

I. S. GOLDMAN, DEC'D.
E. E. GOLDMAN, EXECUTRIX.
FRUIT PITTER AND SPLITTER.
APPLICATION FILED JULY 25, 1910.

1,047,786.

Patented Dec. 17, 1912.

5 SHEETS-SHEET 1.

Fig. 1.

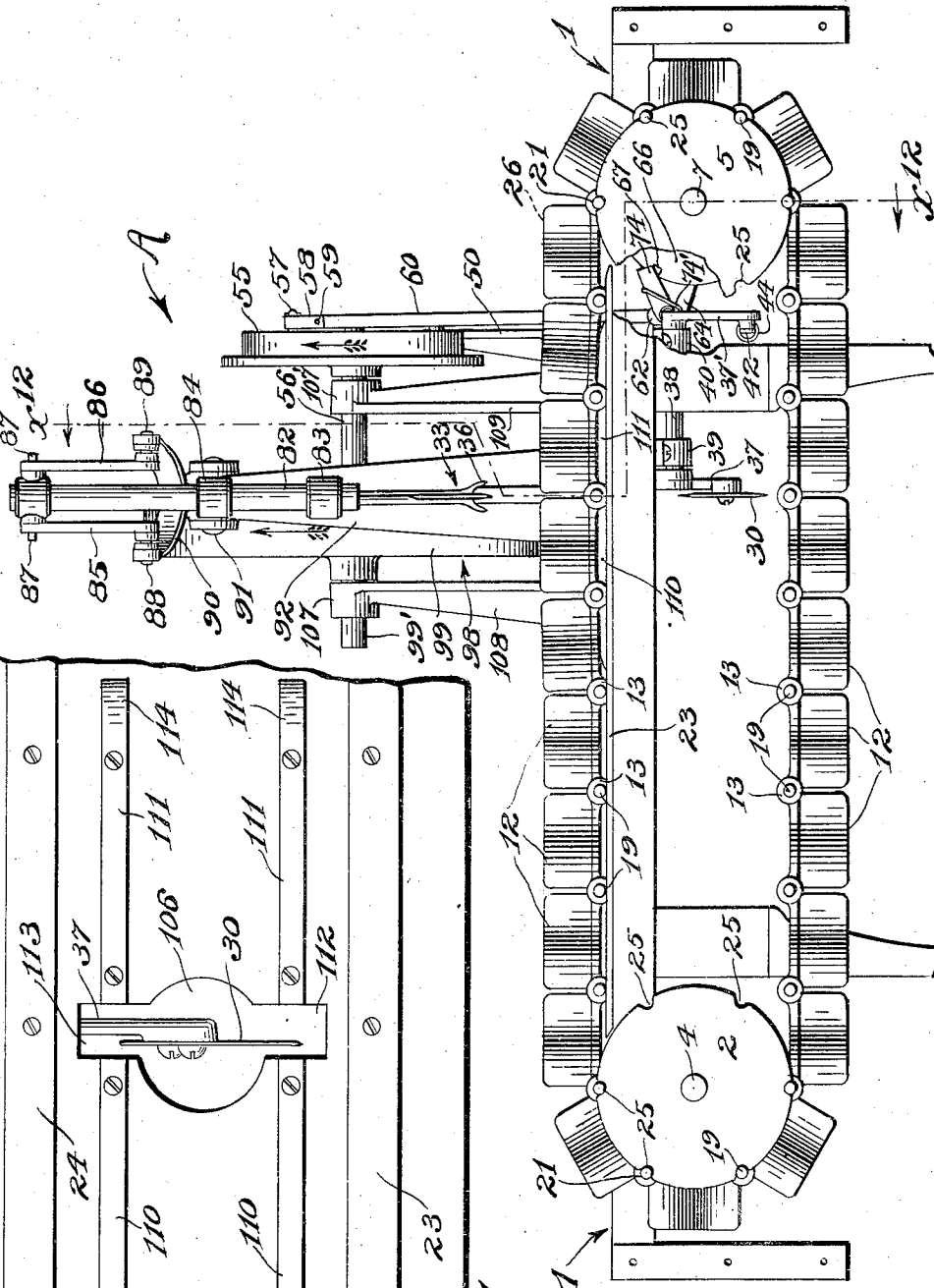
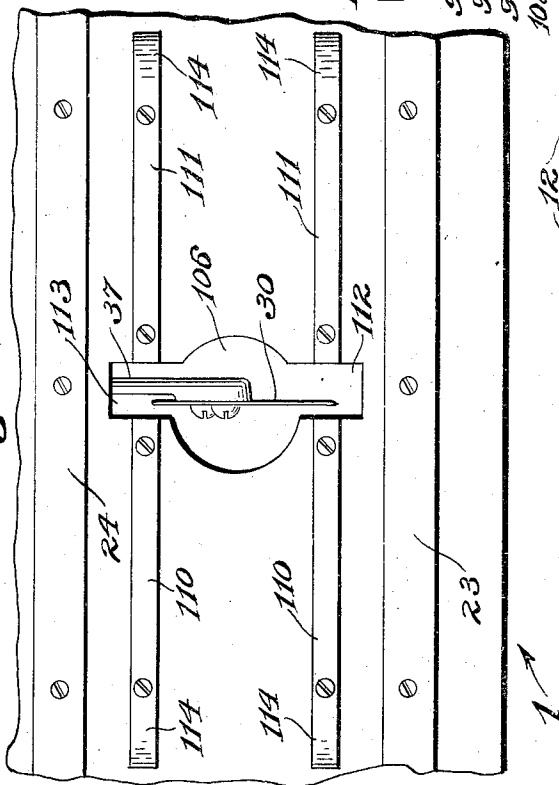


Fig. 2.



Witnesses:

G. H. Hiles,
L. Belle Rose

Inventor:

Isaac S. Goldman.

by James H. Townsend
his Atty.

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5 SHEETS-SHEET 2.

Fig. 3.

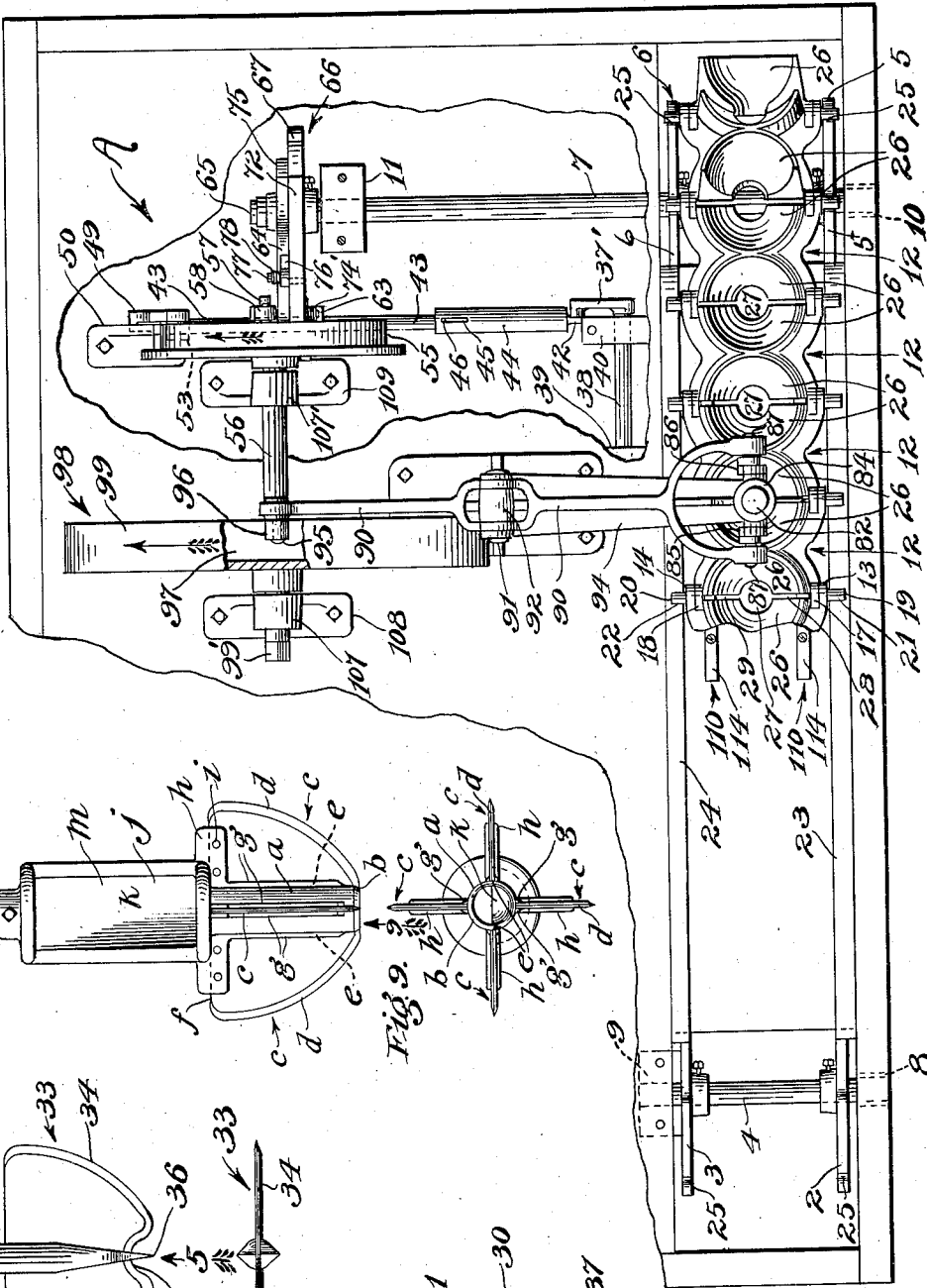


Fig. 8.

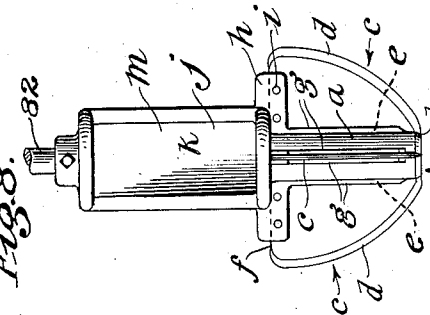


Fig. 9.

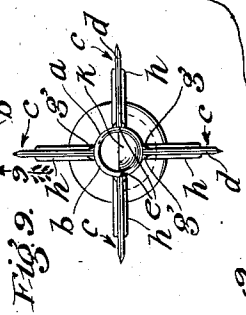


Fig. 4.

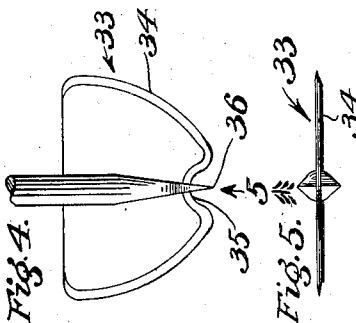


Fig. 5.



Fig. 7.

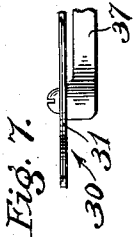
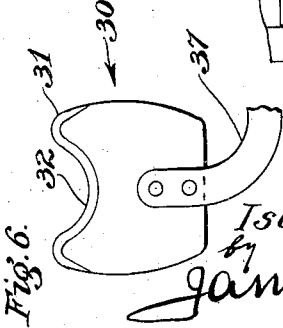


Fig. 6.



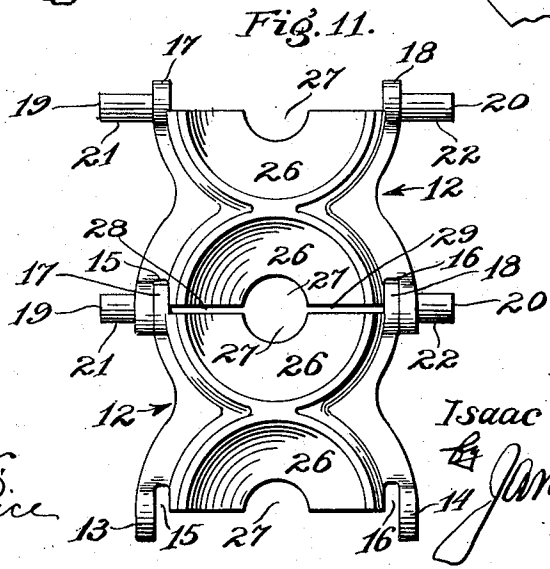
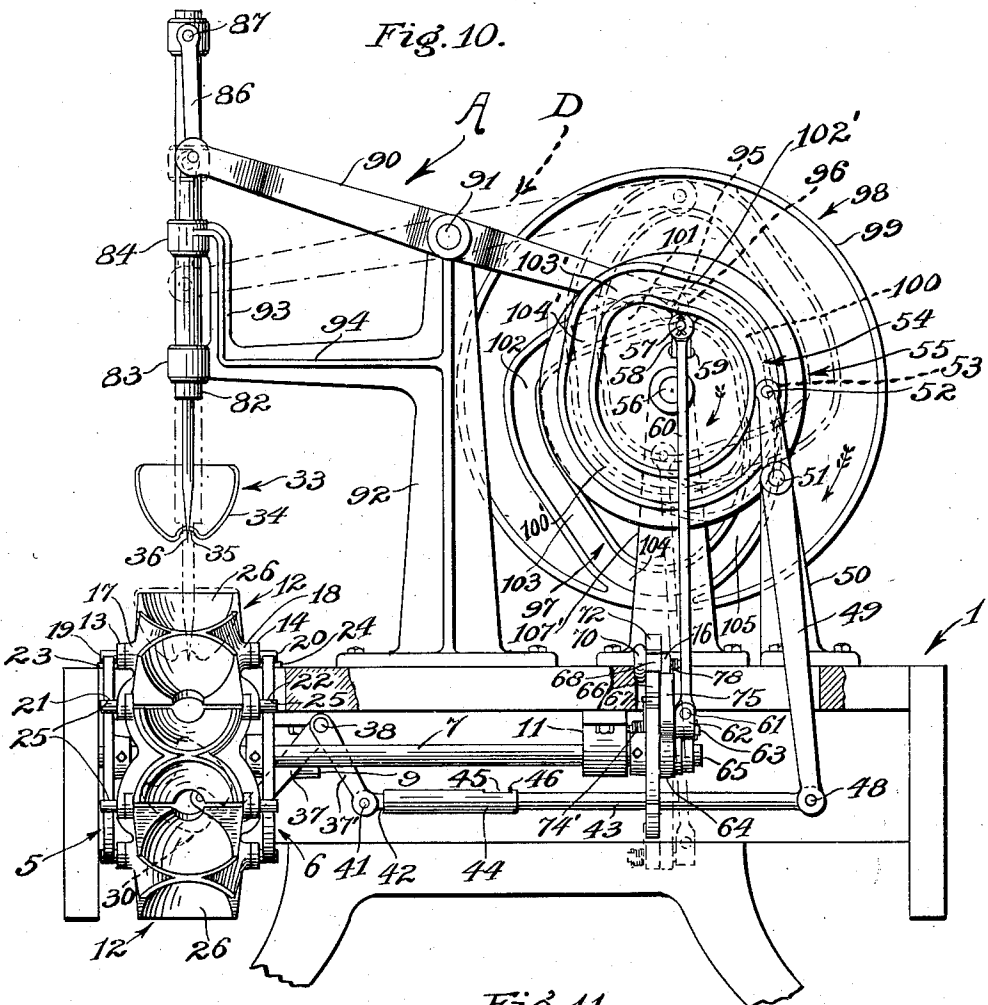
Witnesses:
G. H. Files.
L. Bille Rice

Inventor:
Isaac S. Goldman.
by James R. Townsend
his atty

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Witnesses:
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 L. Belle Rice

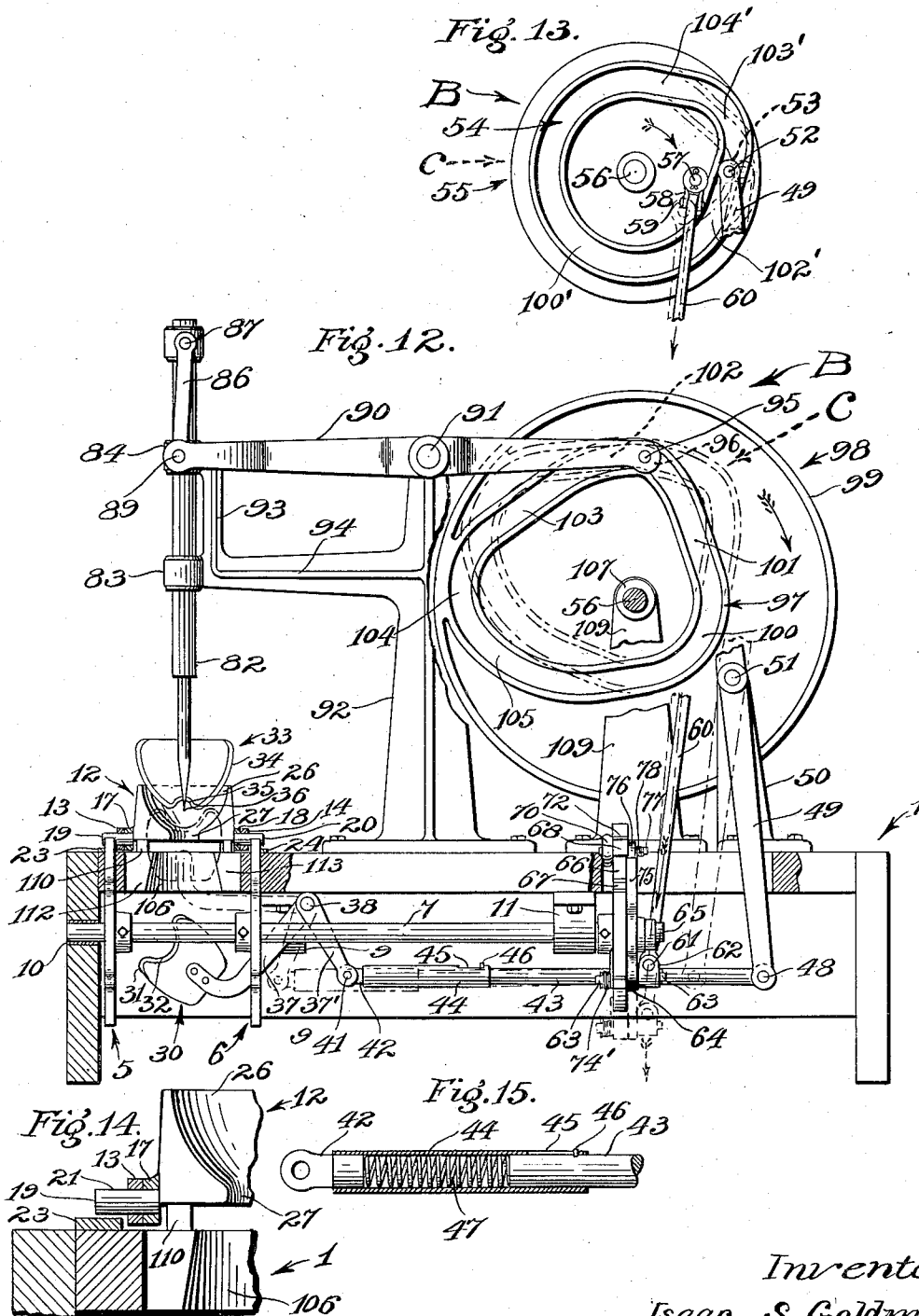
Inventor:
 Isaac S. Goldman.
 James R. Townsend
 his atty.

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5 SHEETS—SHEET 4.



Witnesses:

G. H. Hiles,
G. Belle Rice

Inventor:

Isaac S. Goldman.

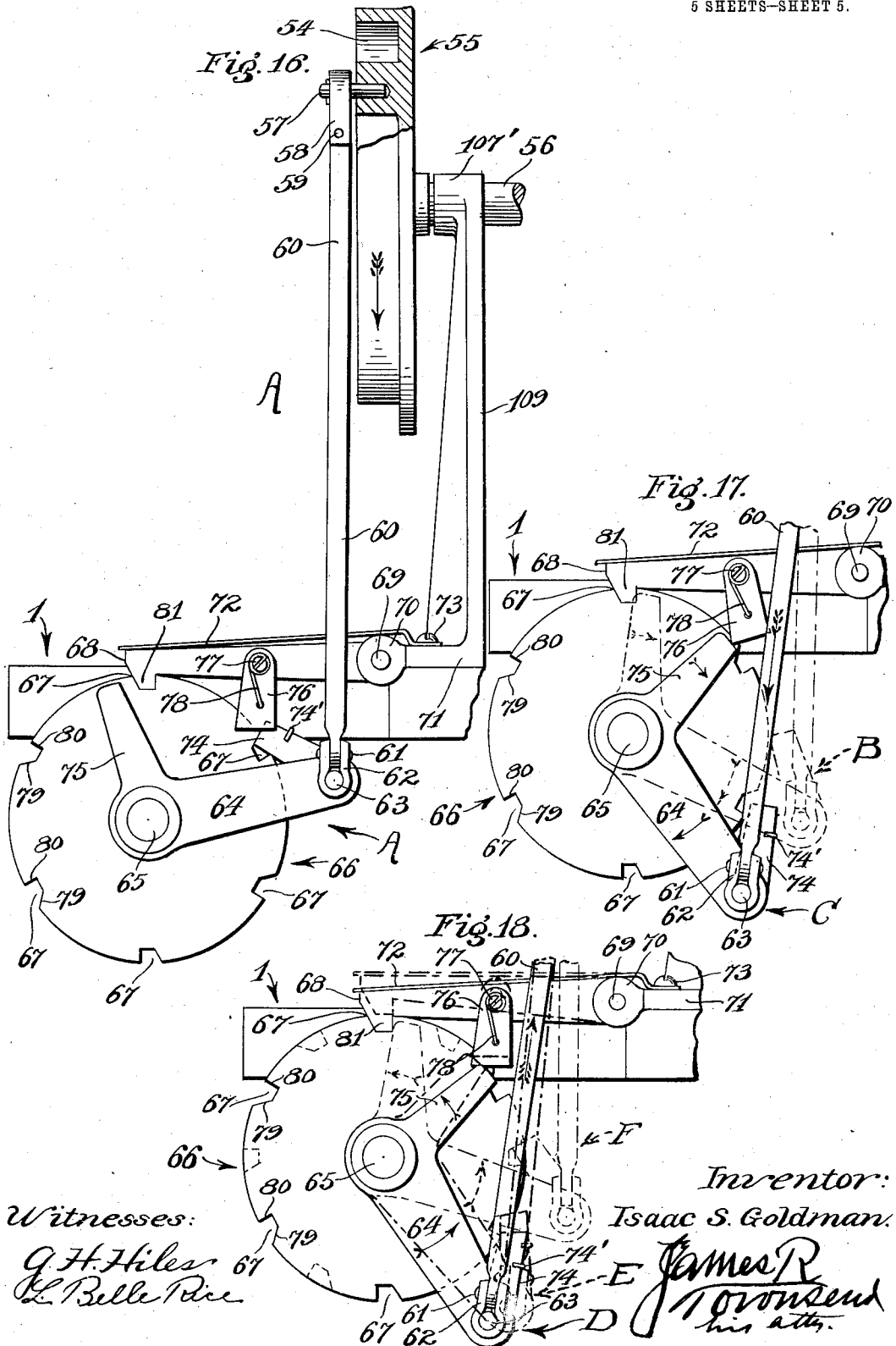
James P. Townsend
his atty.

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5 SHEETS—SHEET 5.



Witnesses:
G. H. Hiles
L. Belle Rice

Inventor:
Isaac S. Goldman.
James R. Townsend
his atty.

UNITED STATES PATENT OFFICE.

ISAAC S. GOLDMAN, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO LESLIE S. HACKNEY, OF PASADENA, CALIFORNIA; ELLA E. GOLDMAN, EXECUTRIX OF SAID ISAAC S. GOLDMAN, DECEASED, ASSIGNOR OF ONE-HALF TO ELLA E. GOLDMAN, OF LOS ANGELES, CALIFORNIA.

FRUIT PITTER AND SPLITTER.

1,047,786.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed July 25, 1910. Serial No. 573,771.

To all whom it may concern:

Be it known that I, ISAAC S. GOLDMAN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Fruit Pitter and Splitter, of which the following is a specification.

This invention is applicable for pitting and splitting free-stone fruits such as apricots, peaches and cherries, and it is also adapted for splitting and coring apples.

The object of the invention is to provide a machine by which fruits may be split and relieved of their pits or cores with maximum rapidity and minimum bruising of the fruit and to separate the pulp from the pits or cores, depositing the pulp on trays or in vessels therefor and delivering the pits or cores to a separate place.

Other objects are simplicity, strength, cheapness of manufacture and ease of construction and operation.

The accompanying drawings illustrate the invention.

Figure 1 is an elevation of one side of a fruit pitter and splitter embodying the invention. Part of the frame is omitted and a small section is broken away for clearness of illustration. The legs are broken away to contract the view. Fig. 2 is an enlarged fragmental plan detail illustrating the construction for supporting the fruit-holder at the moment of the downward stroke of the pitting knife. Fig. 3 is a plan of the machine shown in Fig. 1. Portions of the rectangular table are broken away to expose part of the mechanism beneath the table top and to contract the view; and some of the carrier links are omitted. Fig. 4 is a side elevation of the upper splitting and pitting knife shown in Fig. 1. Fig. 5 is a view of said splitting knife from the arrow 5, Fig. 4. Fig. 6 is a side elevation of the lower splitting knife shown in Figs. 1 and 2. Fig. 7 is a plan view of Fig. 6. Fig. 8 is a side elevation of a knife for splitting and coring apples to take the place of the upper knife shown in Figs. 1, 4 and 5. Fig. 9 is a view looking up from the arrow 9, Fig. 8. Fig. 10 is an end elevation looking at the rear or dumping end of the machine. Portions of the table are broken away to expose the mechanism. In Figs. 1, 3 and 10 the upper knife is shown at the beginning of its down

stroke. Fig. 11 is a plan detail of two of the links of the fruit-carrier, shown in Fig. 1, said links being hinged together and forming one complete fruit-holder and two separate halves of two other fruit-holders. Fig. 12 is an elevation analogous to Fig. 10 showing the upper knife in its intermediate or fruit holding position and the lower knife at the beginning of its upstroke. The lower knife-operating cam is removed and portions of the machine are broken away for clearness of illustration. The left hand side is sectioned as indicated by line x^{12} , Fig. 1. Fig. 13 is a view of the lower knife-operating cam removed from Fig. 12. Fig. 14 is an enlarged fragmental section showing one way and a journal and other details at one side of the carrier, the view being analogous to Fig. 12. Fig. 15 is an enlarged fragmentary longitudinal sectional detail of the yielding connecting rod for the lower splitting knife. Fig. 16 is a fragmental detail elevation from the other side of the machine than that shown in Fig. 1 showing the mechanism for locking and advancing the fruit-carrier. Fig. 17 is a view analogous to Fig. 16 to illustrate the tripping-pawl pushed out of operative position. Fig. 18 is a view analogous to Figs. 16 and 17 to illustrate the tripping-pawl in operative position.

In the various views like capital letters denote corresponding relative positions of the moving elements.

The frame 1 may be in the form of a table or stand and may be of any desirable dimensions or shape. Two pairs of sprocket wheels are provided, the sprocket wheels 2, 3 of one pair being mounted on a shaft 4 and the sprocket wheels 5, 6 of the other pair being mounted on a shaft 7. The front shaft 4 rotates in bearings 8, 9, and the rear shaft 7 rotates in bearings 10, 11. All of said bearings are carried by said frame 1.

The fruit carrier is of an endless chain type and comprises corresponding divided-cup links 12, each having knuckles 13, 14, and between such knuckles recesses 15, 16, to receive a pair of knuckles 17, 18, of another link; each link being provided at one end with the knuckles 13, 14, and recesses 15, 16, and at the other end with knuckles 17, 18, aligned with the recesses 15, 16, respectively, of its link. The pins 19, 20 have their inner ends fixed in the inner knuckles 17, 18, and

thence extend pivotally through the outer knuckles 13, 14, and form outwardly projecting journals 21, 22, to rest upon and slide along horizontal ways 23, 24, that are fixed to the frame 1. The sprocket wheels 2, 3, are provided with peripheral notches 25 spaced apart to receive the journals 21, 22, as the sprocket wheels rotate, thereby to drive the endless chain formed of the pivoted links. Each of the links is provided at its ends with centrally arranged concentric segmental concavities and notches 26, 27, so that the adjacent concavities of two links that are pivoted together form a semi-spherical cup to receive and hold the fruit, and at the center of each cup is a circular opening formed by the adjacent notches 27. Each cup is thus formed in two halves pivoted together so that when they pass along a straight course between the ends of the machine the cups will be closed to receive the fruit, and when they bend around the wheels at the ends of the course they will open to dump and discharge the fruit. The knuckles 13, 14, and 17, 18, project from the bodies of the links sufficiently to provide vacant spaces or open transverse slots 28, 29, at opposite sides of and extending radially from each opening 27, to allow fruit pits to be driven downward through the bottom of the cup by means hereinafter described.

The lower splitting knife 30 is arranged between the upper and lower limbs of the carrier and is designed to split the fruit pulps from below and its cutting edge 31 has a central semi-circular recess 32 adapted to accommodate the under-side of the fruit pit.

The upper splitting knife 33 has a downwardly converging centrally recessed splitting edge 34, and is provided at the recess 35 thereof with a transversely arranged fork 36, thus outlining a concavity at its center to accommodate the fruit pits. Said upper knife 33 is thus adapted to split the fruit from above downward part way around the pit and to force the pit down through the split made by the lower knife 30.

The cups, knives, notches, forks and recesses may be made of different sizes for splitting fruits of different sizes, being correspondingly larger or smaller to accommodate fruits of different kinds as peaches and cherries.

The lower splitting knife 30 is mounted on a bell-crank lever comprising two arms 37, 37' and a rocker-shaft 38 journaled at 39, 40, on the frame 1. Said bell crank is pivotally connected by a pivot 41 with a longitudinally compressible telescoping rod composed of two sections 42, 43, connected by a telescoping sleeve 44 which is fastened to one of the rod sections 42 and is slidably connected by a slot 45 and a pin 46 with the rod section 43, a spring 47 inside the sleeve, being

interposed between the rod sections so as normally to hold the compressible rod yieldingly extended in order that it may yield endwise in case the knife 30 should meet an obstacle before the back stroke of the rod causes the recession of the knife. Said rod is pivoted by a pin 48 to one end of the lower knife operating lever 49 that is a lever of the first class pivoted to a standard 50 by a pin 51 and provided at its upper end with a stud 52 on the projecting end of which is journaled a roller 53 that tracks the rotary cam race 54 carried by the lower knife cam wheel 55 which is fixed to the driving shaft 56 from which the fruit carrier and both the knives are operated so that their movements will be relatively timed.

On the lower knife cam wheel 55 is fixed a wrist-pin 57, which rotates in the eye of a joint 58 pivoted at 59 to the upper end of a universal connecting-rod 60 that is pivotally connected at its lower end by a pin 61 with a joint 62 journaled on a pin 63 which projects from a lever 64 pivoted on the pin 65 coaxially of the rear sprocket wheel shaft 7, of which the pivot 65 may be an extension. On said shaft 7 is mounted a ratchet wheel 66 having notches 67 therein, corresponding in number and position with the notches 25 of both of the rear sprocket wheels 5, 6, so that when the ratchet wheel 66 is operated the space between two notches, the sprocket wheels 5 and 6 will be operated correspondingly. A locking pawl 68 is arranged to engage the notches 67 of the ratchet wheel 66 to prevent rotation of the ratchet wheel and the sprocket wheels, and consequently of the fruit carrier whenever the locking pawl 68 is engaged with a notch 67 of the ratchet-wheel 66, as shown in Figs. 16, 17, 18. The locking pawl 68 is pivoted on a stud 69 that projects from a suitable boss 70 preferably integral with the base 71 of a standard 109 and may be quickly forced into engagement with a notch 67 by a leaf spring 72, which presses upon the upper surface of the locking pawl and is attached at one end to the base 71 by a screw 73. On the pin 63 is pivoted a dog 74 to engage in the notches 67 to rotate the ratchet wheel 66 in the direction to drive the upper limb of the fruit carrier toward the rear end of the machine. The dog 74 is held toward the ratchet wheel 66 by a helical spring 74' on the pin 63.

The lever 64 is provided with a finger 75 adapted to engage a tripping pawl 76 near the beginning of the up-stroke of the lever 64 as shown in Fig. 18, and to lift the locking pawl 68 out of engagement with a ratchet notch 67 before the dog 74 engages a notch to rotate the ratchet wheel 66 as illustrated by positions E, F, Fig. 18.

The tripping pawl 76 is pivoted to the locking pawl 68 by a pin 77 and is normally held in position for engagement with the

finger 75 by a spring 78, which quickly returns the tripping pawl 76 to normal position, shown in Figs. 16, 18, after it has been pushed aside by the downstroke of the finger 75 as illustrated by position designated C, Fig. 17.

Each of the ratchet notches 67 is provided with a front face 79 and a rear face 80. The front face 79 is arranged tangentially to be engaged by the dog 74 for the purpose of rotating the ratchet wheel 66; and the rear face 80 is arranged radially to engage the tooth 81 of the locking pawl 68; the front face 79 of said tooth being aslant and the rear face 80 being arranged practically radial of the ratchet wheel 66.

The upper splitting knife 33 is fixed to a vertical reciprocating rod 82 working in the guides 83, 84, and provided at its upper end with complementary, oscillatory arms 85, 86, which are pivoted thereto by pins 87, the lower ends of said arms 85, 86, being respectively pivotally connected by pins 88, 89, with a walking beam 90 that is pivoted by a pin 91 to a standard 92 fixed to the frame 1.

The guides 83, 84, are supported by and preferably are integral with a vertical member 93 of the standard 92, to which the member is connected by a horizontally extended arm 94. The walking-beam 90 is provided with a stud 95 having on its free end a roller 96, which tracks the cam race 97, that is preferably part of the main driving pulley 98, having a flange 99 for a driving belt, not shown.

The machine may be power-driven or if preferred a crank, not shown, may be attached to the extension 99' of the driving shaft 56 for driving by hand. The cam races 54 and 97 are of such outline and relative arrangement as will produce the desired movements of the knives, respectively, relative to each other and the cups so that the different movements of the several parts will occur in timely sequence, thus allowing the cams to be of minimum diameter. The upper knife cam race 97 comprises a top rest arc 100, a down stroke splitting limb 101, a pit holding bend 102, a pitting limb 103, a bottom turn 104, an upstroke limb 105. The lower knife cam race 54 comprises a bottom rest arc 100', a bottom upstroke splitting limb 102', a bottom turn 103', a bottom down stroke limb 104'.

The parts of the races 97 and 54 are co-active to respectively operate the upper and lower knives through the intermediate mechanisms, as follows:—The top rest arc 100 is co-active with the bottom rest arc 100'. The bottom rest arc 100' is co-active with the top rest arc 100, down stroke splitting limb 101, and the up stroke limb 105. The bottom up stroke splitting limb 102' and the bottom turn 103' are co-active with the pit holding bend 102 and the turn 103' is also

co-active with the pitting limb 103. The bottom down-stroke limb 104' is co-active with the pitting limb 103 and the bottom turn 104. The mechanism between the cams and the fruit holders to advance said holders step by step is co-active with the bottom rest arc 100', the up stroke limb 105 and top rest arc 100 while the knives are withdrawn. It is evident that the elements may be variously arranged to effect the co-action of the several parts.

When the roller 96 has reached the end of the top rest arc 100, as shown in Figs. 1, 3 and 10, the universal connecting rod 60 has attained the end of its up stroke and the tooth 81 of locking pawl 68 engages a slot 67, locking the fruit carrier. (See Fig. 16.) Then the universal connecting rod 60 and the upper knife 33 operated by the down stroke splitting limb 101, make their down strokes; the knife being arrested in the position shown in Fig. 12 by reason of the pit holding bend 102 concentric with the top rest arc 100, but of just sufficient length to momentarily arrest the down stroke of the first or upper knife after it has entered the top of the fruit to be pitted and thus to firmly hold the fruit while the second or lower knife quickly strikes up by reason of its operating roller 53 traversing the up stroke splitting limb 102' and turn 103' of the cam race 54, as shown by broken construction lines in Figs. 12 and 13, the portions 102', 103' and 104' interrupting an otherwise perfectly concentric cam race and occupying a space corresponding approximately to one-sixth of a revolution. At the beginning of the recession of the lower knife, by reason of its operating roller 53 traversing the down stroke limb 104', the upper knife continues its down stroke through the fruit by reason of the action of the pitting limb 103, and forces the pit down through the segmental notches 27 in the links 26 and an opening 106 in the top of the table 1, whence a suitable trough, not shown, deposits it in a receptacle, not shown; the upper knife being at the end of the stroke as shown by broken lines in Fig. 10, the up stroke limb 105 then operates to quickly withdraw the upper knife and at the instant said knife is clear of the carrier the pick-up of the ratchet wheel 66 occurs, and continues while the upper knife is on its up stroke and until the roller 96 has again traversed the top rest arc 100, thus completing the cycle. By operating the knives in this fashion and with the relative movements specified, the fruit is cut with maximum speed and with minimum amount of crushing and tearing. The driving shaft 56 is journaled at both ends in the bearings 107, 107', supported by standards 108, 109, that are fixed to the frame 1. A pair of short auxiliary relief ways constructed of

two pieces 110, 111, which are arranged on either side of slots 112, 113, provided for accommodation of the lower knife 30 and the bell crank lever 37, are interposed between the ways 23, 24, and fastened to the frame 1. The relief ways 110, 111, are sufficiently high to raise cup links 12 as they pass over said relief ways, and consequently to raise journals 21, 22, from contact with the ways 23, 24, so that when the upper knife operates strain and consequent bending of the link pivots 19, 20, will not occur. The relief ways 110, 111 have rounded ends 114 to raise and lower the carrier links without shock.

When it is desired to use the machine for coring, the knife shown in Figs. 8, 9 is substituted for the splitting and pitting knife 33 and the lower knife 30 is preferably disconnected. The coring knife comprises a lower hollow cylindrical shell *a* having a cutting edge *b* for cutting out the core of the fruit, and four blades *c* arranged in the form of a cross to split the fruit. The blades *c* have rounded cutting edges *d* and each blade has two straight edges *e*, *f*, at right angles with one another and adapted to be respectively engaged by vertical ribs *g* for stiffening the blade lengthwise and by horizontal flanges *h* for fastening by rivets *i*. A disk integral with the shell *a* and flanges *h* is surmounted by a half-cylindrical chamber *j* into which the core passes; the walls *k* of the chamber *j* gradually thickening toward the top, so as to form a wedge to thrust the core out of the chamber *j* through the opening *m*.

I claim:—

1. A fruit pitter comprising a fruit holder provided with a cup formed of two links pivoted together and provided with notches and with cavities that together form the cavity of the cup, the notches together forming an outlet for the fruit pits, a knife beneath the cavity, means to move said knife into and from the cavity, a second knife above the cavity and means to move the second knife into and from the cavity to cut the fruit and move the pit through said cavity.

2. A fruit pitter comprising a fruit holder provided with a cup formed of two links pivoted together and provided with notches and with cavities that together form the cavity of the cup, the notches together forming an outlet for the fruit pits, means to move the fruit pit from the fruit through the notches in the cup and means to move the cup from the pit removing means and to bend and open the cup to discharge fruit pulp therefrom.

3. A fruit pitter comprising a fruit holder provided with a cavity, a knife below the

cavity, means to move the first knife into the cavity, means to arrest the movement of the first knife intermediately of its stroke, and means to move the second knife into the cavity while the movement of the first knife is so arrested.

4. A fruit pitter comprising a fruit holder provided with a cup having a cavity, a knife above the cavity, a second knife below the cavity, means to move the first knife into the cavity, means to arrest the movement of the first knife intermediately of its stroke, means to move the second knife into the cavity while the movement of the first knife is so arrested, and means to move the cup from the pit removing means and to bend and open the cup to discharge fruit pulp therefrom.

5. A fruit pitter comprising a fruit holder provided with a cavity, a knife above the cavity, means to move said knife partially into the cavity and stop it, a second knife below the cavity, means to move the second knife into the cavity while the first knife is stopped, means to retract the second knife and means to move the first knife farther into the cavity to move the pit through the cavity during the retraction of the second knife.

6. In a fruit pitter, a fruit carrier provided with a cup formed of two links pivoted together and provided with notches and with cavities that together form the cavity of the cup, the notches together forming an outlet for the fruit pits, horizontal ways to support the cup in closed position and means to drive the cup along the ways and to tip and open the cup.

7. In a fruit pitter, a fruit carrier provided with a cup formed of two links pivoted together and provided with notches and with cavities that together form the cavity of the cup, the notches together forming an outlet for the fruit pits, horizontal ways to support the cup in closed position by its pivots, relief ways to support the cup and free the pivots from said horizontal ways and means to drive the cup along the ways and to tip and open the cup.

8. In a fruit pitter, a fruit holder comprising two links pivoted together and provided with notches and with cavities that together form the cavity of a cup, the notches together forming an outlet for the fruit pits.

In testimony whereof, I have hereunto set my hand at Los Angeles, this 28th day of June, 1910.

ISAAC S. GOLDMAN.

In presence of—

JOHN A. MORRIS,
ELLA E. GOLDMAN.