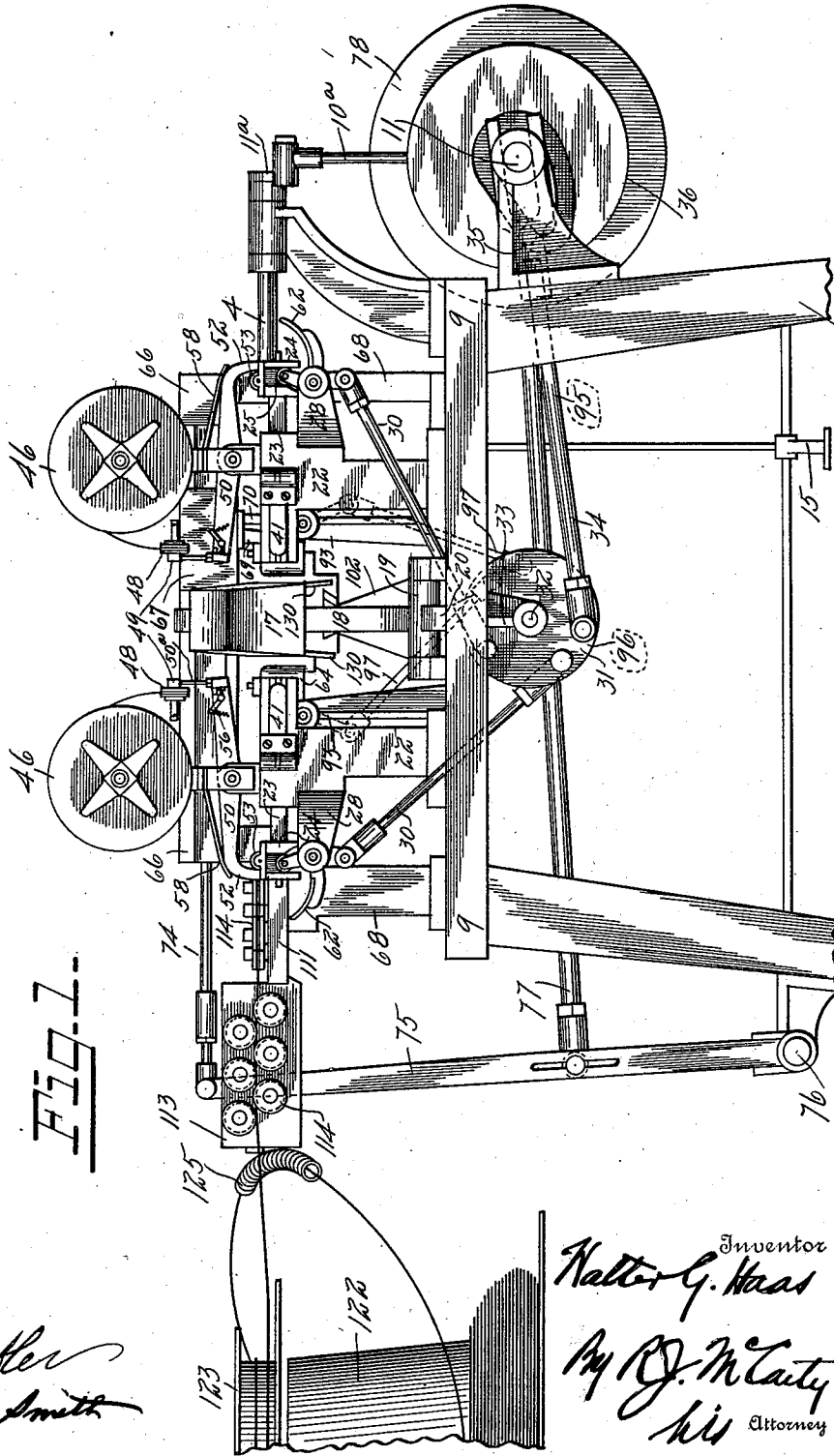


W. G. HAAS.
PAPER BUCKET MACHINE.
APPLICATION FILED FEB. 18, 1910.

1,001,198.

Patented Aug. 22, 1911.

7 SHEETS-SHEET 1.

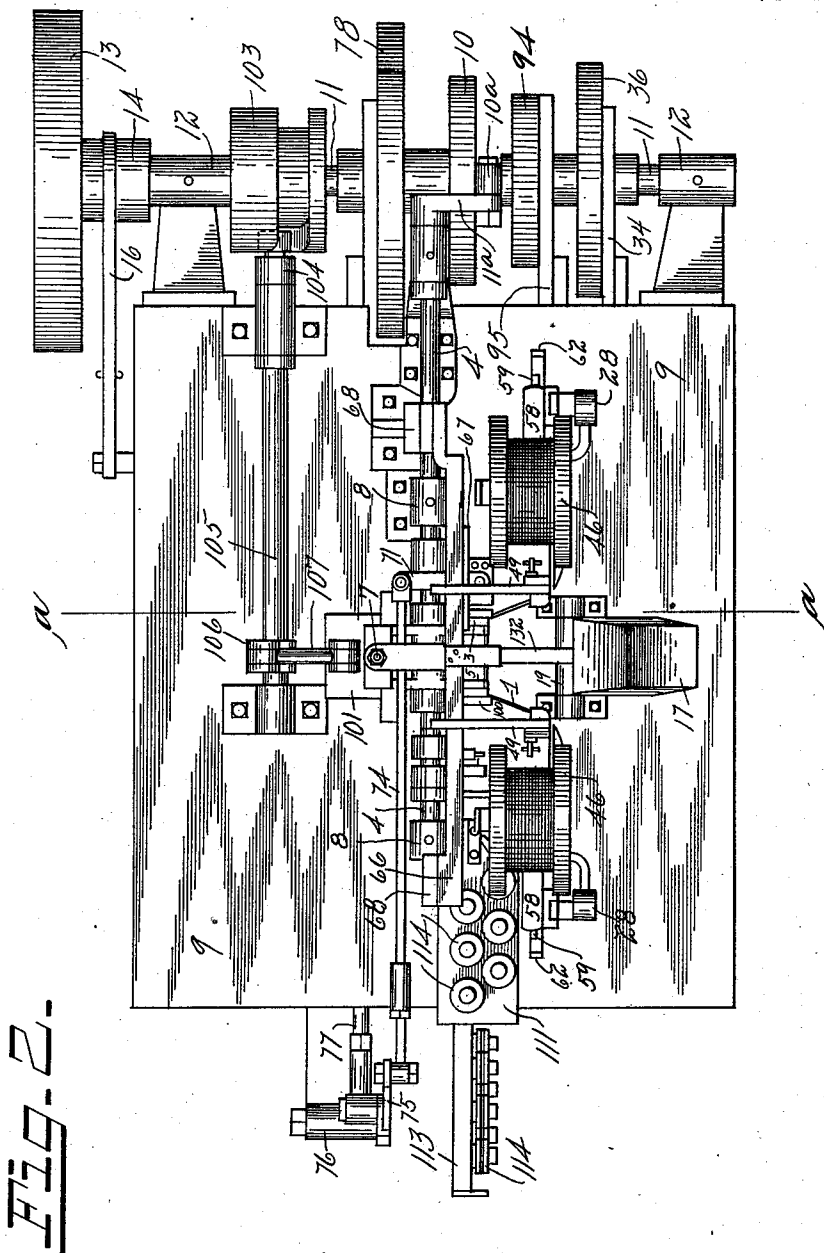


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7 SHEETS—SHEET 2.



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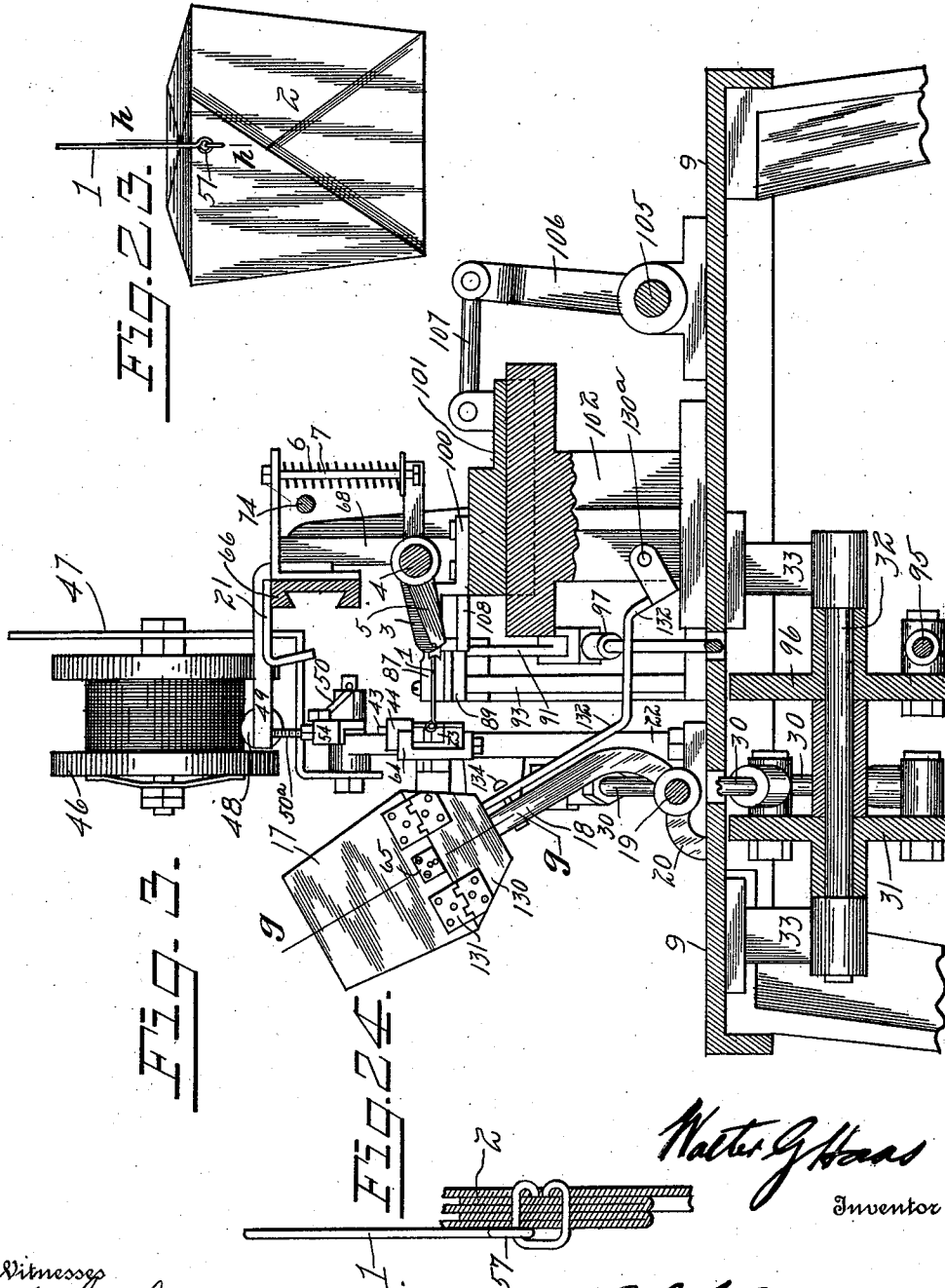
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7 SHEETS-SHEET 3.



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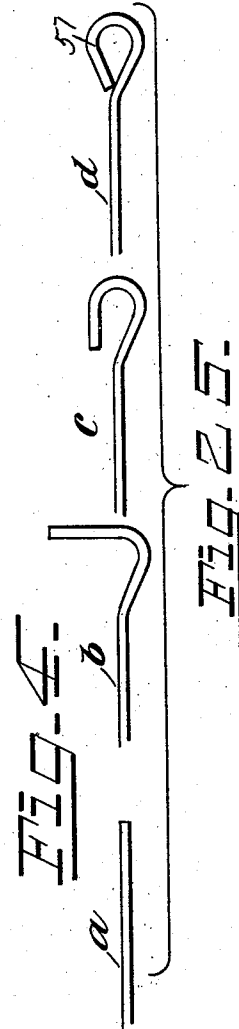
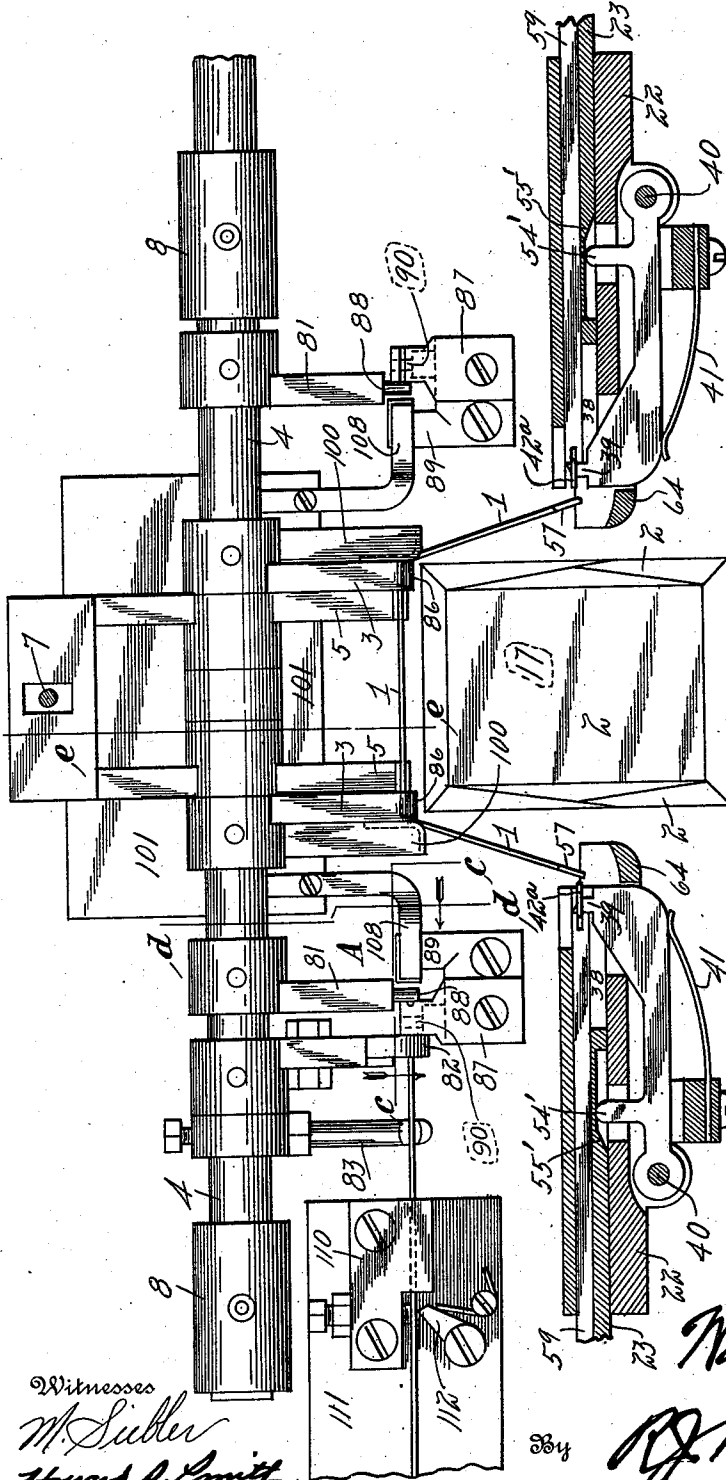
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1,001,198.

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7 SHEETS—SHEET 4.



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7 SHEETS—SHEET 5.

1,001,198.

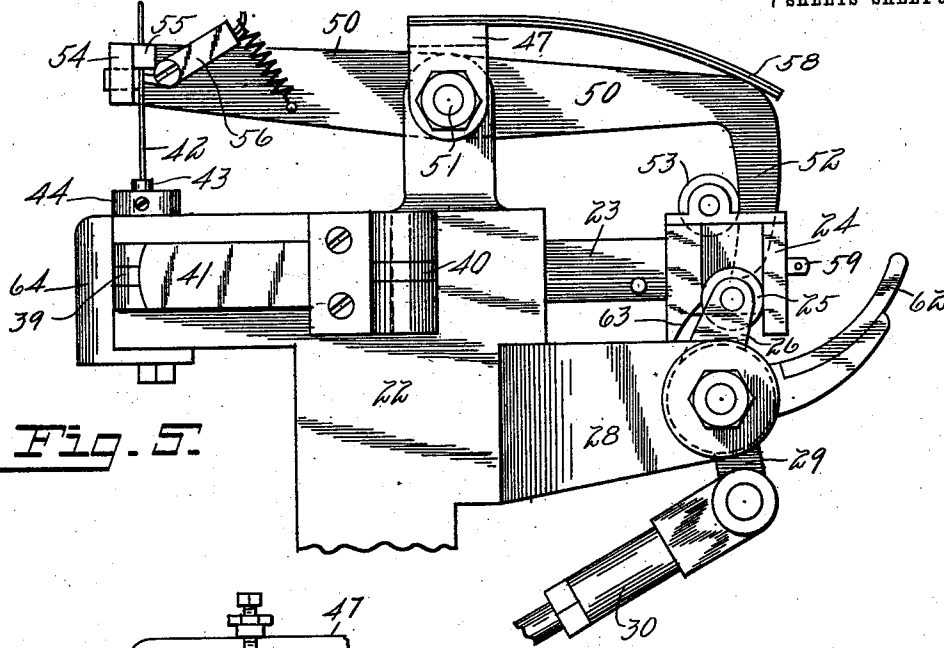


Fig. 5.

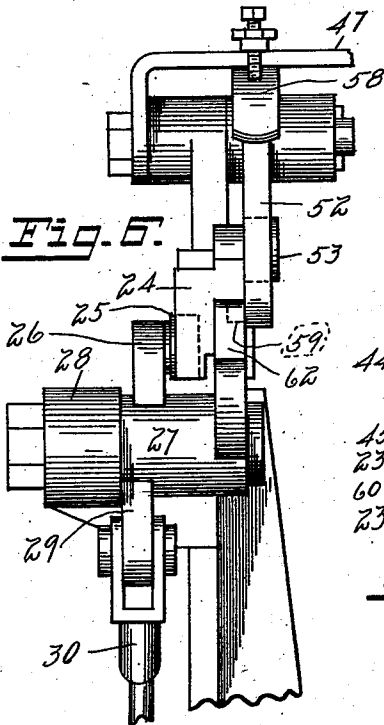


Fig. 6.

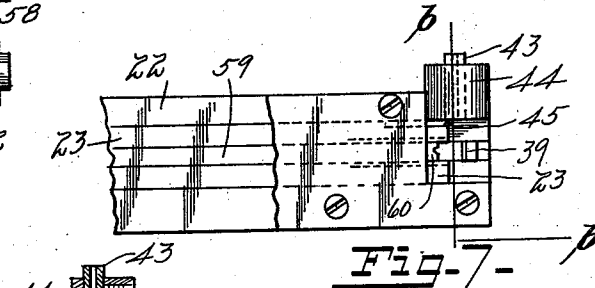


Fig. 7.

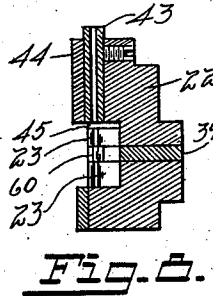


Fig. 8.

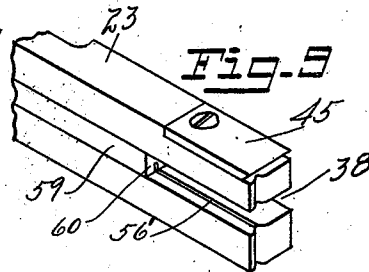


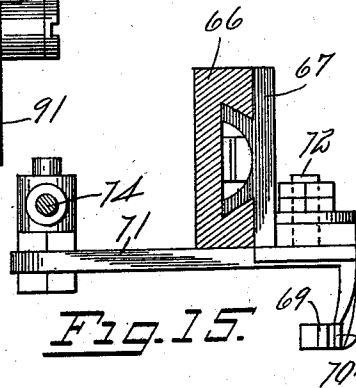
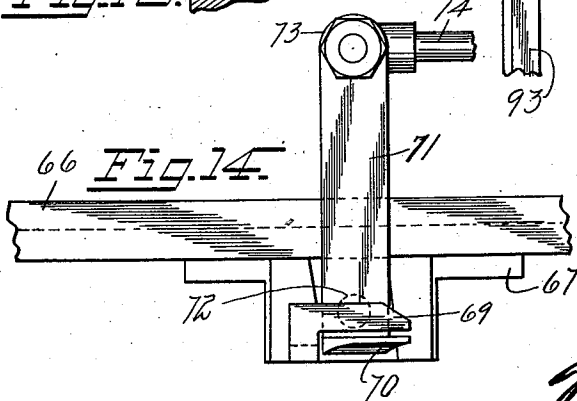
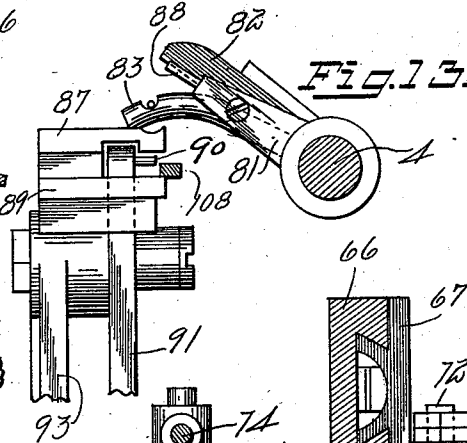
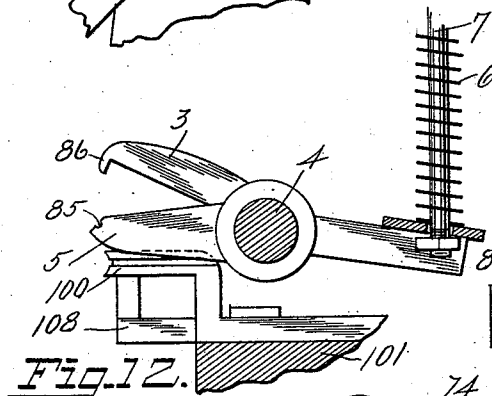
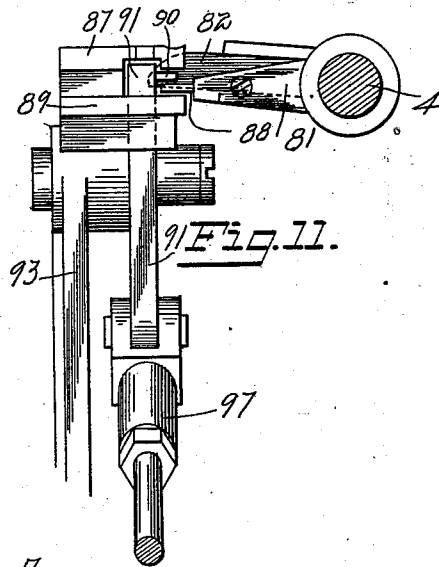
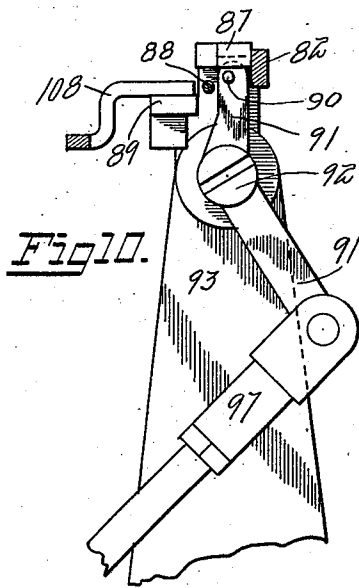
Fig. 9.

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APPLICATION FILED FEB. 18, 1910.

1,001,198.

Patented Aug. 22, 1911.

7 SHEETS—SHEET 7.

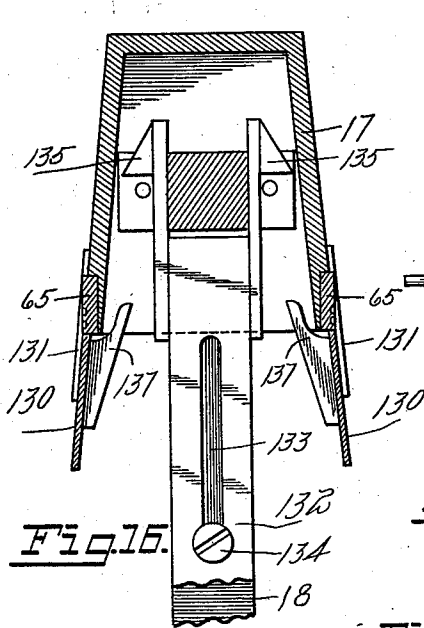


Fig. 16.

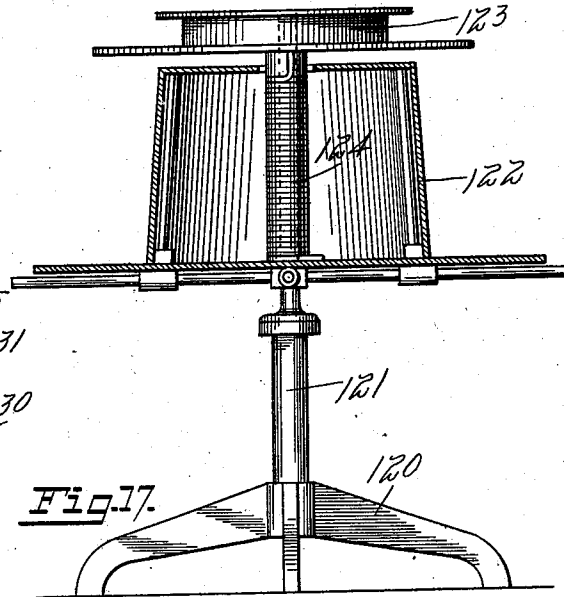


Fig. 17.

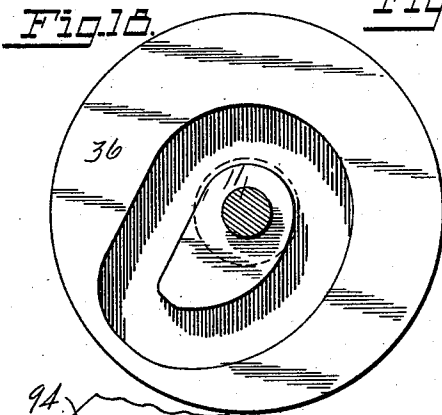


Fig. 18.

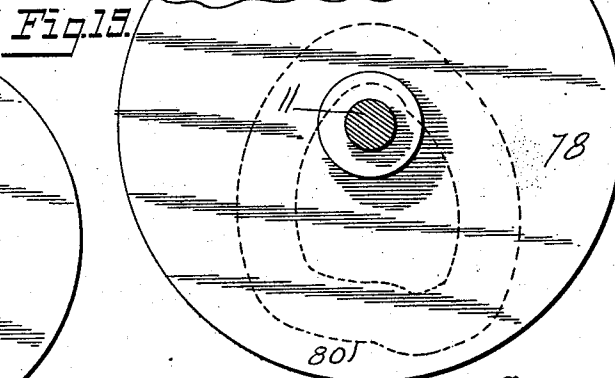


Fig. 19.

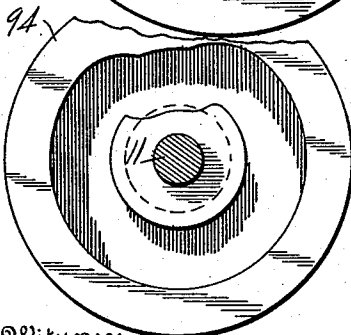


Fig. 20.



Fig. 21.

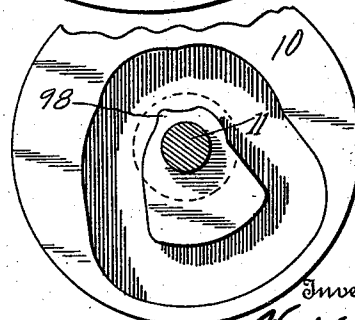


Fig. 22.

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UNITED STATES PATENT OFFICE.

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PAPER-BUCKET MACHINE.

1,001,198.

Specification of Letters Patent. Patented Aug. 22, 1911.

Application filed February 18, 1910. Serial No. 544,544.

To all whom it may concern:

Be it known that I, WALTER G. HAAS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Paper-Bucket Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in machines for making and attaching wire bails to paper buckets.

The object of the invention is to provide a machine for making and attaching wire bails to paper buckets through intervening means between the ends of the bail and the side folds of the bucket, as distinct from attaching the ends of the bail directly to the bucket and still other objects of the invention will be described in the specification and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a front elevation of the machine. Fig. 2 is a top plan view thereof. Fig. 3 is a sectional view on the line *a—*a** of Fig. 2. Fig. 4 is a top plan view partially in section of the bail-forming and stapling mechanism. Fig. 5 is an enlarged front elevation of one of the staple-forming and driving devices. Fig. 6 is an end elevation of the same. Fig. 7 is a view of the inner central end of the staple mechanism. Fig. 8 is a sectional view on the line *b—*b** of Fig. 7. Fig. 9 is a perspective view of the end of the staple-former. Fig. 10 is a detail view of the mechanism for forming the eyes in the ends of the bail, the same being a section on the line *c—*c** of Fig. 4. Fig. 11 is a sectional view on the line *d—*d** of Fig. 4. Fig. 12 is a sectional view on the line *e—*e** of Fig. 4. With the bail-holding fingers shown in their open position. Fig. 13 is a view similar to Fig. 11 with the bail-forming devices shown in their upper position. Fig. 14 is a bottom plan view of the wire gripping and feeding mechanism. Fig. 15 is a side elevation of the same. Fig. 16 is a sectional view on the line *g—*g** of Fig. 3, showing the mechanism for breaking the

cover folds of the bucket on their score lines. Fig. 17 is a longitudinal vertical sectional elevation of the wire reel. Fig. 18 is a view of the cam which operates the staple mechanism. Fig. 19 is a view of the wire-feed cam. Fig. 20 is a view of a cam which assists in forming the eyes in the ends of the bail. Figs. 21 and 22 are views of other cams which operate in connection with the bail-forming mechanism. Fig. 23 is a side elevation of a paper bucket showing a bail attached by means of a staple. Fig. 24 is a sectional view on the line *h—*h** of Fig. 23. Fig. 25 is a series of views illustrating the different successive steps in forming the eyes on the ends of the bail by the cams shown in Figs. 20, 21 and 22.

The machine is shown in its normal position in the drawings and is at rest. When in this position the bail 1 has been formed with the eyes 57, and the next operation attaches said bail to the bucket 2. In Fig. 4 the bail 1 is held between the fingers 3, attached to a rock-shaft 4, and fingers 5, which are mounted freely on the rock-shaft 4 and controlled by a spring 6 and a rod 7 shown in Fig. 3. The shaft 4 is mounted in bearings 8 attached to a base plate 9, and is actuated by a cam 10 on the main shaft 11 through a rod 10^a and a crank 11^a as shown in Fig. 2. The main shaft 11 is journaled in bearings 12 and is driven from a pulley 13 through a clutch 14 of any well known construction. The clutch 14 is controlled by a pedal 15 and a lever 16, and the operation of said clutch is such that the main shaft makes one complete revolution at each operation of the pedal.

It will be noted from Fig. 4 that the arms of the bail spread; this is to allow the folded bucket, on the former 17, to pass between the arms of the bail. In Fig. 3 the former 17 is shown as having a shape substantially the same as the completed paper bucket, and as mounted on an arm 18 pivoted at 19 to the base plate 9. A short arm 20 is attached to the arm 18 to prevent the former 17 moving too far forward. As is well known, blanks for paper buckets are stamped and scored, and when it is desired to form a bucket and to attach a bail thereto, the blank is folded around the former 17 and the latter is moved rearwardly on the pivot 19 until it assumes the position shown in Fig. 4. When in this position, it rests against a stop 21.

Mounted on each side of the former 17 are right and left hand stapling mechanisms. (See Figs. 5 to 9.) Both stapling mechanisms are the same in construction and mode of operation, so that a description of the one on the right will suffice for both. In Fig. 5, 22 designates a standard in which reciprocates a staple-former 23 having a slotted head 24. Within said slotted head 24 is a roller 25 mounted on an arm 26 projecting from a hub 27 pivoted to an extension 28 of the standard 22. The hub 27 is provided with a downward extension 29 which is attached to a link 30 extending downwardly through the base-plate 9 where it connects with a disk 31 on a pivot-shaft 32. (See Figs. 1 and 3): The shaft 32 is mounted in brackets 33 depending from the base-plate 9, and the disk 31 is connected to a rod 34 provided with a cam-roller 35 which is engaged and actuated by a cam 36 on the main shaft 11. The cam 36 is shown in detail in Fig. 18. Through the above described train of mechanism, it will be seen that whenever the main shaft 11 and the cam 36 are rotated, the staple former 23 will be reciprocated.

As shown in Figs. 4 and 9, the inner end of the staple former 23 is provided with a slot 38 which is adapted to straddle an anvil 39 during the reciprocatory movement of said staple former to form a staple. The anvil 39 is pivoted at 40 and is held in a normal position by a spring 41. The wire 42 from which the staples 42^a are formed, is fed down between the anvil 39 and the end of the staple former 23, through a tube 43 mounted in a box 44. A knife 45 is mounted on the staple former 23 to cut the wire 42 to proper lengths to form the staples 42^a. As shown in Figs. 1 and 3, the wire 42 is wound upon a spool 46 supported upon a bracket 47 attached to the standard 22. The wire 42 passes through a tension device 48 mounted on an arm 49 attached to the feed wire guide 66 hereinafter described. As shown in detail in Fig. 5, the wire is fed downwardly by means of a lever 50 pivoted at 51 and provided with a cam extension 52 engaged by a roller 53 on the slotted head 24. It will therefore be seen that whenever the staple former 23 is moved outwardly, the inner end 54 of the lever 50 will move downwardly. The end 54 of said lever is provided with a block 55 through which the wire passes, and with a spring-controlled pawl 56 which engages the wire when the end 54 moves downwardly. A spring 58 mounted on the bracket 47, returns the lever 50 to its normal position after the cam extension 52 passes from under the influence of the roller 53. A projection 50^a on the bracket 49 holds the lever 50 in a normal position as shown in Fig. 1.

After the staple is formed by the slotted end of the former 23 bending the wire

around the anvil 39, the said anvil recedes to permit the former to carry the finished staples to a position to be driven through the eyes 57 of the bail and into the bucket. As shown in Fig. 4, the receding movement of the anvil is accomplished by a cam extension 54' on said anvil, being engaged by a cam 55' on the former 23. After the staple is made it is held by the former through means of upper and lower grooves 56' shown in Fig. 9, and as the staple moves forward to be driven, one prong thereof passes into the eye 57 on the end of the bail and carries the free ends of the bail toward the folded blank on the bucket former 17. The staple is then driven by the following means. As shown in Fig. 4, along the inner side of the former 23 is mounted a hammer 59 which is suitably shaped on its inner end 60 to engage and drive the staple. As shown in Fig. 5, the other end of the hammer 59 projects beyond the slotted head 24 of the former and said end is adapted to be engaged by a cam 62 mounted on the hub 27. The slotted head 24 is provided with a radial portion 63, and when the roller 25 reaches said radial portion 63, the former 23 will stop, but the continued movement of the hub 27 will permit the cam extension 62 to engage the outer end of the hammer 59 and thereby drive the staple. The ends of the staple after passing through the successive layers of the bucket, are clenched on a block 65 mounted on the former 17 (see Figs. 3, 16, and 24), and thus the staples unite the bail to the paper vessel and at the same time unite the side folds to the sides of the vessel in a substantial manner, the making of the bail with eyes therein, and the making of the staples and attaching the bail by passing said staples through the eyes being all accomplished in one operation.

While the staples are being driven, the bail wire feeding device is moving from its normal position to a position to engage the wire. This device is constructed as follows: (see Figs. 1, 2, 14 and 15). Extending upwardly from the base plate 9 are two standards 68 which support a longitudinal guide 66 in which reciprocates a plate 67. This plate carries engaging fingers 69 and 70 which grasp the wire and carry it over and under the bending dies 87 and 89 and members 88 and 90. As shown in Figs. 14 and 15 the plate 67 is provided with the stationary finger 69 and with the movable finger 70. The movable finger is mounted on a lever 71 pivoted at 72 to the plate 67 and the outer end 73 of which is attached to a connecting rod 74. The outer end of the connecting rod 74 is attached to a vertical lever 75 pivoted at its lower end 76 (see Fig. 1). Intermediate of its length, the lever 75 is attached to a connecting rod 77 the outer end of which is provided with the usual cam

roller which engages a cam 78 on the main shaft 11.

The cam 78 is shown in detail in Fig. 19. As before stated the wire feeding device is moving to a position to grasp the wire while the staple is being formed. When the fingers 69 and 70 reach a point marked "A" in Fig. 4, there is a dwell in the movement of the fingers during which all of the projections on the rock-shaft 4 move upwardly. The said dwell is caused by the radial portion 80 of the cam 78. When the fingers 69 and 70 reach the point "A" the fingers 3 and 5 on the rock-shaft 4, before referred to, open to the position shown in Fig. 12, at the same time the arms 100 recede from the legs of the bail; this releases the bail and allows the former 17 to be drawn to the position shown in Fig. 3, at which time the finished bucket can be removed from the former 17. When the fingers 3 and 5 are opened by rocking the shaft 4, bending arms 81, shear blade 82 and a lifting finger 83 are also elevated as shown in Fig. 13. This permits the wire gripping fingers 69 and 70 to pass under the shear blade 82 and to grasp the wire. As soon as said fingers grasp the wire, they are moved to their normal position drawing the wire with them. The rock-shaft 4 then comes under the influence of the cam 10, and the fingers 3 descend (see Fig. 4). As they descend the wire is forced into the recesses 85 of the fingers 5, and the projections 86 of the fingers 3 hold said wire in said recesses. At this time, the shearing blade 82 descends, and in connection with the left bending die 87, severs the wire in a proper length to form a bail. Also at the same time the bending arms 81 descend. These arms 81 carry pins 88, which in connection with the upper bending dies 87 and the lower bending dies 89, bend the ends of the wire from the form shown at "a" to the form shown at "b", Fig. 25. See also Figs. 10, 11 and 13. While the pins 88 are in their extreme lower position, the wire is bent around them to the position shown at "c", Fig. 25, by pins 90 mounted on the upper ends of levers 91. The levers 91 are pivoted at 92 to the standards 93 which also support the upper and lower bending dies 87 and 89. Said levers 91 are actuated by a cam 94 on the mainshaft 11 through a connecting rod 95, disks 96 and connecting rods 97 (see Fig. 1). The cam 94 is shown in detail in Fig. 20.

After the pins 90 have passed over the pins 88, there is a short dwell of said pins 90, during which the rock-shaft 4 comes under the influence of the projection 98 of the cam 10, and the pins 88 are slightly elevated, and as the extreme end of the wire is held by the pins 90, the loop at the end of the wire will be given its complete eye-shape as shown at "d." The pins 88 then

lower and return to their normal position as in Fig. 10, which enables the pins 90 to recede to their normal positions as in Fig. 10. The pins 88 and the fingers 3 and 5 are elevated and bring the wire in line with the slots in the arms 100; this allows the said arms 100 to bend the wire into the form of the bail. The arms 100 are mounted on a plate 101 which slides upon a standard 102 attached to the base plate 9 (see Figs. 3 and 4). The plate 101 is reciprocated by a cam 103 on the main shaft 11 through a crank 104, shaft 105, crank 106 and link 107 (see Figs. 2 and 3). As will be seen from Fig. 4 the arms 100 lie along the sides of the fingers 3 and as the arms 100 move forward, the wire is bent around the projections 86 of the fingers 3 into the form of the bail. The eyes at the ends of the wire are stripped from the pins 88 by means of projections 108 which are attached to the plate 101 and move forward simultaneously with the bending arm 100. The said eyes are however, stripped from the pins 88 before the wire comes under the influence of the bending arms 100. At this time said bending arms 100 and the plate 101 do not move forward to their full extent as it is desired that the arms of the bail should be flaring, as hereinbefore stated. The bending arms 100 complete their bending movement simultaneously with the movement of the former 23 when driving the staple, as before described.

When the shearing blade 82 severs the wire, it has a tendency to bend the end of the remaining wire downwardly. To elevate the end of the remaining wire to a position to be engaged by the wire feeding fingers 69 and 70, there is provided on the rock-shaft 4 a finger 83 which engages the wire in its upward movement (see Fig. 13).

The wire is drawn through a block 110 mounted on a horizontal plate 111 provided with a spring-controlled pawl 112 which engages the wire and prevents retrograde movement. Attached to the plate 111 is a vertical plate 113; both of said plates are provided with straightening rollers 114 of a well known form.

The wire is unwound from a reel constructed as follows (see Figs. 1 and 17). Mounted on a base portion 120 is a stem 121 to which is attached a lower drum 122. On the upper end of the stem 121 is a small drum 123 which is resiliently connected to the lower drum 122 by means of a spring 124. Attached to the vertical plate 113, as shown in Fig. 1, is a curved spring 125 which acts in lieu of a sheave and through which the wire passes from the lower drum. The wire then passes several times around the upper drum and thence into the straightening rollers 114. It will therefore be seen that the successive

jerks of the wire when the same is being drawn, will be absorbed by the spring 124, and the lower drum will have practically a constant turning movement which prevents the coil of wire on the drum unwinding too freely.

As is illustrated in Figs. 3 and 16, the former 17 is provided with side flaps 130 which are pivoted thereto by hinges 131. The flaps 130 are adapted to be bent outwardly to break the folds of the top or cover of the bucket to allow them to be more readily closed. The said flaps 130 are actuated as follows: Lying along the stem 18 is a rod 132 which is pivoted at its lower end 130^a to the standard 102 and which is provided with a slot 133 through which a bolt 134 passes and acts as a guide. The upper end of the rod 132 is provided with wedge shaped members 135 adapted to engage extensions 137 on the flaps 130. It will be seen that when the former 17 moves rearwardly on its pivot 19, the wedge shaped members 135 will move upwardly to the position shown in Fig. 16 due to the difference in position of the pivots 19 and 130^a, and when the former 17 moves forward to the position shown in Fig. 3, the wedge shaped members will move downwardly and engage the extensions 137 and move the flaps 130 outwardly and thus break the folds at the mouth of the bucket to form a cover. When said wedge shaped members 135 move upwardly, the flaps 130 will be drawn inwardly, but this movement performs no function.

Although I have shown and described the former 17 as being manually operated, I wish it to be understood that the same may be operated from the main shaft 11 by means of any suitable intervening mechanism.

The operation of the machine is briefly as follows: With the parts in position shown in the main views of the drawing, the bail 1 is completed and is held by the fingers 3 and 5 in a position to be attached to the bucket. The staple wire 42 has been fed downward by the lever 50 and the extreme end of the wire lies between the anvil 39 and the former 23. The operator then folds a blank around the former 17 and moves said former to its inner position as shown in Fig. 4. The pedal 15 is then pressed, which sets the clutch 14 and permits the drive wheel 13 to rotate the main shaft 11 and the cams thereon one revolution. At the initial movement of this rotation, the cam 36 moves the staple former 23 inwardly, which severs the wire and forms the staple. The continued movement of the cam 36 actuates the hammer 59 to drive and clench the staple. During this operation the bail wire drawing fingers 59 and 70 are moving to a position to engage the wire. The rock shaft 4 then comes under the influence of the cam 10

and the fingers 3 and 5 open, which operation releases the bail 1 and allows the former 17 to move to the position shown in Fig. 3, at which time the bucket may be removed. This movement of the former 17 permits the wedge shaped members 135 to engage the flaps 137 and move said flaps outwardly to break the folds of the cover of the bucket. The continued movement of the shaft 11 permits the fingers 69 and 70 to grasp the wire held by the block 110 and the arm 83, to draw out a sufficient length of wire to form a bail. In drawing the wire, the said fingers pass under the fingers 3 and over the fingers 5. The rock shaft 4 then comes under the influence of the cam 10, and the fingers 3 descend, engaging the wire and holding said wire rigidly on the ends of the fingers 5. At the same time the shearing blade 82 also descends and cuts off a sufficient length of wire to form a bail. Simultaneously with this movement, the bending arms 81 descend, and in connection with the pins 90 on the levers 91, form the eyes 57 on the ends of the bail. The plate 101 then comes under the influence of the cam 103 and the plate 101 is moved forward. During this movement the arms 108 strip the eyes 57 from the pins 88, and the bending arms 100 give the bail the shape shown in Fig. 4. At this time the shaft 11 has made a complete revolution and the clutch is disengaged. The machine is then in a position to renew its cycle of movements and to thus make and apply a bail to another bucket.

I do not desire to limit myself to the precise arrangement and details of mechanism shown and described herein, but desire to claim broadly mechanism for forming a bail and attaching it to the sides of a paper vessel with means intervening between the sides of the vessel and the ends of the bail, whereby the bail is attached.

I claim:

1. In a machine of the type specified, the combination of reciprocable mechanism for forming wire bails with eyes in the ends thereof, devices coöperating with said bail-forming mechanism for supporting the bail when formed, a former adapted to receive the blank from which a paper bucket is formed thereon, said former being mounted in coöperative relation with the completed bail, and attaching mechanism coöperating with said former and adapted to unite the eyes of the bail to the opposite side of the bucket by intervening connections.

2. In a machine of the type specified, the combination with reciprocable mechanism for forming wire bails with eyes in the ends thereof, of devices coöperating with said bail-forming mechanism for supporting the bail when formed, a former adapted to receive a paper bucket, said former being mounted in coöperative relation with the

completed bail, and staple-forming and driving mechanism cooperating with said bucket former and adapted to drive staples through the eyes of the bail, substantially as specified.

3. In a machine of the type specified, the combination of reciprocable devices for forming wire bails with eyes in the ends thereof, mechanism cooperating with said bail-forming devices for supporting the bails when formed, a former mounted in co-operative relation with the completed bail and adapted to support a paper bucket, and staple-forming and driving mechanism co-operating with the bucket former and adapted to form staples and subsequently drive them through the eyes of the bail and through the overlapped folds of the bucket.

4. In a machine of the type specified, the combination of a former adapted to receive a paper blank and to form the same into a bucket, reciprocable mechanism for forming wire bails with eyes in the ends thereof, means cooperating with said bail-forming mechanism for supporting the bail when formed in a position with the eyes lying on opposite sides of the paper bucket, means for forming staples, and means for driving said staples through the eyes of the bail and through the overlapping folds of the bucket, thereby attaching the bail and folds of the bucket in one operation.

5. In a machine of the type specified, the combination with a former adapted to support a blank formed into a bucket thereon, of reciprocable mechanism for forming wire bails with eyes in the ends thereof, means cooperating with said bail-forming mechanism for supporting the bail when so formed with the eyes thereof on opposite sides of the bucket former, stapling mechanism co-operating with said bucket former in attaching the eyes of the bail and the opposite sides of the bucket, and means for actuating said bail-forming mechanism and the stapling devices consecutively.

6. In a machine of the type specified, the combination of wire feeding and cutting devices, reciprocable mechanism for forming eyes in the ends of each length of wire, mechanism for completing each length of wire into the form of a bail after the eyes have been formed and for supporting the bail when formed in a position to be attached to the bucket, a former adapted to support a paper bucket between the ends of the bail, and staple-forming and driving mechanism cooperating with the bucket former and adapted to form staples and to drive them through the eyes in the bail and to thus unite said bail to the opposite sides of the bucket while the bucket is on the former.

7. In a machine of the type specified, the combination with a former adapted to re-

ceive a paper blank and to form the same into a bucket, of devices for feeding wire and cutting the same into suitable lengths for bails or handles, reciprocable mechanism for forming eyes in the ends of each length of wire so fed and cut, bending devices for giving said wire the form of a bail after the eyes have been formed therein, said bending devices moving the ends of the bail on opposite sides of the bucket, and staple-forming and driving mechanism cooperating with the bucket former and adapted to form staples and to drive them through the eyes in the ends of the bail and through the adjacent walls of the bucket.

8. In a machine of the type specified, the combination with a pivoted former adapted to receive a paper blank and to form the same into a bucket, and wire feeding and cutting devices adapted to feed and cut wire into suitable lengths for bails for said buckets, of devices for holding each length of wire when cut, reciprocable mechanism for forming eyes in the ends of the wire, means for bending the ends of the wire around the opposite sides of the bucket and former, and staple-forming and driving mechanism cooperating with said pivoted former in driving staples through the eyes in the ends of the bail and through the adjacent side walls of the bucket.

9. In a machine of the type specified, the combination with a support adapted to receive a paper bucket, and clenching dies mounted thereon, of staple-driving mechanism mounted in alinement with said clenching dies and adapted to drive the staples through the folds of the bucket and to clench the ends thereof against the clenching dies simultaneously.

10. In a machine of the type specified, the combination with a support adapted to receive a paper bucket, and clenching dies mounted on opposite sides of said support, of staple-driving mechanism mounted in alinement with said dies and adapted to drive staples simultaneously through the folds of the opposite sides of the bucket, and to clench the ends of the staples against the clenching dies, said clenching dies being adapted to turn the ends of the staples into the folds of the bucket.

11. In a machine of the type specified, wire bail-forming mechanism comprising pins around which the ends of the wire are bent to form eyes in the ends of the bail, dies cooperating with said pins in forming said eyes, and stripping fingers adapted to relieve the pins of the eyes after said eyes have been formed by the pins and dies.

12. In a machine of the type specified, the combination with grippers adapted to engage the ends of a length of wire to feed the same, an oscillating knife adapted to sever the wire into suitable lengths, an os-

cillating shaft upon which said knife is mounted, a finger mounted on said shaft and adapted to engage the wire and to lift the same to a position to be engaged by the grippers after the wire has been bent downwardly by the knife in severing the same.

13. In a machine of the type specified, the combination with left and right staple-forming and driving mechanism, a support adapted to receive a folded paper bucket, said support cooperating with said driving mechanism when the staples are driven, a rock shaft, connections between said left and right staple-forming and driving mechanism and said shaft, and a cam operatively connected with said rock shaft whereby the left and right staple-forming and driving mechanism are actuated simultaneously.

14. In a machine of the type specified, the combination of means for supporting a length of wire, left and right eye-forming mechanism adapted to form eyes on the ends of said wire, a rock shaft, connections between said eye-forming mechanism and said shaft, and a cam operatively connected with said shaft and adapted to actuate said left and right eye-forming mechanism simultaneously.

15. In a machine of the type specified, the combination with a rock shaft, of holding fingers resiliently mounted on said rock shaft and adapted to engage a length of wire, gripping fingers rigidly mounted on said rock shaft and cooperating with said holding fingers to support the wire, forming fingers cooperating with said holding fingers to form a wire bail, and means for actuating said rock shaft and said forming fingers.

16. In a machine of the type specified, the combination with a rock shaft, of holding and gripping fingers mounted on said rock shaft, means for opening and closing said fingers to receive a length of wire, wire-feeding fingers reciprocally mounted parallel with said rock shaft, and means for reciprocating said feeding fingers whereby, when said holding and gripping fingers are opened, the feeding fingers pass between the holding and gripping fingers, and when said holding and gripping fingers are closed, said feeding fingers pass above said holding and gripping fingers.

17. In a machine of the type specified, the combination with a rock shaft and means for imparting movement to the same, wire-feeding fingers reciprocally mounted parallel with said rock shaft, gripping fingers rigidly mounted on said rock-shaft, holding fingers loosely mounted on said shaft, springs controlling said loosely

mounted fingers and adapted to press them upwardly, and a stop controlling the upward movement of said holding fingers, thereby allowing the feeding fingers to pass between the holding and gripping fingers when the gripping fingers are moved upwardly by said shaft.

18. In a machine of the type specified, means for holding a length of wire, a bending die mounted under the end of said wire, a bending finger cooperating with said die to initially bend the end of the wire, a pin cooperating with said finger to subsequently bend the wire, means for actuating the finger, and means for actuating said pin, said actuating means for the finger being adapted to actuate said finger before and after the pin is actuated, whereby a complete eyelet is formed in the end of the wire.

19. In a machine of the type specified, means for holding a length of wire, bending dies mounted under the end of said wire, a vertically movable finger cooperating with said dies to initially bend said wire, a horizontally movable pin cooperating with said finger to subsequently bend said wire around said finger, means for actuating said finger, and means for actuating said pin, said finger-actuating means adapted to move said finger upwardly while the end of the wire is in engagement with the pin, thereby completing the formation of an eyelet on the end of the wire.

20. In a machine of the type specified, a rock-shaft, fingers mounted on said shaft and adapted to hold a wire, a stationary severing die, a movable severing die mounted on said rock-shaft and cooperating with said stationary severing die, and means for rocking said shaft, said fingers and said movable die, whereby said wire is clamped and severed simultaneously.

21. In a machine of the type specified, a bucket former, mechanism for feeding the wire from which the bail is formed to a position relative to the sides of the former, mechanism for feeding the wire from which the staples are formed relative to the ends of the bail wire, means for forming eyes in the ends of the bail wire, means for forming staples from the staple wire, and means for driving the staples through the eyes in the ends of the bail and through the side folds of the bucket.

In testimony whereof I affix my signature, in presence of two witnesses.

WALTER G. HAAS.

Witnesses:

R. J. McCARTY,
MATTHEW SIEBLER.