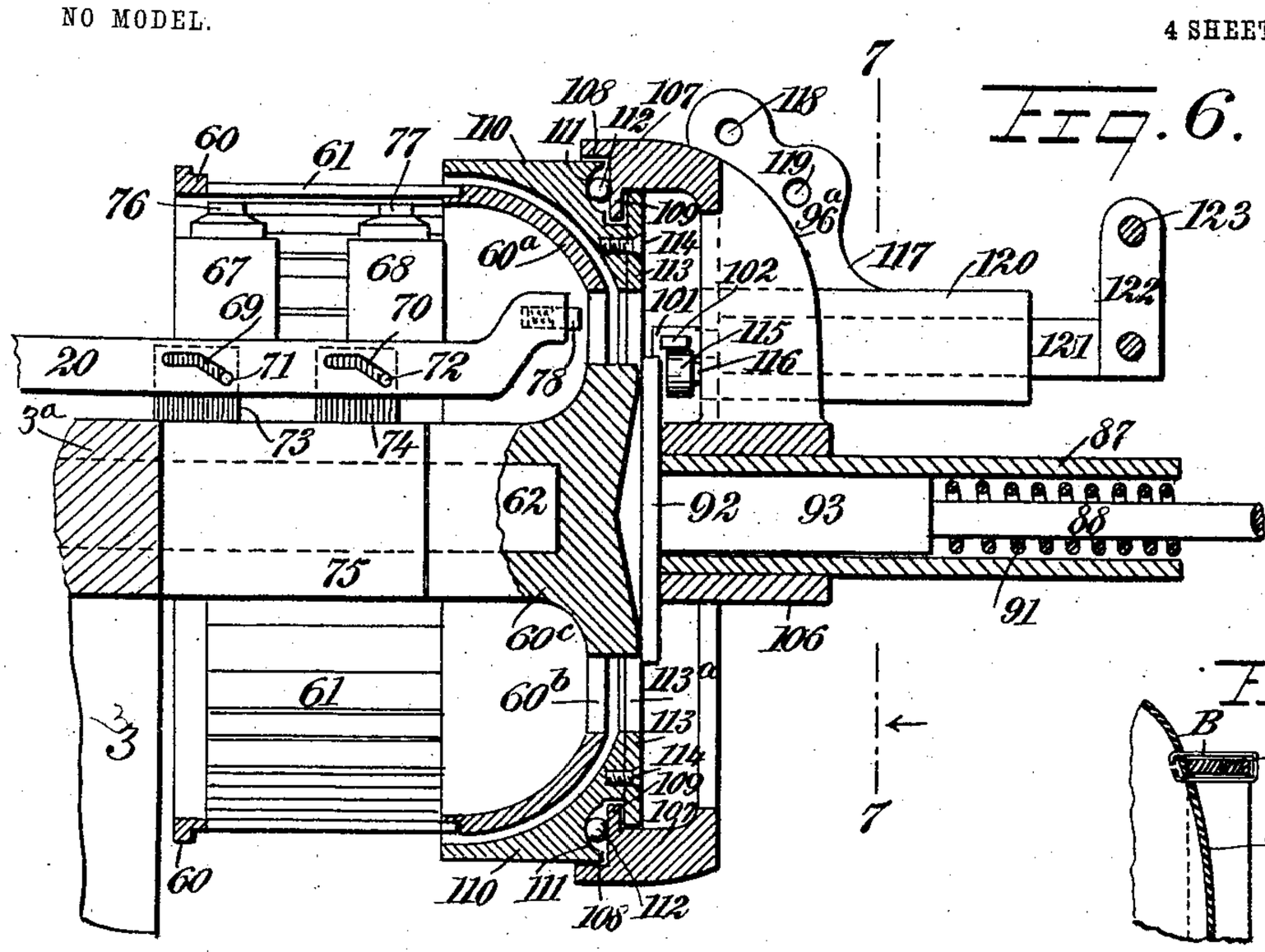


Fig. 8.

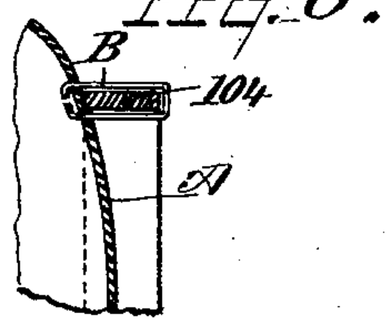
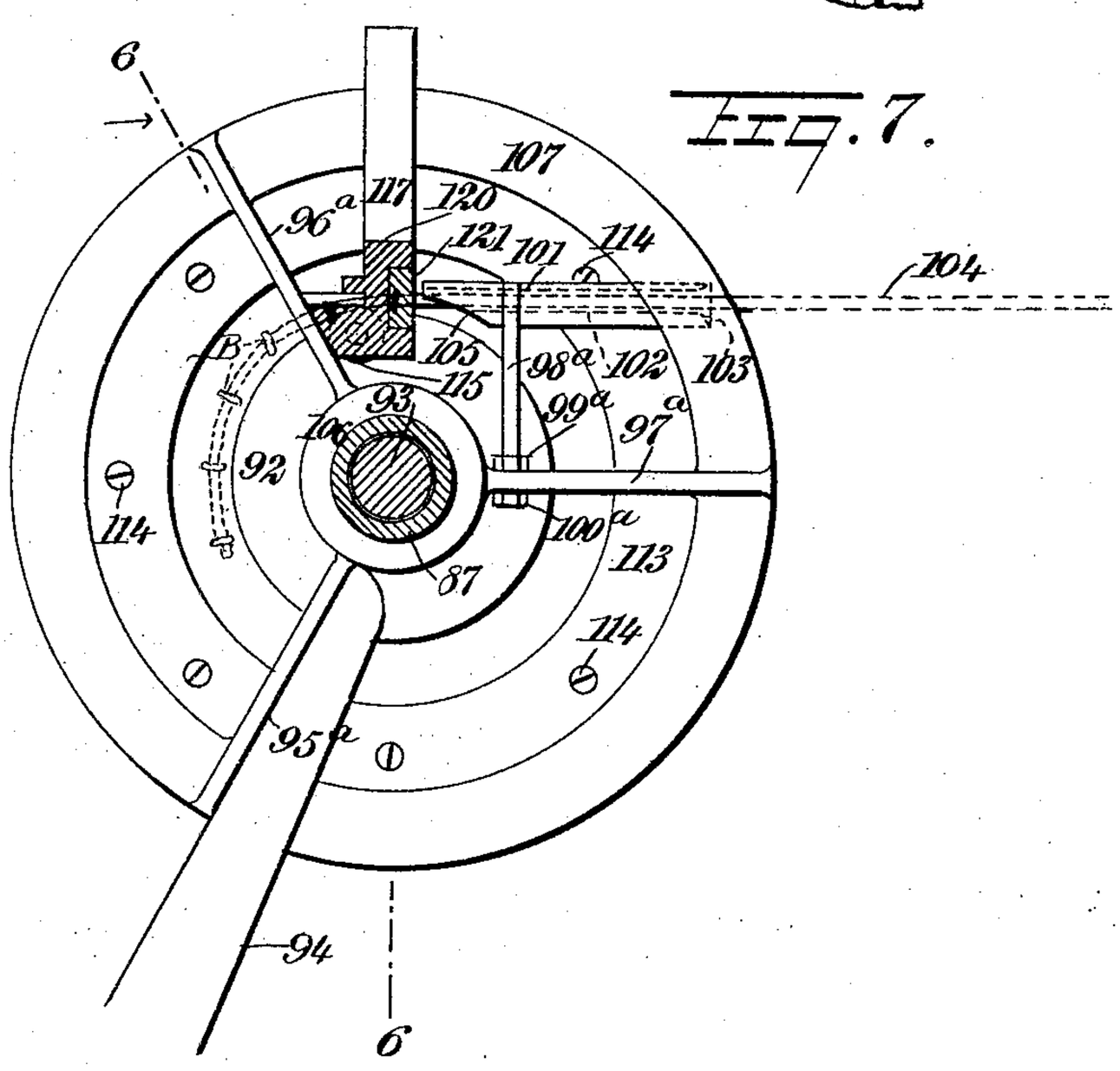


Fig. 7.



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UNITED STATES PATENT OFFICE.

CARL ENGBERG, OF ST. JOSEPH, MICHIGAN, ASSIGNOR TO ENGBERG'S ELECTRICAL AND MECHANICAL WORKS, OF ST. JOSEPH, MICHIGAN.

BASKET-MACHINE.

SPECIFICATION forming part of Letters Patent No. 771,049, dated September 27, 1904.

Application filed June 20, 1903. Serial No. 162,341. (No model.)

To all whom it may concern:

Be it known that I, CARL ENGBERG, a citizen of the United States, and a resident of St. Joseph, in the county of Berrien and State of Michigan, have invented a new and Improved Basket-Machine, of which the following is a full, clear, and exact description.

My invention relates to basket-machines, the object of my several improvements being to render the machine, as far as practicable, automatic and to present certain points of advantage hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation showing the basket-machine complete. Fig. 2 is a fragmentary section upon the line 2 2 of Fig. 1 looking in the direction of the arrow. Fig. 3 is a side elevation of the machine, the view being of opposite direction to that of Fig. 1. Fig. 4 is a vertical section upon the line 4 4 of Fig. 1 looking in the direction of the arrow. Fig. 5 is an end elevation of the machine, showing the same as if viewed from the left of Fig. 1. Fig. 6 is a section on the line 6 6 of Fig. 7 through the forming mechanism and showing the clench-bar. Fig. 7 is a section upon the line 7 7 of Fig. 6 looking in the direction of the arrow and showing portions of the hoop-guide mechanism. Fig. 8 is a fragmentary vertical section showing the bottom hoop being stapled in position. Fig. 9 is a fragmentary reverse elevation, partly in section, showing the cam 34 for restoring the lever 14 to its normal position.

Upon a base 1 are mounted the standards 2 3 4 5. On a revoluble shaft 6, provided with a driving-pulley 7 and adapted to transmit power to other parts by the clutch members 10 10^a, hereinafter described, is mounted a gear-wheel 8, provided integrally with a revoluble sleeve 8^a, which meshes with a somewhat similar gear-wheel 9 and is rigidly connected with the sleeve 8^a. The clutch members 10 10^a are for the purpose of controlling the gear-wheel 8. The clutch member 10 is connected with a hand-lever 11 by means of a Y-shaped portion 11^a. By moving the lever 11 to the left or to the right the operator is enabled to cause the clutch members 10 10^a to engage and disengage, thereby throwing the gear-wheel 8 into and out of action. Also mounted rigidly upon the shaft 6 is a bevel-gear 12. This shaft 6 is provided with clutch members 13 13^a, the latter being connected with a Y-shaped portion 14^a of a lever 14. By the movements of the lever 14 the clutch member 13^a is brought into and out of engagement with the clutch member 13, which controls the bevel-gear 12. This bevel-gear is mounted rigidly upon the sleeve 12^a, which of course rotates therewith. A revoluble shaft 15 is provided with a cam 16 and is supported upon bearings carried by the standards 2 3 4 and also by a bearing 17. A lever 18 is pivoted at 19 upon the standard 2 and is operated by the cam 16. The upper end of the lever 18 is connected with a clench-bar 20. By means of a pitman 21, a pawl 22, and a crank 23^a the gear-wheel 9 is operatively connected with a ratchet-wheel 23, so as to rotate the same intermittingly. The ratchet-wheel 23 is provided with crown-teeth 24, which are engaged by a roller 25. This roller is mounted upon the upper end of a lever 27, which is pivoted at 28 and is connected at its lower end by a spring 29 with a stationary eye 30. The tension of the spring 29 normally tends to force the roller 25 between consecutive crown-teeth 24, so as to lock the wheel 23 in a definite position. The tension of the spring 29 is not so great, however, as to prevent the rotation of the wheel 23 under the impulse of the pawl 22.

Mounted upon the standards 2 3 is a plate 26, forming virtually a part of the framework. A spring 31 is connected with the lever 14, as indicated in Fig. 3. Within a slideway 32 is mounted a sliding bar 33, which is periodically engaged by a cam 34 of the shape indicated in Figs. 3 and 9. The sliding bar 33 is provided with a roller 34^a, periodically engaged by a lug 34^b on the cam 34, thereby preventing the cam 34 from moving beyond a certain predetermined limit. When the lug 34^b is thus engaged by the slide-bar 33, the lever 14 is in one of its extreme positions. As the cam 34

rotates, however, the lever 14 is gradually pushed from its position indicated by full lines in Fig. 9 to its position indicated by dotted lines in said figure. A revoluble shaft 37 supports the cam 34 and also supports a disk 38, provided with a heart-shaped cam-groove 39, engaged by a roller 40, carried by a slidable member 41, to which motion is communicated by the movements of the roller 40 within the groove 39 each time the wheel or bevel-gear 42 is caused to rotate a portion of a turn. The member 41 is connected with an arm 43, mounted upon a shaft 42^a, to which is rigidly connected a pair of arms 44, carrying pawls 45. Mounted rigidly upon the arms 44 is a curved arm 46, provided at its upper end with a pivot 47.

A stapling-head 48 is journaled upon the framework and is free to rock in a definite plane, as indicated in Fig. 3. The stapling-head is rigidly connected with a plate 49, which is provided with a longitudinal slot 50, this slot engaging the pivot 47, carried by the arm 46. When the shaft 42^a rocks, the pivot 47 slides from one end of the slot 50 to the other, the stapling-head 48 being thereby caused to assume either the position indicated in Fig. 1 or that indicated in Fig. 3. The stapling-head 48 is provided with the usual operating accessories, such as a reciprocating head 51, staple-driving mechanisms proper, 52 53, springs 53^a for propelling the drivers 54 55, and a sliding rod 56, all of these parts being substantially of the usual construction or as described, for instance, in my Letters Patent No. 722,961, dated March 17, 1903, for a basket-machine. This stapling-head 48 is journaled upon pintles 57. (Shown to better advantage in Fig. 2.) Connecting with the reciprocating head 51 is a pawl 58, which operates a wire-feed 59 in the usual manner, each movement of the reciprocating head 51 representing a certain amount of rotation of the wire-feed. An annular member 60 is connected by slats 61 with a rotund head 60^a, these three parts constituting the male former. From an eccentric 63 on the shaft 15 a pitman 64, provided with a head 65, extends to the pintle 66, as shown more particularly in Fig. 2. By this arrangement the angular movement of the stapling-head 48 is free to take place without disturbing the position of any other part, owing to the flexibility existing between the pitman 64 and the pintle 66.

As will be seen by referring to Fig. 6, the clench-block frames 67 68 are mounted directly upon the clench-bar 20. This clench-bar is provided with cam-slots 69 70, which engage the bosses 71 72. These bosses are mounted upon the standards 73 74, which are integrally connected with a collar 75, supported rigidly upon the framework 3^a or 3. Rigidly mounted upon the end of the revoluble shaft 62 is the rotund portion 60^a, heretofore referred to, provided with a plurality of apertures 60^b and integral with the head 60^c. By this arrangement the entire male former is mounted upon the shaft 62 and is rigid relatively thereto. The rotation of the shaft 62 carries with it, therefore, the rotation of the rotund portion 60^a and of the slats 61. The clench-blocks are shown at 76 77 and are of the usual construction. These blocks are for the purpose of clenching the inner end of the staples as the same are driven into the basket-web. Connected to a crank 79 (see Fig. 1) is a pitman 80, which is pivoted upon the toggle-levers 81, these toggle-levers 81 having pintles 83, whereby the same are connected with pitman 84, connected by a pivot 85 with a head 86, rigidly mounted upon a tube 87. Extending through this tube is an adjustment-rod 88, provided at its outer or free end with a stop-nut 89 and a nut 90 for locking the same. A spiral spring 91 encircles the adjustment-rod 88 and normally forces the same to the left in the view exhibited in Fig. 1.

Mounted within the tube 87 is a head 92, carried upon a cylinder 93, as indicated more particularly in Fig. 6. Rigidly connected with the tube 87 (see Figs. 1 and 3) is a hanger 94, provided at its lower end with a bifurcated portion 95 96, inclosing a cam 97. Engaging this cam is a roller 98, mounted upon the lower end of a lever 99, this lever being pivoted at 100. The sliding of the frame 94 causes the cam 97 to slide upon the shaft 15 without losing engagement therewith, the shaft being provided with a spline 16^a, (see Fig. 4,) which engages the cam for this purpose.

The hoop-guide is shown at 101 and is provided with an aperture 102 and has the general form of a rectangular tube. This hoop-guide is supported upon the post 98^a, which by means of nuts 99^a 100^a is secured upon a rib 97^a. This rib, together with the ribs 95^a 96^a, is supported by the hanger 94 and is movable therewith in the general direction of the axis of the cylinder 93 and shaft 88. The outer end of the hoop-guide is beveled or funnel-shaped for the purpose of facilitating the entry of the hoop-lath 104. The other end of the hoop-guide is beveled at 105 to allow the lath to be drawn freely therefrom. A ring 106 is integrally connected with the hanger 94 and with the ribs 95^a 96^a 97^a. Mounted upon these ribs is an annular member 107, provided with an annular groove 108 and with an annular flange 109, these parts constituting one member of a ball-race. A revoluble concave member 110 is provided with an annular channel 111, which engages the balls 112 and constitutes the other member of the ball-race. Rigidly connected to the concave member 110 is a flat ring 113, secured thereto by means of screws 114 and serving to maintain the several parts in proper position, as indicated in Fig. 6.

Intermediate of the head 92 and the ring 113 is an annular aperture 113ª. The head 92 and the concave member 110 together constitute the female former. Normally the spring 91 by pressing the head 92 to the left causes the stop-nut 89 to engage the standard 5, and thereby causes the head 92 to project to the left from the position indicated in Fig. 6. When, however, the frame 94 is moved to the left, so as to bring the head 92 into engagement with the web of the basket, the head 92 is forced backward relatively to the member 110 and made to occupy the position indicated in Fig. 6. A revoluble roller 115 is mounted upon the boss 116, this boss being rigidly connected with the rib 96ª. When a hoop-lath is fed through the aperture 102, it passes over the roller 115, being stapled upon the form A, as indicated in Fig. 8, and being gradually bent in the form of a circle, as indicated by dotted lines in Fig. 7, the curvature of the hoop being attained by the rotation of the form A, which draws the same over the roller 115.

A plate 117 is integrally connected with the ring 107 and with the rib 96ª. This plate is provided with holes 118 119 and is integral with the slideway 120. Mounted within this slideway is a slide-rod 121, provided with a head 122 and with a fastening 123, as indicated in Fig. 6. Connected with the fastening 123 is a spring-pawl 124. By means of the pitman 125 the head 122 is connected with the lever 99, whereby the sliding head 122 is operated. The spring-pawl 124 operates a ratchet 126, thereby actuating the feed-wire wheels 128 129 in the usual manner. The basket-web is supported upon the hangers 130 before the female former closes over it.

The operation of my invention is as follows: The several parts being in the position indicated in Fig. 3, the operator places a basket-web upon the hangers 130. He next moves the lever 14 to the left, thereby throwing the clutch member 13ª into engagement with the clutch member 13. This causes the revolution of the bevel-gears 12 and 42, the latter of which rotates exactly a half-turn, whereupon the cam 34 forces the sliding bar 33 outward and restores the lever 14 to its normal position. This automatic movement of the lever 14 back to its normal position disengages the clutch and stops the gear 42 instantly. The half-turn thus given the gear 42 causes the pitman 80 to descend to its lowermost position, thereby straightening out the levers 81 84 and sliding the head 86 toward the standard 4. This causes the female former to engage the web of the basket and to force the same against the male former, thereby bending the unfinished basket into shape. The clutch members 13 13ª, being disengaged, as above described, the female former remains in engagement with the web for an indefinite period of time. The movement just described causes the tube 87 to advance toward the male former and to carry with it the hanger 94, carrying the stapling mechanism, including members 120 to 129, hereinbefore described. These members together constitute a type of stapling-head, as will be seen in Fig. 1. As above explained, the cam 97, being splined upon the shaft 15, is free to move longitudinally thereof, so that this cam is free to perform its function when the female former is advanced, as stated. The half-turn of the gear 42, above described, also causes the cam-groove 39 to move the roller quickly toward the left from the position shown in Fig. 3—that is to say, during the first part of the half-turn the cam-groove 39 holds the roller 40 stationary and toward the latter part of the movement causes the roller to be suddenly thrown to the left. This operates the longitudinal rod 41 and lever 43, causing the levers 44 to move quickly to the right, according to the view shown in Fig. 1, thus drawing the pawls 45 into the position indicated in Fig. 1. It will be seen that this movement of the pawls 45 is simultaneous with the closing of the female former upon the male former. At the same time the upper end of the lever 46 is thrown outward—that is, toward the pulley 7—which causes the stapling-head 48 to leave its position, as indicated in Fig. 3, and assume the position indicated in Fig. 1. As the hanger 94 carries the stapling head or mechanism, consisting of parts 120 to 129, into position the instant the female former closes over the male former, the above-mentioned movement of the stapling-head 48 leaves all of the stapling mechanism in close proximity to the formers and ready to plant staples into the hoop and web. While the disengagement of the clutch members 13 13ª at the end of the half-turn of the gear 42 restores the lever 14 to its normal position, it should be remembered that this does not disturb the position of the female former and of the stapling mechanism connected therewith. The operator next moves the lever 11 to the right, thereby causing the clutch member 10 to engage the clutch member 10ª. This causes the rotation of the gears 8 9, and by causing the pitman 21 to reciprocate starts the ratchet-wheel 23 to move intermittingly. After each movement of the ratchet-wheel 23 it is locked by the roller 25, carried by the lever 27, which is tensioned by the spring 29, as above described. This momentary locking of the ratchet-wheel causes the male former to be held firmly in position for an instant—that is to say, the male former moves with a step-by-step positive motion. The eccentric 63 causes the pitman 64 to alternately raise and lower the sliding rod 56, thereby actuating the internal mechanism of the stapling-head and causing the staple-drivers 54 55 to force the staples into the web. The intermittent movement is so timed that the staple-drivers always plant the staples between the slats 61. The cam 97, through the

agency of the lever 99, pitman 125, and head 122, causes the sliding rod 121 to reciprocate. This sliding rod carries a staple-driver. After each stop of the revoluble forming mechanism the sliding rod 121 moves toward the frame A and the stapling-head plants a staple into the web, as indicated in Fig. 8. The staple is so driven as to straddle the end hoop and hold the same firmly in position. The so-called "first" and "second" hoops are fed in the usual manner beneath the staple-drivers 54 55, and the so-called "end" hoop is fed through the hoop-guide 101, as indicated in Fig. 7. The edge of the hoop-lath 104 is toward the webs, and after each staple B straddles the lath and secures it at that point the roller 115 gradually bends the lath, and thereby lessens the strain to some extent upon the staple.

No power is needed to drive the female former, for the reason that the revoluble portion is supported upon ball-bearings, as shown in Fig. 6, and readily revolves with the male former and basket-web.

By the operation above described the so-called "first" and "second" hoops are applied around the upper portion of the basket, the laths being disposed flatwise relatively to the web, and the end hoop is applied edgewise and in a comparatively small circle at the bottom of the basket, as shown in Fig. 8. The clench-bar 22 being actuated, as above described, moves to the right and left and also slightly upward and downward, as will be seen by examining Fig. 6. Each time the clench-bar moves to the right the clench-block of a staple holds the bottom hoop in position, and upon the return movement of the clench-bar 20 the clench-blocks 76 77 engage the inner ends of the staples, securing the so-called "first" and "second" hoops. The clench-block 78 alternates in its action with the two clench-blocks 76 77, and its action is entirely automatic. It will therefore be seen that practically the entire machine is operated by the two levers 11 14, the function of the lever 14 and clutch mechanism connected therewith being to govern the general position of the forming mechanism and of the stapling-heads and the function of the lever 11 being to control the stop and start the stapling and clench mechanism. After the staples have been applied and clenched by control of the lever 11 the operator again grasps the lever 14 and moves it exactly as he did before. This causes the gear 42 to make another half-turn, whereupon it is stopped by the disengagement of the clutch member 13ª. This half-turn of the gear 42 causes the arm 44 to be moved quickly toward the female former, thereby thrusting the basket off the male former. The same movement of the gear 42 thrusts back the stapling-head 48 and reciprocates the female former and the stapling-head 120 into the position which they occupy in Fig. 3.

This machine has been tried in actual practice, and it is found that the two levers 11 14 are quite adequate to handle it, thereby making its action to a great extent automatic.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a basket-machine, the combination of a male and a female forming-die each provided with apertures, stapling mechanism disposed adjacent to said female die and provided with reciprocating drivers adapted to extend through the apertures thereof, means for rotating said forming-dies step by step, said forming-dies being so adjusted that by each step said apertures register with said reciprocating head, a clench-bar movably mounted within said male former and adapted to extend through the apertures thereof, and clench-blocks mounted upon said clench-bar and coacting with all of said drivers.

2. In a basket-machine, the combination of a revolubly-mounted male forming-die provided with apertures, a revolubly-mounted female forming-die disposed adjacent to said male forming-die and mating the same, said female forming-die being provided with an aperture of substantially annular form, stapling mechanism mounted adjacent to said forming-dies and provided with drivers adapted to extend through said apertures, clench mechanism provided with clench-blocks, said clench-blocks being disposed within said male forming-die and adapted to move toward and from said apertures, and mechanism for moving said forming-dies into such positions that said apertures register with said stapling mechanism.

3. In a basket-machine, the combination of a male forming-die provided with a series of apertures disposed in the general form of a ring, a female forming-die mating said male forming-die and provided with apertures likewise disposed in the general form of a ring, means for guiding a hoop-lath into engagement with the web of a basket, stapling mechanism for passing staples through said apertures of said female forming-die and for driving them into said web, and clenching mechanism provided with a clench-block disposed within said male forming-die and adapted to extend through said apertures for securing staples upon the inside of said web.

4. In a basket-machine, the combination of a pair of revoluble forming-dies for engaging the web of a basket, means for guiding a hoop-lath against said web for the purpose of forming a so-called bottom hoop thereupon, mechanism for driving staples into said web in a general direction parallel with the axis of rotation thereof for the purpose of holding said lath in place upon said web, a clench-bar mounted within one of said forming-dies, and mechanism for moving said clench-bar toward and from said web in a general direction sub-

stantially parallel with the axis of rotation thereof for the purpose of clenching said staples and thereby completing said bottom hoop.

5. In a basket-machine, the combination of a frame, forming-dies revolubly mounted thereon and adapted to engage opposite faces of a basket-web, means for feeding a hoop-lath edgewise against one face of said basket-web, stapling mechanism for driving staples into said basket-web so as to secure said hoop-lath thereto, a clench-bar mounted adjacent to said dies and adapted to reciprocate toward and from said basket-web, said clench-bar and said stapling mechanism being disposed upon opposite sides of said basket-web, and means for actuating said clench-bar in accordance with movements of said stapling mechanism.

6. In a basket-machine, the combination of revoluble forming-dies for engaging a basket-web, means for causing hoop-laths to encircle said basket-web in positions corresponding to the so-called first and second hoops, stapling mechanism for driving staples into said basket-web in radial directions crossing the axis of rotation thereof for securing said hoop-laths thereto, means for feeding another hoop-lath against said web in a position corresponding to the so-called bottom hoop, stapling mechanism for driving staples into said basket-web in a general direction parallel to the axis of rotation thereof for securing said last-mentioned hoop-lath against said basket-web, and a single clench-bar coacting with all of said stapling mechanisms for the purpose of clenching said staples driven thereby.

7. In a basket-machine, the combination of revoluble forming-dies for engaging a basket-web, means for causing hoop-laths to encircle said basket-web in positions corresponding to the so-called first and second hoops, stapling mechanism for driving staples into said basket-web in radial directions crossing the axis of rotation thereof for securing said hoop-laths thereto, means for feeding another hoop-lath against said web in a position corresponding to the so-called bottom hoop, stapling mechanism for driving staples into said basket-web in a general direction parallel to the axis of rotation thereof for securing said last-mentioned hoop-lath thereto, a single clench-bar movable in a plurality of independent directions for clenching staples driven in the different directions above mentioned, and means for actuating said clench-bar in said different directions.

8. In a basket-machine, the combination of a revoluble forming-die having a general fixed position, a revoluble forming-die mating the same, mechanism for moving said last-mentioned forming-die bodily toward and from said first-mentioned forming-die for the purpose of causing said dies to engage and disengage the web of a basket, mechanism for periodically engaging one of said forming-dies so as to prevent movements thereof, a hoop-guide for fitting a lath against the bottom of said web, stapling mechanism for driving staples into said web so as to secure said hoop thereupon, means for positioning said last-mentioned stapling mechanism relatively to said hoop, and means for actuating said stapling mechanism.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL ENGBERG.

Witnesses:
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LAWRENCE C. FYFE.